



Documentation for 1.10-

dev#454#453#452#451#445#444#441#438#435#434#433#432#429#416#416#407#406#405#404# version

BetonQuest is advanced and powerful quests plugin. It offers RPG-style conversations with NPCs and a very flexible quest system. Instead of being limited to creating "quest" objects with taking requirements and rewards upon completion, BetonQuest allows you to freely define what should happen (events), if it should happen (conditions) and what needs to be done for it to happen (objectives). Your quests don't have to look like "kill, bring, get reward": you can create multi-threaded stories, narrated with NPC conversations, with multiple endings affecting the player's gameplay in many ways.

Features

- Minecraft **1.9**, **1.10**, **1.11** and **1.12** support
- **Multiple choice conversations** with NPCs using an inventory GUI
- **Powerful event system**: anything you want can happen anywhere in a quest
- Even more **powerful condition system**: you can limit whenever something should (or shouldn't) happen
- **Journal** in a book
- **Backpack** for quest items
- Advanced item handling which considers even text in books
- **Party system** allowing for creation of group quests
- Ability to create various **reputation systems** (points)
- Firing events for a players when they enter specified area (global locations)
- **Daily quests** or repeatable reward collection (`delay` objective)
- Variables in conversations - let the NPC tell how much more wood he needs!
- Quests can be organized into distributable packages
- **Citizens2** NPC support

- Integrated with [BetonLangAPI](#), [Citizens](#), [Denizen](#), [EffectLib](#), [Heroes](#), [HolographicDisplays](#), [LegendQuest](#), [Magic](#), [McMMO](#), [MythicMobs](#), [PlaceholderAPI](#), [PlayerPoints](#), [Quests](#), [RacesAndClasses](#), [Shopkeepers](#), [SkillAPI](#), [Skript](#), [Vault](#), [WorldEdit](#) and [WorldGuard](#)
- Multiple languages and easy translating
- API for creating your own events, conditions and objectives
- SQLite and **MySQL** support
- Last but not least, an **active, open source** project with development builds available

Overview

Imagine you have a conversation with an NPC. You can choose from multiple options, and the NPC will react differently, for example he will tell you to cut some trees when asked for a job. If you tell him that you accept his offer, an event will be fired. It will start an objective for getting wood. It will also "tag" you as someone who started the quest. From now on the NPC will check for that tag, and use different options in the conversation, for example telling you to hurry up.

When you complete the objective (by breaking wood blocks), the objective will fire another event. This one will "tag" you as someone who collected the wood. When you go back to the NPC and tell him about it, he will check (using a condition) if you actually have the wood in your inventory. If so, he will fire another event, giving you the reward.

There was no single "quest" object. This was only a conversation, which was firing events and checking conditions. The objective also wasn't a "quest" - it only added a tag when you collected the wood, nothing more. It could not exist on it's own. The same conversation on the other hand could start some other quests afterwards (for example mining some ore), so it's also not a "quest".

Don't be disappointed by my examples of getting wood and mining ore. These were only simplifications, so it's easier to explain the system. BetonQuest is capable of much more. You can add entries to player's journal based on the quests he's doing like in Morrowind, the conversations can be as multi-threaded as in Baldur's Gate and quests can be started by entering specific location like in Skyrim. You can create reputation systems, unique quest items, books that react to reading them and so on. Your quests can have multiple ways to different endings depending on players' decisions and they can require multiple players to do something.

You don't have to use BetonQuest for quests only. Conversations with NPCs can help your players, teleports them around the map, describe server features, buy or sell stuff, give ranks etc. The only limit is your imagination!

Installation and Configuration

Installation

First of all you should install Citizens plugin. You can find it on its dev.bukkit.org page. It's not required, you can use NPCs made from clay blocks, but that would be less immersive. Download the BetonQuest plugin, place `.jar` file in your *plugins* folder and start the server. BetonQuest generated configuration files. If you want to use MySQL for data storage then open *config.yml* and fill your database informations. If not, just leave these fields blank, the plugin will use SQLite instead. If you don't want to use autoupdater disable it in configuration before restarting the server or reloading the plugin. When you're finished you can reload the plugin (`/q reload`). Now tweak the configuration to your liking and move on to *Quick start tutorial* chapter. You don't have to read about commands and permissions just yet, you should understand how the plugin works first.

Configuration

The configuration of BetonQuest is done mainly in *config.yml* file. All options are described here. If you don't know about some aspect of BetonQuest you can skip the explanation here. It will be repeated later, in the description of a specific feature.

Do not touch "version" option! *It may corrupt your files!*

- First is connection data for MySQL database. Fill it to use MySQL, leave it blank (or incorrect) to use SQLite.
- Language is just translation of the plugin. Currently there are 7 available languages, English (en), Polish (pl), German (de), French (fr), Spanish (es), Chinese (cn), Dutch (nl) and Italian (it).
- `update` section controls the updater. It has the following settings:
 - `enable` option is set to true by default and it controls if the plugin should do anything update-related.
 - `download_bugfixes` controls if BetonQuest should automatically update bugfix versions (like `1.7.3 -> 1.7.4` or `1.8.1 -> 1.8.3`).
These versions **do not** change how the plugin works, they only fix bugs, so it's good to set it to `true`.
 - `notify_new_release` option is responsible for displaying a notification at startup about new releases (like `1.7.6 -> 1.8`).
These can change how the plugin works by introducing new features and changing existing ones, so they won't be downloaded automatically. You can use `/q update` when you're ready.
 - If you're using a development version, there will be a third setting here, `notify_dev_build`.
This is the same as `notify_new_release` but it checks the development builds instead. There are no specific version checking here, so if the found dev number is higher, it will appear. You download development builds on your own responsibility.

- `default_journal_slot` is a number of slot where the journal will appear after using `/journal` command.
- `max_npc_distance` is a distance you need to walk away from the NPC for the conversation to end (in case of using chat-based conversation interface).
- `default_conversation_IO` is a conversation interface. `simple` is a conversation in chat, `tellraw` is an extension to provide clickable options and `chest` is a conversation in inventory window. Other plugins can add additional IO types.
- `display_chat_after_conversation` this will prevent all chat messages from displaying during a conversation and it will show them once it's finished.
- `combat_delay` is a delay (in seconds) the player must wait before he can start the conversation after combat.
- `notify_pullback` will display a message every time the player is pulled back by the `stop` option in conversations (in case of chat-based conversations). It notifies players that they are in a conversation and the pullback is not some kind of a bug.
- `default_package` is a name of the package that should be used when you don't specify package in `/q` command. It's for your convenience.
- `remove_items_after_respawn` option should be turned on if you don't use "keepInventory" gamerule. It prevents other plugins from duplicating quest items after death. When the player dies, his quest items are removed from drops and stored in the backpack, but some plugins may try to restore all items to the player (for example WorldGuard custom flag keep-inventory). That's why BetonQuest removes the quest items that are in player's inventory after he respawns again, to be sure they were not readded. The "keepInventory" gamerule however works differently - the items are never dropped, so they cannot be added to backpack. Removing them from the inventory would destroy them forever. Sadly, Bukkit does not allow for gamerule checking, so it's up to you to decide. Once again: if you have "keepInventory" gamerule true, this setting has to be false, and vice versa.
- `quest_items_unbreakable` controls whenever quest items can be broken by usage. It was used in the past, when `unbreakable` tag couldn't be added to items. You can now turn it off and make your quest items unbreakable by vanilla means.
- Sounds define what sounds will be played on these occasions:
 - `start` and `end` refer to starting/ending conversations
 - `journal` is just updating journal
 - `update` is played when there's a changelog file, to draw your attention
 - `full` can be played when the player uses `/j` command but his inventory is full.

List of all possible sounds can be found [here](#).
- `cmd_blacklist` is a list of commands that can't be used while in conversation. Remember that you can type here only single words (command names)!
- `hook` controls compatibility with other plugins. Here you can turn off each hook.
- `journal` controls various settings of the journal:
 - `chars_per_page` is a number of characters before a page break. If you set it too high, the text on a journal page can overflow, becoming invisible.
 - `one_entry_per_page` will make each entry take a single page. Note that it won't expand to other pages even if it overflows, so keep your entries short.

- `reversed_order` controls the chronological order of entries in the journal. By default the entries are ordered from newest to oldest. You can reverse it, but it will force players to click through a lot of pages to get to the latest entry.
- `hide_date` hides the date of each entry. Set it to true if you don't want this functionality.
- `full_main_page` makes the main page take always a full page. If you display a lot of information you should probably make this true. If you use main page only for small notifications, set it to false, so the entries can follow immediately.
- `journal_colors` controls the colors used in the journal. It takes color codes without the `&` character.
 - `date.day` is a day number
 - `date.hour` is a hour number
 - `line` is a delimiter between entries
 - `text` is the text of the entry
- `conversation_colors` controls the colors of the conversation. It takes [color names](#). If you want to add a font style (bold, italic etc.) you can add it after a comma.
 - `npc` is the name of the NPC
 - `player` is the name of the player
 - `text` is the NPC's text
 - `answer` is the text of player's answer (after choosing it)
 - `number` is the option number
 - `option` is the text of an option
- `date_format` is the Java [date format](#) used in journal dates. It needs to have a space between the day and hour.
- `debug` is responsible for logging plugin's activity to `debug.log` file in `logs` directory. You shouldn't turn this on as it can slow your server down. However if you experience any errors turn this on, let the plugin gather the data and send logs to the developer. Note that first run of the plugin will be logged anyway, just as a precaution.

Updating

The updating process is safe and easy. After updating to a new version (manually or automatically) configuration files and database will be automatically backed up to a zip file so you never lose all your work due to an error. Then configuration will be converted to a new version. At the end the localization will be updated with new languages and the `changelog.txt` file will be created for you.

When you enter the server BetonQuest will alert you about changes and ask you to read `changelog.txt` file located in plugin's main directory. This way you will be always up to date with every changes made by new versions.

All next versions of BetonQuest should have full compatibility with your current version of the plugin and server. This means that after updating the plugin should work *exactly* the same way as it did before (except for bugs). The changes will be visible only in configuration format or new features. (For example in 1.5 inverting conditions was done by adding `--inverted` argument to the instruction. It was changed to the current format (with exclamation marks before the condition

name) in 1.6 version. The plugin had updated the configuration files automatically when switching to the new version, the only problem the user had was getting used to the new (better) way of negating conditions).

If there were any unexpected errors during an update process just download previous version, restore your configs from backup and disable autoupdating feature. Don't forget to post your error so I can fix it!

Backups

Every time the plugin updates the configuration there is a backup created. This is especially important if you use development versions, as they may be unstable. You can also create a backup manually by running **/q backup** command. It needs to be run from console on empty server, because it heavily uses the database.

You can find your backups in *backup* directory in plugin's folder. They are .zip files containing all your configuration and *database-backup.yml* file, which - as the name says - is your database backup. If you want to replace your configuration with an older backup just delete all the files (except backups and logs) and replace them with the files from .zip file.

If you want your database loaded you should also place *database-backup.yml* file in plugin's directory. When the plugin sees this file while enabling, it will backup the current database and load all data from that file to the database. You can find a backup of old database in *backups* folder, so if you ever need to load it back, just rename it to *database-backup.yml* and place it back in main plugin's directory. Note that *database-backup.yml* file will be deleted after loading, so it doesn't replace your database on next plugin start.

Migrating database from SQLite to MySQL and back

Follow these few simple steps to migrate your database easily:

1. Create a backup with **/q backup** command.
2. Extract database backup from it.
3. Turn your server off.
4. Place the *database-backup.yml* file inside plugin's directory.
5. Edit in configuration which database type you want to use (correct credentials for MySQL, incorrect or empty for SQLite).
6. Start the server.
7. Check for errors.
8. If there are no errors, enjoy your migrated database.
9. If there are any errors, post them to the developer or try to fix them if you know how.

Commands and permissions

Commands

- `/j` - gives the journal
- `/backpack` - opens the backpack
- `/q` - lists all available admin commands
- `/q reload` - reloads the plugin
- `/q objectives {playerName} [list/add/del/complete] [instruction]` - shows player's currently active objectives
- `/q tags {playerName} [list/add/del] [tag]` - lists all player's tags
- `/q points {playerName} [list/add/del] [category] [amount]` - lists all player's points in all categories
- `/q journal {playerName} [list/add/del] [package.pointer] [date]` - lists
- `/q event {playerName} {package.eventID}` - fires an event for the player
- `/q condition {playerName} {package.conditionID}` - shows if the player meet specified condition or not
- `/q item {package.itemID}` - creates an item based on what you're holding in hand
- `/q give {package.itemID}` - gives you an item defined in the configuration
- `/q config {set/add/read} {path} [value]` - sets, adds or reads values from configuration
- `/q purge {playerName}` - deletes all player's data from the database
- `/q rename {tag/point/objective/entry} {oldName} {newName}` - renames all specified things in the database
- `/q delete {tag/point/objective/entry} {name}` - deletes all specified things in the database
- `/q backup` - creates a backup of configuration files and database
- `/q update` - updates the plugin to the newest release available. If you want to update to a development version instead, add `--dev` argument at the end of the command.
- `/q create {package}`: creates new package with given name, filled with default quest
- `/q vector {packname.variable} {newvariable}`: calculates the vector from first location variable to you position and saves it as second variable
- `/questlang {lang}` - changes the language for the player (and globally if used from console).
`default` language will use the language defined in `config.yml`.

Aliases

- `/j`: `bj`, `journal`, `bjournal`, `betonjournal`, `betonquestjournal`
- `/backpack`: `b`, `bb`, `bbackpack`, `betonbackpack`, `betonquestbackpack`
- `/q`: `bq`, `bquest`, `bquests`, `betonquest`, `betonquests`, `quest`, `quests`
 - **objective**: `o`, `objectives`
 - **tag**: `t`, `tags`
 - **point**: `p`, `points`
 - **event**: `e`, `events`
 - **condition**: `c`, `conditions`

- **journal**: j, journals
- **item**: i, items
- **give**: g
- **rename**: r
- **delete**: d, del
- **create**: package
- **/questlang**: ql

Permissions

- **betonquest.admin** - allows using admin commands (/q ...) and creating an NPC from blocks
- **betonquest.journal** - allows using /j command (default for players)
- **betonquest.backpack** - allows using /backpack command (default for players)
- **betonquest.conversation** - allows talking with NPCs (default for players)
- **betonquest.language** - allows changing the language (default for players)

Don't give **betonquest.admin** permission to people you don't fully trust. They can use **/q config** command to add a `command` event, and this way execute any command as the console. This might be dangerous.

Main command details

Reloading loads all data from configuration, but not everything is updated. Player's data isn't touched to avoid lags made by database saving. The database is also the same, you will have to reload/restart the whole server for the database to change.

Tags subcommand allows you to easily list and modify tags. '`/q tags Beton`' would list tags for player Beton. '`/q tags Beton add test`' would add "test" tag for that player, and '`/q tags Beton del test`' would remove it.

Points subcommand is similar - listing points is done the same way. Adding points to a category looks like that: '`/q points Beton add reputation 20`' (adding 20 points to "reputation" category). You can also subtract points with negative amounts. Removing the whole point category can be achieved by '`/q points Beton del reputation`'.

Journal subcommand works in the same way as those two above. Adding and removing looks like '`/q journal Beton add default.wood_started` (or `del`), and you can also specify the date of entry when adding it, by appending date written like this: `23.04.2014_16:52` at the end of the command. Note that there is `_` character instead of space!

Objective subcommand allows you to list all active objectives (shown as their labels) of the player. It can also directly add or cancel objectives using instruction strings. You can also complete the objective for the player using `complete` argument - it will run all events and remove the objective.

Running events for online players can be done with event argument:

' `/q event Beton give_emeralds` ' would run "give_emeralds" for player Beton (if he's online) from default package (not necessarily "default" but rather the default one specified in *config.yml*). If you want to run a static event, replace player's name with `-` .

There is also condition argument for checking conditions, for example

' `/q condition Beton has_food` '. Events and conditions need to be defined in their files, this command doesn't accept raw instructions. You can skip package name, the plugin will assume you're referring to package specified in `default_package` option in *config.yml* file. If you want to check a static condition replace the player's name with `-` .

If you need to create for example "Nettlebane" quest item, just hold it in your hand and type

' `/q item nettlebane` '. It will copy the item you're holding into the *items.yml* file and save it there with the name you specified (in this case "nettlebane"). You can skip the package name here as well.

The ' `/q give package.item` ' command will simply give you specified item.

Config subcommand is used to modify or display values in configuration files. `set` option replaces the value with what you typed, `add` simply adds your string to the existing value. (Note on spaces: by default the plugin won't insert a space between existing and added value. You can however achieve that by prefixing the string with `_` character. For example: existing string is `objective location` , and you want to add `100;200;300;world;10` . Your command will look like `/q config add default.events.loc_obj _100;200;300;world;10`). `read` option allows you to display config value without modifying it.

Path in this command is like an address of the value. Next branches are separated by dots. For example language setting in main configuration has path `config.language` , and a text in "bye" player option in default quest has path

```
default.conversations.innkeeper.player_options.bye.text
```

You can purge specific player with ' `/q purge Beton` ' command, where Beton is the name of the player. To purge the entire database at once simply change the prefix in *config.yml* or delete *database.db* file.

Delete command (' `/q delete` ') allows you to delete from the database every tag, point, objective or journal entry with specified name.

Rename command (' `/q rename` ') allows you to rename every tag, point, objective or journal entry in the database. In case of an objective it will also rename the objective in *objectives.yml*, so it continues to work correctly.

If you want to backup your configuration and database make sure that your server is empty (this process requires all data to be saved to database -> all players offline) and run ' `/q backup` ' command. You will get a zip file containing all your data, ready to be unzipped for restoring the plugin.

Update command (' `/q update` ') will try to download the newest version of the plugin and save it

to the update folder. This folder is then handled by Spigot to update the plugin. If you accidentally use this command but do not wish to update the plugin, you should remove `BetonQuest.jar` file from the `plugins/update` folder before restarting/reloading the server.

Using `/q create beton` command you will create new package named `beton`. It will contain the default quest.

The `/q vector` command allows you to create vector variables from the specified in first argument location variable to your position. The result will be saved to the "vectors.{second argument}" variable.

Quick start tutorial

The first thing you probably want to after installing the plugin is to check out how it's working. If you want to use inventory GUI open `config.yml` and change `default_conversation_IO` to `chest`, save the file and issue `/q reload` command on the server.

Now log in and place somewhere in the world a block of stained clay. On top of it put a head (can be a Creeper's head), and on the side of the clay block place a sign. Write this on first and second line:

```
[NPC]
Innkeeper
```

Done. Now right-click on the NPC's head. The conversation should start. If it did not, check if you correctly built the NPC. Ask the Innkeeper for some quests. He will tell you to cut some trees. If you want, type `/journal` to get the journal and see a new entry. Now, don't try to place any wood blocks. BetonQuest will detect that and increase the number of blocks to destroy. Just go and find some trees. Cut them down and if you're in creative mode, give yourself 16 blocks of wood. Now you can return to Innkeeper and give him the wood. You will receive the reward.

Using events and conditions

Now that you know how a (very) simple quest looks like time to start learning how to write something similar. Let's start with events. We won't do conversations just now, since they heavily use events and conditions, so you need to know them first. You can read complete reference to events in the *Reference* chapter. Do that now or just continue with this tutorial.

Events

Let's just open `events.yml` file inside the `default` package. At the end add a new line:

```
foo: message Hello world!
```

This is an event instruction. BetonQuest will use it to determine what type of event it is and what exactly should it do. `foo` is the name, `message` is the type and `Hello world!` tells the message type what it needs to display. In this case, if you run `foo` event, it will display to you `Hello world!` message. Now save the file, issue `/q reload` command and run the event with `/q e {name} foo` command (`q` is shortcut for `quest`, `e` is shortcut for `event`, `{name}` is your Minecraft name without the brackets and `foo` is the name of the event we've just created). It should show you white `Hello world!` message in the chat.

Let's create another event, more complicated one. `teleport` seems complicated enough. As you can read in the *Events list*, it needs a single argument, the location. Press F3 and check out your current location (it's shown on the left, three numbers, `x`, `y` and `z`). Now add in `events.yml` another line:

```
bar: teleport 100;200;300;world
```

and replace `100` with your `x` coordinate, `200` with `y` and `300` with `z`. `world` needs to be replaced with your current world's name. Save the file, reload the plugin and run this event with a command described before. It should teleport you to the location you have specified.

Congratulations, you have just created your first events. Go ahead and do some experiments with other event types. You can find them in *Events list* chapter. Once you're done let's start learning conditions.

Conditions

Open the `conditions.yml` file and add there a new line:

```
foo: location 100;200;300;world;5
```

Can you see how we named the `foo` condition in the same way as the `foo` event? They are not connected in any way. Condition names and event names are separated, so you can give them the same name without any problems. Now let's look at the instruction string. As you can suspect, `location` is a type of the condition. This one means that we'll be checking if the player is near that location (you should change the location to the place where you're standing right now, so you don't have to run around the world). Note that at the end of location argument there is an additional number, `5`. This is the maximum distance you can be away from the location to meet the condition. Alright, save the file and reload the plugin.

Now walk to the location you have defined in the condition. Try to stand on the exact block corresponding to that location. Issue `/q c {name} foo` command (`c` is shortcut for `condition`). It should show you "checking condition blah blah blah: **true**". We're focusing on that last word, **true**. This means that you're meeting the condition: you're standing within 5 block radius of the location. Now move 2 blocks away and issue that command again. You should still be meeting the condition. Walk 4 more blocks away and try now. It should show **false**. You are now outside of that 5 block radius. Get it? Great.

Now I'll show you the simplest use of those conditions. Open the `events.yml` file again, and at the end of `foo` instruction add `conditions:foo` argument. By the way, rename `foo` event to `baz`, so the names won't get confusing. Now you should have something like

```
baz: message Hello world! conditions:foo
```

Now `baz` event will run only if it meets `foo` condition. Reload the plugin, walk outside of the 5 block radius and try to run `baz` event. Puff, nothing happens. It's because you're not meeting `foo` condition. Walk into the radius again and try to run that event now. It should happily display the `Hello world!` message.

It's very nice that we can add such conditions, but the problem is: what if you wanted to display the message only if the player is *outside* the radius? Don't worry, you don't have to specify `inverted_location` condition or anything like that. You can simply negate the condition.

Negation makes the condition behave in the exact opposite way, in this case it `foo` will be met only if the player is outside of the 5 block radius, and it won't be met if he's inside. Open the `events.yml` and add an exclamation mark before the `foo` condition, so it looks like

```
baz: message Hello world! conditions:!foo
```

This means "display message `Hello world!` if the `foo` condition is *not met*". Save the file, reload the plugin and run the event inside and outside of the radius to see how it works.

Basic tags

Now that you know how to use events and conditions I'll show you what tags are. Create new events:

```
add_beton_tag: tag add beton
del_beton_tag: tag del beton
```

It's a good practice to give your events names that describe what they are doing. Imagine you have 100 events, `foo24`, `bar65`, `baz12` etc. You would get lost pretty quickly. So,

`add_beton_tag` event here simply adds `beton` tag to the player, `del_beton_tag` removes it. Save the file, reload the plugin and run this event. Nothing happens... or does it? Issue `/q t {name}` command (`t` is shortcut for `tags`). It should show you a list with few entries. Right now focus on `default.beton`, the rest are used by the default quest for Innkeeper. Alright, `default` is the name of the package in which the tag is, and `beton` is the name of the tag, as defined in `add_beton_tag` event. Now run `del_beton_tag` event. Guess what, `default.beton` disappeared from the list! And that's it, you know how to add and remove tags. Pretty useless.

Nothing could be more wrong. Tags are one the most powerful things in BetonQuest. They just need to be used with `tag` condition. Open `conditions.yml` and add

```
has_beton_tag: tag beton
```

line. As you can imagine, `tag` is the type of a condition (the same as `tag` event, but these are not the same things - one is an event, the other one is a condition) and `beton` is the name of the tag. You don't have to specify `default.beton`, but you can if you want. Now save, reload and check it with a command. It should show **false**, since you have removed the tag with

```
del_beton_tag
```

 event. Add it again with

```
add_beton_tag
```

 event and check the

```
has_beton_tag
```

 condition again. Now it will show **true**.

Now you probably understand how powerful this system is. You could for example set a tag on the first time the player talks with an NPC, and if the NPC sees that tag next time they talk, he will tell something different, like "welcome back".

Creating objectives

Time to write some objectives! Open the *objectives.yml* file and add a new line:

```
kill_creepers: mobkill creeper 3 events:bar conditions:has_beton_tag
```

Now let's analyze it. `kill_creepers` is a name of the objective. `mobkill` is a type. In this case, to complete the objective the player will have to kill some mobs. `creeper` is a type of the mob, so we know that these mobs will have to be Creepers. `3` is the amount. It means that the player has to kill 3 Creepers. `events:bar` means that once the player kills those Creepers, the `bar` event will be run (it's the teleportation event). `conditions:has_beton_tag` tells us that the player will have to have `beton` tag while killing Creepers to complete the objective. Save it, reload the plugin and issue `/q o {name} add kill_creepers` command (`o` is for `objective` , `add` tells the plugin to add an objective).

Now you can check if you actually have this objective with `/q o {name}` command, it will show you all your active objectives. It should show `default.kill_creepers` . Alright, remove (yes, remove!) the `beton` tag from you and find some Creepers to kill. Once you kill 3 of them you will notice that nothing happened. It's because `has_beton_tag` condition is not met, so the objective does not count your progress. Now add the tag again and kill another Creepers. When the third is dead you should be teleported to the location defined in `bar` event.

Congratulations, now you know how to use objectives. You should experiment with other types now, since objectives will be used very often in your quests. Once you're done check out the *Writing your first conversation* chapter to use your knowledge to write your first conversation.

Writing your first conversation

Now that you have seen BetonQuest in action and understood events, conditions and objectives, it's time for writing your first conversation. There's a *conversations* directory inside the default package. It contains a single file, *innkeeper.yml*. This is the conversation with Innkeeper, the one who asks you to cut some trees. Open it, we'll use that for reference. Now create a new file, let's say *miner.yml*. Now type (don't copy-paste it, you'll learn better while typing) that into the file:

```
quester: Miner
first: greeting
NPC_options:
  greeting:
    text: Hi there, traveler!
```

It's the most basic conversation possible. The NPC named `Miner` upon starting the conversation will use `greeting` option, which means he will say `Hi there, traveler!` . Then the conversation will end, because there are no player options defined.

Now you need to link the conversation with an NPC. You do that in the *main.yml* file. Open it now. As you can see, *innkeeper.yml* conversation is linked to `Innkeeper` word. It's the one you have put on the sign, remember? Now, add another line under the Innkeeper: `Miner: miner.yml` ,

save the file and reload the server. This will link our new conversation with the NPC named "Miner". Construct a new NPC on the server, give him a sign with "Miner" name and click on the head.

Guess what, the conversation finished right after it started. The Miner just said

Hi there, traveler! , as expected. Now go to the conversation file and edit it (again, manually, no copy-paste!) so the options look like this:

```
NPC_options:
  greeting:
    text: Hi there, traveler!
    pointers: hello, bye
player_options:
  hello:
    text: Hello!
  bye:
    text: I need to go, sorry.
```

When you save the file, reload the plugin and start the conversation again you will notice that there are two options for you to choose: Hello! and I need to go, sorry. Choosing any of them will end the conversation, because these options did not specify any pointers.

Now add a new NPC option, for example weather with text Nice weather. and make hello player option point to it. When you save&reload, the Miner should say Nice weather. when you tell him Hello! . I think you get how it works.

```
NPC_options:
  greeting:
    text: Hi there, traveler!
    pointers: hello, bye
  weather:
    text: Nice weather.
player_options:
  hello:
    text: Hello!
    pointer: weather
  bye:
    text: I need to go, sorry.
```

Now, every time you talk to the Miner, he will say the same thing. It would be nice if the second time you talk to him he knew your name. We can do that with tags. Define a meet_miner event and has_met_miner condition. When you talk to the Miner for the first time, he will check if you have met him. If not, he will meet you (with that event) and next time you talk, the condition will be passed and he will use your name.

Now, rename greeting NPC option to first_greeting . Add meet_miner event and negated has_met_miner condition (negated because this option should only show if the player

has not met the Miner yet). You will need to surround the condition with `' '`, because strings cannot start with exclamation marks in YAML. It should look like this:

```
first: first_greeting
NPC_options:
  first_greeting:
    text: Hi there, traveler!
    condition: '!has_met_miner'
    event: meet_miner
    pointers: hello, bye
```

This means: `first_greeting` should be used if the player **does not pass** `has_met_miner` condition (meaning he doesn't have a tag because he haven't talked to the NPC yet). When this option is used, it will fire `meet_miner` event and display `hello` and `bye` options. Alright, but what happens if the player met the Miner and now negated `has_met_miner` condition doesn't work? NPC will try to use next option defined in `first` setting. There is none yet, so let's add it.

```
first: first_greeting, regular_greeting
NPC_options:
  regular_greeting:
    text: Hi %player%!
    pointers: hello, bye
```

This option does not have any conditions, so if the `first_greeting` fails, the NPC will always choose this one. Now take a look at the `%player%` thing. It's a variable. In this place it will show your name. There are more than this one, they are described in *Reference* chapter. Alright, save&reload and start the conversation. If you did everything correctly, the Miner should greet you as a "traveler", and the second time you talk to him, he should greet you with your Minecraft name.

Here's the whole conversation you created, so you can check if you understood everything correctly:

```
first: first_greeting, regular_greeting
NPC_options:
  first_greeting:
    text: Hi there, traveler!
    condition: '!has_met_miner'
    event: meet_miner
    pointers: hello, bye
  regular_greeting:
    text: Hi %player%!
    pointers: hello, bye
  weather:
    text: Nice weather.
player_options:
```



```
hello:
  text: Hello!
  pointer: weather
bye:
  text: I need to go, sorry.
```

Now you should experiment some more with this conversation, you can help yourself by looking at the *innkeeper.yml* file. Try to understand how that conversation works step by step. As the exercise you should complete the Miner NPC, so he asks you to mine some iron ore, then smelt it in the furnace, next craft an armor with it and return to him wearing this armor.

You might want to check out the *Reference* chapter to see how to handle items in your quests and how to add entries to the journal. If you want to use Citizens NPCs instead of the ones made with clay you will find information you need in that chapter too. To find out more about events, conditions, objectives and variables, take a look at the appropriate lists (after the *Reference* chapter).

Reference

This chapter describes all aspects of BetonQuest in one place. You should read it at least once to know what you're dealing with and where to search for information if you ever have any problems.

Conversations

Each conversation must define name of the NPC (some conversations can be not bound to any NPC, so it's important to specify it even though an NPC will have a name) and his initial options.

```
quester: Name
first: option1, option2
stop: 'true'
final_events: event1, event2
NPC_options:
  option1:
    text: Some text in default language
    events: event3, event4
    conditions: condition1, !condition2
    pointers: reply1, reply2
  option2:
    text: '&3This ends the conversation'
player_options:
  reply1:
    text:
      en: Text in English
      pl: Tekst po polsku
    event: event5
    condition: '!condition3'
    pointer: option2
  reply2:
    text: 'Text containing ' character'
```

Note 1: Configuration files use YAML syntax. Google it if you don't know anything about it. Main rule is that you must use two spaces instead of tabs when going deeper into the hierarchy tree. If you want to write `'` character, you must double it and surround the whole text with another `'` characters. When writing `true` or `false` it also needs to be surrounded with `'`. If you want to start the line with `&` character, the whole line needs to be surrounded with `'`. You can check if the file is correct using [this tool](#).

- `quester` is name of NPC. It should be the same as name of NPC this conversation is assigned to for greater immersion, but it's your call.
- `first` are pointers to options the NPC will use at the beginning of the conversation. He will choose the first one that meets all conditions. You define these options in `npc_options`

branch.

- `final_events` are events that will fire on conversation end, no matter how it ends (so you can create e.g. guards attacking the player if he tries to run). You can leave this option out if you don't need any final events.
- `stop` determines if player can move away from an NPC while in this conversation (false) or if he's stopped every time he tries to (true). If enabled, it will also suspend the conversation when the player quits, and resume it after he joins back in. This way he will have to finish his conversation no matter what. *It needs to be in '' !* You can modify the distance at which the conversation is ended / player is moved back with `max_npc_distance` option in the `config.yml`.
- `NPC_options` is a branch with texts said by the NPC.
- `player_options` is a branch with options the player can choose.
- `text` defines what will display on screen. If you don't want to set any events/conditions/pointers to the option, just skip them. Only `text` is always required.
- `conditions` are names of conditions which must be met for this option to display, separated by commas.
- `events` is a list of events that will fire when an option is chosen (either by NPC or a player), defined similarly to conditions.
- `pointer` is list of pointers to the opposite branch (from NPC branch it will point to options player can choose from when answering, and from player branch it will point to different NPC reactions).

When an NPC wants to say something he will check conditions for the first option (in this case `option1`). If they are met, he will choose it. Otherwise, he will skip to next option (note: conversation ends when there are no options left to choose). After choosing an option NPC will say it, the events will fire and then the player will see options defined in `player_options` branch to which `pointers` setting points, in this case `reply1` and `reply2` . If the conditions for the player option are not met, the option is simply not displayed, similar to texts from NPC. Player will choose option he wants, and it will point back to other NPC text, which points to next player options and so on.

If there are no possible options for player or NPC (either from not meeting any conditions or being not defined) the conversations ends. If the conversation ends unexpectedly, check the console - it could be an error in the configuration.

This can and will be a little confusing, so you should name your options, conditions and events in a way which you will understand in the future. Don't worry though, if you make some mistake in configuration, the plugin will tell you this in console when testing a conversation. Also, study the default conversation included with the plugin to fully understand how powerful this system can be.

Cross-conversation pointers

If you want to create a conversation with multiple NPCs at once or split a huge conversation into smaller, more focused files, you can point to NPC options in other conversation. Just type the pointer as `conversation.npc_option` .

Keep in mind that you can only cross-point to NPC options. It means that you can use those pointers only in `first` starting options and in all player options. Using them in NPC options will throw errors.

Conversation variables

You can use variables in the conversations. They will be resolved and displayed to the player when he starts a conversation. A variable generally looks like that: `%type.optional.arguments%`. Type is a mandatory argument, it defines what kind of variable it is. Optional arguments depend on the type of the variable, i.e. `%npc%` does not have any additional arguments, but `%player%` can also have `display` (it will look like that: `%player.display%`). You can find a list of all available variable types in the "Variables List" chapter.

If you use a variable incorrectly (for example trying to get a property of an objective which isn't active for the player, or using `%npc%` in `message` event), the variable will be replaced with empty string (`""`).

Translations

As you can see in default conversation, there are additional messages in other languages. That's because you can translate your conversations into multiple languages. The players will be able to choose their preferred one with `/questlang` command. You can translate every NPC/player option and quester's name. You do this like this:

```
quester:
  en: Innkeeper
  pl: Karczmarz
  de: Gastwirt
```

As said before, the same rule applies to all options and quester's name. The player can choose only from languages present in `messages.yml`, and if there will be no translation to this language in the conversation, the plugin will fall back to the default language, as defined in `config.yml`. If that one is not defined, there will be an error.

You can also translate journal entries, quest cancelers and `message` events, more about that later.

Conversation displaying

By default BetonQuest uses the most native and safe way of displaying a conversation, which is the Minecraft chat. You choose the option by typing their number in. You can however change it with `default_conversation_IO` option in `config.yml` file. Default value is `simple`. By changing it to `tellraw` you will add a possibility to click on options. Keep in mind that if the chat is quickly flowing, players will sometimes "miss" an option and click another one. There is a display type that doesn't suffer from this problem at all, it's called `chest`. It will display the conversation in an inventory GUI, where the NPC's text and options will be shown as item lore.

You can control the colors of conversation elements in the *config.yml* file, in `conversation_colors` section. Here you must use names of the colors.

If you're using the `chest` display method you can change the option's item to something else than Ender Pearl by adding a prefix to that option's text. The prefix is a name of the material (like in *items.yml*) inside curly brackets, with optional damage value after a colon. Example of such option text: `{diamond_sword}I want to start a quest!` or `{wool:10}Purple!`

In case you want to use a different type of conversation display for a specific conversation you can add `conversationIO: <type>` setting to the conversation file at the top of the YAML hierarchy, which is the same level as `quester` or `first` options).

Conditions, events and objectives are defined with an "instruction string". It's a piece of text, formatted in a specific way, containing the instruction for the condition/event/objective. Thanks to this string they know what should they do. To define the instruction string you will need a reference, few pages below. It describes how something behaves and how it should be created. All instruction strings are defined in appropriate files, for example all conditions are in *conditions.yml* config. The syntax used to define them looks like this:

`name: 'the instruction string containing the data'` . Apostrophes are optional in most cases, you can find out when to use them by looking up "YAML syntax" in Google.

Conditions

Conditions are the most versatile and useful tools in creating advanced quests. They allow you to control what options are available to player in conversations, how the NPC responds or if the objective will be completed. The reference of all possible conditions is down below.

You can negate the condition (revert its output) by adding an exclamation mark (`!`) at the beginning of it's name (in the place you use it, i.e. in conversations, not in the *conditions.yml* file).

You can use conversation variables instead of numeric arguments in conditions. If the variable fails to resolve (i.e. it will return an empty string) BetonQuest will use 0 instead.

Events

In certain moments you will want something to happen. Updating the journal, setting tags, giving rewards, all these are done using events. You define them just like conditions, by specifying a name and instruction string. You can find instruction strings to all events in the event reference. At the end of the instruction string you can add `conditions:` or `condition:` (with or without `s` at the end) attribute followed by a list of condition names separated by commas, like `conditions:angry,!quest_started` . This will make an event fire only when these conditions are met.

You can use conversation variables instead of numeric arguments in events. If the variable fails to resolve (i.e. it will return an empty string) BetonQuest will use 0 instead.

Objectives

Objectives are the main things you will use when creating complex quests. You start them with a special event, `objective`. You define them in the `objectives.yml` file, just as you would conditions or events. At the end of the instruction string you can add conditions and events for the objective. Conditions will limit when the objective can be completed (e.g. killing zombies only at given location in quest for defending city gates), and events will fire when the objective is completed (e.g. giving a reward, or setting a tag which will enable collecting a reward from an NPC). You define these like that: `conditions:con1,con2 events:event1,event2` at the end of instruction string. Separate them by commas and never use spaces! You can also use singular forms of these arguments: `condition:` and `event:`.

If you want to start an objective right after it was completed (for example `die` objective: when you die, teleport you to a special spawnpoint and start `die` objective again), you can add `persistent` argument at the end of an instruction string. It will prevent the objective from being completed, although it will run all its events. To cancel such objective you will need to use `objective delete` event.

Objectives are loaded at start-up, but they do not consume resources without player actually having them active. This means that if you have 100 objectives defined, and 20 players doing one objective, 20 another players doing second objective, and the rest objectives are inactive (no one does them), then only 2 objectives will be consuming your server resources, not 100, not 40.

Packages

All the content you create is organized into packages. Each package must contain the `main.yml` file with package-specific settings. Additionally it can have `conversations` directory with conversation files, `events.yml`, `conditions.yml`, `objectives.yml`, `items.yml` and `journal.yml`. The default package is called simply "default". It is always present, and if you delete it, it will be regenerated with a sample quest.

If you want, you can simply ignore the existence of packages and write all your quests in the default one. You will however come to a point, when your files contain hundreds of lines and it gets a little bit confusing. That's why it's better to split your quests into multiple packages, for example "main" for the quests in the main city, "dungeon" for some interesting dungeon story etc.

Each package can be disabled/enabled in the `main.yml` file, by setting `enabled` to `true` or `false`.

It would be limiting if you couldn't interact between packages. That's why you can always access stuff from other packages by prefixing its name with package name. If you're writing a conversation in package `village` and you want to fire an event `reward` from package `beton`, you simply name the event as `beton.reward`. The plugin will search for `reward` in `beton` package instead of the one in which the conversation is defined. All events, conditions, objectives,

items and conversations behave this way. Note that you can't cross-reference journal entries!

Packages can be nested together in folders. A folder can either contain packages or be a package, never both. The name of such nested package is prefixed by names of all folders, separated with a dash. This directory tree (*main.yml* represents a package):

```
BetonQuest/  
  default/  
  quests/  
    village1/  
      quest1/  
        main.yml  
      quest2/  
        main.yml  
    village2/  
      quest1/  
        main.yml
```

contains these packages:

- *default*
- *quests-village1-quest1*
- *quests-village1-quest2*
- *quests-village2-quest1*

Relative paths

You don't have to always specify a full package name. In the example above, if you wanted to reference package `quests-village1-quest2` from `quests-village1-quest1`, you could write it as `__-quest2` - this means "from the current package (`quest1`) go up one time and find there package `quest2`". Name `_` has special meaning here. Analogously, if you wanted to reference `quests-village2-quest1` from that package, you would use `__-village2-quest1`. Using `_` twice will get you to `quests` package, and from there you're going into `village2` and then `quest1`.

Relative paths can be useful if you want to move your packages between directories. Instead of rewriting every package name to match current directory tree, you can use relative paths and it will just work. It can also be useful if you want to create a downloadable quest package which can be placed anywhere and not just on the root directory (*BetonQuest*) or when working with BetonQuest-Editor + BetonQuestUploader combo - quest writers don't have to prefix every package call with their name (this feature will work soon, needs an update in the editor).

Unified location formatting

Whenever you want to define some location in your events, conditions, objectives or any other things, you will define it with this specific format. The location can consist of 2 things: base and

vector. Only the base is always required.

The base is a core location. Currently there are two types: absolute coordinates and variables. Absolute coordinates are defined like `100;200;300;world`, where `100` is X coordinate, `200` is Y, `300` is Z and `world` is the name of the world. These can have decimal values. If you want you can also add two more numbers at the end, yaw and pitch (these are controlling the rotation, for example in teleportation event, both are needed if you decide to add them; example: `0.5;64;0.5;world;90;-270`).

To use a variable as the location's base it must resolve to a valid absolute coordinates. An example of such variable is `%location%`, which shows player's exact location. Simply place it instead of coordinates. There is one rule though: you can't use variable base types in events running without players (for example static events or the ones run from folder event after their player left the server). BetonQuest won't be able to resolve the location variable without the player!

The vector is a modification of the location. It will be useful if you use global variables instead of base (described in the next subsection) or the base itself is variable, like `player`. Vectors look like `->(10;2.5;-13)` and are added to the end of the base. This will modify the location, X by 10, Y by 2.5 and Z by -13. For example, location written as `100;200;300;world_nether->(10;2.5;-13)` will generate a location with X=110, Y=202.5 and Z=287 on `world_nether` world.

Global variables

You can insert a global variable in any instruction string. It looks like this: `$beton$` (and this one would be called "beton"). When the plugin loads that instruction string it will replace those variables with values assigned to them in *main.yml* file **before** the instruction string is parsed. This is useful for example when installing a package containing a WorldEdit schematic of the quest building. Instead of going through the whole code to set those locations, names or texts you will only have to specify a few variables (that is, of course, if the author of the package used those variables properly in his code).

Note that these variables are something entirely different than conversation variables. Global ones use `$` characters and conversation ones use `%` characters. The former is resolved before the instruction string is parsed while the latter is resolved when the quests are running, usually on a per-player basis.

```
variables:
  village_location: 100;200;300;world
  village_name: Concrete
```

Canceling quests

If you want to let your players cancel their quest there is a function for that. In *main.yml* file there is `cancel` branch. You can specify there quests, which can be canceled, as well as actions that

need to be done to actually cancel them. You can find an example in the `default` package. The arguments you can specify are:

- `name` - this will be the name displayed to the player. All `_` characters will be converted to spaces. If you want to include other languages you can add here additional options (`en` for English etc.)
- `conditions` - this is a list of conditions separated by commas. The player needs to meet all those conditions to be able to cancel this quest. Place there the ones which detect that the player has started the quest, but he has not finished it yet.
- `objectives` - list of all objectives used in this quest. They will be canceled without firing their events.
- `tags` - this is a list of tags that will be deleted. Place here all tags that you use during the quest.
- `points` - list of all categories that will be entirely deleted.
- `journal` - these journal entries will be deleted when canceling the quest.
- `events` - if you want to do something else when canceling the quest (like punishing the player), list the events here.
- `loc` - this is a location to which the player will be teleported when canceling the quest (defined as in teleport event);

To cancel the quest you need to open your backpack and select a "cancel" button (by default a bone, can be changes by naming an item "cancel_button" inside default package). There will be a list of quests which can be canceled. Just select the one that interests you and it will be canceled.

Global locations

Global locations are locations at which events can fire. They are defined as normal **location** objectives in objectives.yml and will fire when any player is in range of that location. Global locations are active for all players, even if they don't have an active objective. They can be used for starting location specific quest (such as encountering a dungeon and checking it out), teleporting players to arenas, this kind of stuff. They use tags to tell which player has been at certain location and which hasn't. These tags follow syntax `global_<tag>` , where `<tag>` is location objective's tag, defined at the end of instruction string (eg. `global_conversation_start` , where `conversation_start` is a tag of location objective). You can specify which events will be global locations in the `main.yml` file inside a package, separating them with commas:

```
global_locations: dungeon_entrance, trap, something_else
```

Static events

Static events are events that will fire at the specified time of the day. They are not tied to a specific player, so not all of event types can be used as static. (Which player should receive a tag or objective? From which one should the items be taken?) Also, static events cannot have conditions defined (`event-conditions:` argument), as the plugin cannot check any condition without the

player. Events, that can be used as static are flagged with `static` keyword in this documentation. You can define your static events in `main.yml` file under `static` section, as such:

```
static:
  '09:00': beton
  '23:59': lightning_strike
  '11:23': some_command
```

The hour must be in `' '` to avoid problems, it needs leading zero if less than 10. `beton`, `lightning_strike` etc. are IDs of events. There can only be one event specified, but it can be of type "folder".

Journal

The journal is a book in which all your adventures are described. You can obtain it by typing `/j` command or `/b` and selecting it from backpack. You cannot put it into any chests, item frames and so on. If you ever feel the need to get rid of your journal, just drop it - it will return to your backpack. The journal is updated with the `journal` event, and the text inside is defined in `journal.yml` config file. If you update these texts and reload the plugin, all players' journals will reflect changes. Colors in the journal can be altered in `config.yml`. The entries can use color codes, but the color will be lost between pages.

The journal by default appears in the last slot of the hotbar. If you want to change that use `default_journal_slot` option in `config.yml`, experiment with different settings until you're ok with it.

If you want to translate the entry do the same thing as with conversation option - go to new line, add language ID and the journal text for every language you want to include.

You can control behavior of the journal in `config.yml` file, in `journal` section.

`chars_per_page` specifies how many characters will be placed on a single page. If you set it too high, the text will overflow outside of the page, too low, there will be too much pages.

`one_entry_per_page` allows you to place every entry on a single page. The `chars_per_page` setting is in this case ignored, BetonQuest will put entire entry on that page.

`reversed_order` allows you to reverse order of entries and `hide_date` lets you remove the date from journal entries.

You can control colors in the journal in `journal_colors` section in `config.yml`: `date` is a color of date of every entry, `line` is a color of lines separating entries and `text` is just a color of a text. You need to use standard color codes without `&` (eg. `'4'` for dark red).

You can also add a main page to the journal. It's a list of texts, which will show only if specified conditions are met. You can define them in the `main.yml` file, in the `journal_main_page` section:

```
journal_main_page:
  title:
    priority: 1
    text:
      en: '&eThe Journal'
      pl: '&eDziennik'
    conditions: 'quest_started,!quest_completed'
```

Each string can have text in different languages, list of conditions separated by commas (these must be met for the text to show in the journal) and `priority`, which controls the order of texts. You can use conversation variables in the texts, but they will only be updated when the player gets his journal with the `/journal` command. Color codes are supported.

If you want your main page take a separate page (so entries will be displayed on next free page), set `full_main_page` in `config.yml` to "true".

Tags

Tags are little pieces of text you can assign to player and then check if he has them. They are particularly useful to determine if player has started or completed quest. They are given with `tag` event and checked with `tag` condition. All tags are bound to a package, so if you add `beton` tag from within the `default` package, the tag will look like `default.beton`. If you're checking for `beton` tag from within `default` package, you're actually checking for `default.beton`. If you want to check a tag from another package, then you just need to prefix it's name with that package, for example `quest.beton`.

Points

Points are like tags, but with amount. You can earn them for doing quest, talking with NPC's, basically for everything you want. You can also take the points away, even to negative numbers. Points can be divided to categories, so the ones from `beton` category won't mix with points from `quests` group. Of course then you can check if player has (or doesn't have) certain amount and do something based on this condition. They can be used as counter for specific number of quest done, as a reputation system in villages and even NPC's attitude to player.

NPCs

Conversations can be assigned to NPCs. You do it in the `main.yml` file inside a package, in "npcs" section:

```
npcs:
  '0': innkeeper
  'Innkeeper': innkeeper
```

The first string is the name of the NPC, second one is the corresponding conversation name. In

case you use Citizens, name is the ID of an NPC (*don't try to put Citizens NPC's name here, it must be the ID*). To acquire it just select the NPC and type `/npc`. If you don't want to use Citizens, you can also build NPCs as any other building in Minecraft:

Place somewhere a block of stained clay, no matter the color. Then place a head on top of it (type doesn't matter, it must be head). Now place a sign on the side of the clay block (it can be on it's back) and type in the first line `[NPC]`, and on the second line the ID of the NPC (in case of the above code example, the ID would be `Innkeeper`). You need to have permission `betonquest.createnpc` for that. Congratulations, you have created the NPC. Now you can add levers (hands) to it and maybe even a fence gate (legs). Conversation is started by right clicking it's head.

Items

Items in BetonQuest are defined in `items.yml` file. Each item has an instruction string, similarly to events, conditions etc. Basic syntax is very simple:

```
item: MATERIAL other arguments...
```

The `MATERIAL` is a type of the item, as taken from [here](#). It doesn't have to be all in uppercase. Other arguments specify data like name of the item, lore, enchantments or potion effects. There are two categories of these arguments: the ones you can apply to every item and type specific arguments. Examples would be name (for every item type) and text (only in books).

Every argument is used in two ways: when creating an item and when checking if some existing item matches the instruction. The first case is pretty straightforward - BetonQuest takes all data you specified and creates an item, simple as that. Second case is more complicated. You can require some property of the item to exist, other not to exist, or skip this property check altogether. You can also accept an item only if some value (like enchantment level) is greater/less than x.

These are arguments that can be applied to every item:

- `name` - the display name of the item. All underscores will be replaced with spaces and you can use `&` color codes. If you want to specifically say that the item must not have any name, use `none` keyword.
- `lore` - text under the item's name. Default styling of lore is purple and italic. All underscores will be replaced with spaces and you can use `&` color codes. To make a new line use `;` character. If you require the item not to have lore at all, use `none` keyword. By default lore will match only if all lines are exactly the same. If you want to accept all items which contain specified lines (and/or more lines), add `lore-containing` argument to the instruction string.
- `data` - data value of the item. An example of this would be different wool colors or damage of a pickaxe. You can require an exact value by specifying a number, or a value greater/less (and equal) than specified by adding `+` / `-` character at the end of the number.

- `enchants` - a list of enchantments and their levels. Each enchantment consists of these things, separated by colons:
 - `name`
 - `level` (a positive number)

For example `damage_all:3` is *Sharpness III*. You can specify additional enchantments by separating them with commas.

You can require the item not to have any enchantments by using `none` keyword. You can also add `+ / -` character to the enchantment level to make the check require levels greater/less (and equal) than specified. If you don't care about the level, replace the number with a question mark.

By default all specified enchantments are required. If you want to check if the item contains a matching enchantment (and/or more enchants), add `enchants-containing` argument to the instruction string. Each specified enchantment will be required on the item by default unless you prefix its name with `none-`, for example `none-knockback` means that the item must not have any knockback enchantment. **Do not use `none-` prefix unless you're using `enchants-containing` argument**, it doesn't make any sense and will break the check!

- `unbreakable` - this makes the item unbreakable. You can specify it either as `unbreakable` or `unbreakable:true` to require an item to be unbreakable. If you want to check if the item is breakable, use `unbreakable:false`.

Examples:

```
name:&4Sword_made_of_Holy_Concrete
name:none
lore:&cOnly_this_sword_can_kill_the_Lord_Ruler
lore:&2Quest_Item lore-containing
lore:none
data:5
data:500-
enchants:damage_all:3+,none-knockback
enchants:power:? enchants-containing
enchants:none
unbreakable
unbreakable:false
```

These are the arguments that can be applied only to specific item types:

Books

This applies to a written book and a book and quill.

- `title` - the title of a book. All underscores will be replaced with spaces and you can use `&` color codes. If you want to specifically say that the book must not have any title, use `none`

keyword.

- `author` - the author of a book. All underscores will be replaced with spaces, you cannot use color codes here. If you want to specifically say that the book must not have any author, use `none` keyword.
- `text` - the text of the book. All underscores will be replaced with spaces and you can use color codes. The text will wrap to the next page if amount of characters exceeds `journal.chars_per_page` setting in `config.yml`. If you want to manually wrap the page, use `|` character. To go to new line use `\n`. Keep in mind that you can't use any spaces here, you must only use underscores (`_`). This needs to be a single argument, even if it's really long. If you don't want the book to have any text, use `none` keyword instead.

Examples:

```
title:Malleus_Maleficarum
author:&eGallus_Anonymus
text>Lorem_ipsum_dolor_sit_amet,\nconsectetur_adipiscing_elit.|Pellentesque
```

Potions

This applies to potions, splash potions and lingering potions.

- `type` - type of a potion. Here's [the list](#) of possible types. Do not mistake this for a custom effect, this argument corresponds to the default vanilla potion types.
- `extended` - extended property of the potion (you can achieve it in-game by adding redstone). It can be specified as `extended` or `extended:true`. If you want to check the potion that is NOT extended, use `upgraded:false`.
- `upgraded` - upgraded property of the potion (you can achieve it in-game by adding glowstone). It can be specified as `upgraded` or `upgraded:true`. If you want to check the potion that is NOT upgraded, use `upgraded:false`.
- `effects` - a list of custom effects. These are independent of the potion type. The effects must be separated by commas. Each effect consists of these things, separated by colons:
 - `type` (this is different stuff than the link above!)
 - `power`
 - `duration` (in seconds)

An example would be `WITHER:2:30`, which is a wither effect of level 2 for 30 seconds.

If you want to target only potions without custom effects, use `none` keyword. You can target potions with level and time greater/less (and equal) than specified with `+` / `-` character after the number. If you don't care about the level/time, you can replace them with question mark.

By default all specified effects are required. If you want to check if the potion contains these

effects among others, add `effects-containing` argument to the instruction string. Now if you want to make sure the potion doesn't contain a specific effect, prefix the effect name with `none-`. **Don't use that prefix unless you're also using `effects-containing` argument**, it doesn't make any sense and it will break the check.

Examples:

```
type:instant_heal
extended
upgraded:false
effects:poison:1+:?,slow:?:45-
effects:none-weakness,invisibility:?:? effects-containing
```

Heads

This applies to human heads.

- `owner` - this is the name of the head owner. It will **not** use color codes nor replace underscores with spaces. If you want to check for heads without any owner, use `none` keyword.

Examples:

```
owner:Co0sh
owner:none
```

Leather armor

This applies to all parts of leather armor.

- `color` - this is the color of the armor piece. It can be either one of [these values](#), a hexadecimal RGB value prefixed with `#` character or its decimal representation without the prefix. You can also check if the armor piece doesn't have any color with `none` keyword.

Examples:

```
color:light_blue
color:#ff00ff
color:none
```

Fireworks

This applies to fireworks.

- `firework` - this is a list of effects of the firework rocket. They are separated by commas. Each effect consists of these things separated by colons:
 - [effect type](#)

- a list of main colors (refer to leather armor colors above for syntax) separated by semicolons
- a list of fade colors
- `true / false` keyword for trail effect
- `true / false` keyword for flicker.

Note the separation characters, this is important: commas separate effects, colons separate effect properties, semicolons separate colors.

If you want to target fireworks without any effects, use `none` keyword. If you want to target any effect type, use question mark instead of the effect name. If you don't want the effect to have any main/fade colors, use `none` keyword in the place of colors. If you don't care about main/fade colors, use question marks in that place. If you don't care about trail/flicker effect, use question marks instead of `true / false` keyword.

By default the check will require all specified effects to be present on the firework. You can check if the firework contains specified effects among others by adding `firework-containing` argument to the instruction string. To match the item which must not have an effect, prefix the effect name with `none-` keyword. **Don't use that prefix unless you're also using `firework-containing` argument**, it doesn't make any sense and will break the check.

- `power` - flight duration of the firework, in levels. You can use `+ / -` character to target greater/less (and equal) levels.

Examples:

```
firework:ball:red;white:green;blue:true:true,ball_large:green;yellow:pink
firework:burst:?:none:?? firework-containing
firework:none-creeper firework-containing
firework:none
power:3
power:2+
```

Firework charges

This applies to firework charges.

- `firework` - this is almost the same as fireworks. You can only specify a single effect and the `power` argument has no effects.

Backpack

Sometimes you'll want some items to be persistent over death. If the player has lost them the quest would be broken. You can add a specific line to item's lore to make it persistent (`&2Quest_Item` by default, `_` is a space in item's definition). Note that this must be a whole new line in the lore! Such item wouldn't be dropped on death, instead it would be placed in player's backpack.

Example:

```
important_sword: 'DIAMOND_SWORD name:Sword_for_destroying__The_Concrete 1
```

To open your backpack just type `/j` command. The inventory window will open, displaying your stored items. The first slot is always the journal, and if you get it, the slot will stay empty. You can transfer quest items back and forth between inventories by clicking on them. Left click will transfer just one item, right click will try to transfer all items. Normal items cannot be stored into the backpack, so it's not an infinite inventory.

If you will ever have more than one page of quest items, the buttons will appear. You can customize those buttons by creating `previous_button` and `next_button` items in `items.yml` file. Their name will be overwritten with the one defined in `messages.yml`.

Quest items cannot be dropped in any way other than using them. This way you can create a quest for eating cookies by giving the player a stack of cookies flagged as quest items and not continuing until there are no more cookies in his inventory/backpack. The player cannot drop the cookies, so he must eat every one of them to complete the quest.

Don't worry if the item-dropping filter isn't working for your items when you're in creative mode - it's not a bug. It's a feature. Creative-mode players should be able to easily put quest items in containers like `TreasureChests`.

Party

Parties are very simple. So simple, that they are hard to understand if you already know some other party system. Basically, they don't even have to be created before using them. Parties are defined directly in conditions/events (`party` event, `party` conditions, check them out in the reference lists below). In such instruction strings the first argument is a number - range. It defines the radius where the party members will be looked for. Second is a list of conditions. Only the players that meet those conditions will be considered as members of the party. It's most intuitive for players, as they don't have to do anything to be in a party - no commands, no GUIs, just starting the same quest or having the same item - you choose what and when makes the party.

To understand better how it works I will show you an example of `party` event. Let's say that every player has an objective of pressing a button. When one of them presses it, this event is fired:

```
party_reward: party 50 quest_started cancel_button,teleport_to_dungeon
```

Now, it means that all players that: are in radius of 50 blocks around the player who pressed the button AND meet `quest_started` condition will receive `cancel_button` and `teleport_to_dungeon` events. The first one will cancel the quest for pressing the button for the others (it's no longer needed), the second one will teleport them somewhere. Now, imagine there is a player on the other side of the world who also meets `quest_started` condition - he won't be teleported into the dungeon, because he was not with the other players (not in 50 blocks range). Now, there were a bunch of other players running around the button, but they didn't meet the `quest_started` condition. They also won't be teleported (they didn't start this quest).

Conditions List

Item in Inventory: `item`

This event is met only when player has specified item in his inventory. You specify items in a list separated by commas (without spaces between!) Each item consists of its name and amount, separated by a colon. Amount is optional, so if you specify just item's name the plugin will assume there should be only one item.

Example `item emerald:5,gold:10`

Item in Hand: `hand`

This event is met only when player is holding a specified item in his hand. Amount cannot be set here, though it may be checked with `item` condition.

Example `hand sword`

Alternative: `or`

Alternative of specified conditions. This means that only one of conditions has to be met in order for alternative to be true. You just define one mandatory argument, condition names separated by commas. `!` prefix works as always.

Example: `or night,rain,!has_armor`

Conjunction: `and`

Conjunction of specified conditions. This means that every condition has to be met in order for conjunction to be true. Used only in complex alternatives, because conditions generally work as conjunction. Instruction string is exactly the same as in `alternative`.

Example: `and has_helmet,has_chestplate,has_leggings,has_boots`

Location: `location`

It returns true only when the player is closer to specified location than the specified distance. Just two mandatory attributes - location and radius around it (can be a variable).

Example: `location 100;200;300;survival_nether 5`

Health: `health`

Requires the player to have equal or more health than specified amount. The only argument is a

number (double). Players can have 0 to 20 health by default (there are some plugins and commands which change the maximum) (0 means dead, don't use that since it will only be met when the player sees the red respawn screen).

Example: `health 5.6`

Experience: `experience`

This condition is met when the player has a specified level (default minecraft experience). It is measured by full levels, not experience points. The instruction string must contain an integer argument.

Example: `experience 30`

Permission: `permission`

The player must have a specified permission for this condition to be met. The instruction string must contain permission node as the required argument.

Example: `permission essentials.tpa`

Point: `point`

Requires the player to have amount of points equal to the specified category or more. There are two required arguments, first is the category (string), second is the amount (integer). You can also add optional argument `equal` to accept only players with exactly equal amount of points.

Example: `point beton 20`

Tag: `tag`

This one requires the player to have a specified tag. Together with `!` negation it is one of the most powerful tools when creating conversations. The instruction string must contain tag name.

Example: `tag quest_completed`

Global point: `globalpoint` ***persistent, static***

The same as point condition but it checks the amount for a global point category which has the same value for all players.

Example: `globalpoint global_knownusers 100`

Global tag: `globaltag` ***persistent, static***

This requires a specific global tag to be set and works the same as normal tag condition.

Example: `globaltag global_areNPCsAgressive`

Armor: `armor`

The armor condition requires the player to wear specified armor, as an item defined in *items.yml* file.

Example: `armor helmet_of_concrete`

Potion Effect: `effect`

To meet this condition the player must have an active potion effect. There is only one argument and it takes values from this page: [potion types](#).

Example: `effect SPEED`

Time: `time`

There must be specific (Minecraft) time on the player's world for this condition to return true. You need to specify two hour numbers separated by dash. These number are normal 24-hour format hours. The first must be smaller than the second. If you want to achieve time period between 23 and 2 you need to negate the condition.

Example: `time 2-23`

Weather: `weather`

There must be a specific weather for this condition to return true. There are three possible options: sun, rain and storm. Note that `/toggltdownfall` does not change the weather, it just does what the name suggests: toggles downfall. The rain toggled off will still be considered as rain! Use `/weather clear` instead.

Example: `weather sun`

Height: `height`

This condition requires the player to be *below* specific Y height. The required argument is a number or a location (for example 100;200;300;world). In case of location it will take the height from it and use it as regular height.

Example: `height 16`

Armor Rating: `rating`

This one requires the player to wear armor which gives him specified amount of protection (armor icons). The first and only argument should be an integer. One armor point is equal to half armor icon in-game (10 means half of the bar filled).

Example: `rating 10`

Random: `random` ***persistent, static***

This condition is met randomly. There is one argument: two positive numbers like `5-12`. They mean something like that: "It will be true 5 times out of 12".

Example: `random 12-100`

Sneaking: `sneak`

Sneak condition is only true when the player is sneaking. This would probably be useful for creating traps, I'm not sure. There are no arguments for this one.

Example: `sneak`

Journal entry: `journal`

This condition will return true if the player has specified entry in his journal (internal name of the entry, like in *journal.yml*). The only argument is name of the entry.

Example: `journal wood_started`

Test for block: `testforblock` ***persistent, static***

This condition is met if the block at specified location matches the given material. First argument is a location, and the second one is material of the block to check against, from [this list](#). There's also an optional `data:` argument which takes a data value. The condition will require you to click on a block with that data (i.e. wool color).

Example: `testforblock 100;200;300;world STONE data:1`

Empty inventory slots: `empty`

To meet this condition the player has to have specified amount of empty slots in his inventory.

Example: `empty 5`

Party: `party`

To see details about parties read "Party" chapter in **Reference** section. This condition takes three

optional arguments: `every:` , `any:` and `count:` . "Every" is a list of conditions that must be met by every player in the party. Any is a list of conditions that must be met by at least one player in a party (it doesn't have to be the same player, one can meet first condition, another one can meet the rest and it will work). Count is just a number, minimal amount of players in the party. You don't have to specify all those arguments, you can use only one if you want.

Example:

```
party 10 has_tag1,!has_tag2 every:some_item any:some_location,some_other_
```

Monsters in area: `monsters` *persistent, static*

This condition will return true only if there is a specified amount (or more) of specified mobs in the specified area. There are three required arguments - monsters, location and range. Monsters are defined as a list separated by commas. Each mob type (taken from [here](#)) can have additional `:amount` suffix, for example `ZOMBIE:5,SKELETON:2` means 5 or more zombies and 2 or more skeletons. Location is standard. Range is a number representing a radius in which the mobs will be looked for. You can also specify additional `name:` argument, with the name of the required mob. Replace all spaces with `_` here. You can use `marked:` argument to check only for monsters marked in `spawn` event.

Example: `monsters ZOMBIE:2 100;200;300;world 10 name:Deamon`

Objective: `objective`

This conditions is very simple: it's true only when the player has an active objective. The only argument is the name of the objective, as defined in *objectives.yml*.

Example: `objective wood`

Check conditions: `check`

This condition allow for specifying multiple instruction strings in one, longer string. Each instruction must be started with `^` character and no other dividers should be used. The condition will be met if all inner conditions are met. It's not the same as `and` condition, because you can specify an instruction string, not a condition name.

Example:

```
check ^tag beton ^item emerald:5 ^location 100;200;300;survival_nether;5
```

Chest Item: `chestitem` *persistent, static*

This condition works in the same way as `item` condition, but it checks the specified chest instead of a player. The first argument is a location of the chest and the second one is the list of items defined in the same way as in `item` condition. If there is no chest at specified location the

condition won't be met.

Example: `chestitem 100;200;300;world emerald:5,sword`

Scoreboard: `score`

With this condition you can check if the score in a specified objective on a scoreboard is greater or equal to specified amount. The first argument is the name of the objective, second one is amount (an integer).

Example: `score kills 20`

World: `world`

This conditions checks if the player is in a specified world. The first argument is the name of a world.

Example: `world world`

Game mode: `gamemode`

This condition checks if the player is in a specified game mode. The first argument is the game mode, i.e. survival, creative, adventure.

Example: `gamemode survival`

Achievement: `achievement`

This condition checks if the player has specified achievement (default Minecraft achievements). The first argument is name of the [achievement](#).

Example: `achievement BUILD_FURNACE`

Variable: `variable`

This condition checks if a variable value matches given [pattern](#). The first argument is a variable (with `%` characters). Second one is the pattern (for example, if you want to check if it's "word", the patten would simply be `word` , but if you want to check if it's a number (positive or negative) you would use `-?\d+` pattern - `-?` means a dash or no dash, `\d` means any digit and `+` allows that digit to be repeated one or more times).

Example: `variable %objective.var.price% -?\d+`

Fly: `fly`

This will check if the player is currently flying (Elytra type of flight).

Example: `fly`

Biome: `biome`

This condition will check if the player is in specified biome. The only argument is the [biome type](#).

Example: `biome savanna_rock`

Events List

Message: `message` *static*

This event simply displays a message to the player. The instruction string is the message. All `&` color codes are respected. You can add additional translations by starting them with `{lang}` argument, just like in the example. The player will see his language or the default one if it's not defined. You can use conversation variables with this event. Just make sure not to use `%npc%`.

Example:

```
message {en} &4You are banned, %player%! {pl} &4Jestes zbanowany, %player
```

Command: `command` *persistent, static*

Runs specified command from the console. The instruction string is the command, without leading slash. You can use variables here, but variables other than `%player%` won't resolve if the event is fired from delayed `folder` and the player is offline now. You can define additional commands by separating them with `|` character.

Example: `command kill %player%|ban %player%`

Teleport: `teleport`

Teleports the player to a specified location, with or without head rotation. It will also end the conversation, if the player has one active. The first and only argument must be location. It's a good idea to use yaw and pitch here.

Example: `teleport 123;32;-789;world_the_nether;180;45`

Point: `point` *persistent*

Gives the player a specified amount of points in a specified category. Amount can be negative if you want to subtract points. You can also use an asterisk to do multiplication (or division, if you use a fraction). First argument after the event name must be a category, and the second one - amount of points to give/take/multiply.

Example: `point npc_attitude 10`

Example: `point village_reputation *0.75`

Tag: `tag` *persistent*

This event adds (or removes) a tag to the player. The first argument after event's name must be `add` or `del`. Next goes the tag name. It can't contain spaces (though `_` is fine). Additional

tags can be added, separated by commas (without spaces).

Example: `tag add quest_started,new_entry`

Global point: `globalpoint` ***persistent, static***

This works the same way as the normal point event but instead to manipulating the points for a category of a specific player it manipulates points in a global category. These global categories are player independent, so you could for example add a point to such a global category every time a player does a quest and give some special rewards for the 100th player who does the quest.

Example: `globalpoint global_knownusers 1`

Global tag: `globaltag` ***persistent, static***

Works the same way as a normal tag event, but instead of setting a tag for one player it sets it globally for all players.

Example: `globaltag add global_areNPCsAgressive`

Objective: `objective` ***persistent***

Manages the objectives. Syntax is `objective <action> name`, where `<action>` can be *start/add* (one of the two), *delete/remove* or *complete/finish*. Name is the name of the objective, as defined in *objectives.yml*.

Example: `objective start wood`

Journal: `journal`

Adds or deletes an entry to/from player's journal. Entries are defined in `journal.yml`. The first argument is action (add/del), the second one is name of the entry. You can also use only one argument, `update`, it will simply update the journal without adding any entries. It's useful when you need to update the main page.

Example: `journal add quest_started`

Example: `journal update`

Lightning: `lightning` ***static***

Strikes a lightning at given location. The only argument is the location.

Example: `lightning 100;64;-100;survival`

Explosion: `explosion` ***static***

Creates an explosion. It can make fire and destroy blocks. You can also define power, so be careful not to blow your server away. Default TNT power is 4, while Wither on creation is 7. First argument can be 0 or 1 and states if explosion will generate fire (like Ghast's fireball). Second is also 0 or 1 but this defines if block will be destroyed or not. Third argument is the power (float number). At the end (4th attribute) there is location.

Example: `explosion 0 1 4 100;64;-100;survival`

Give Items: `give`

Gives the player predefined items. They are specified exactly as in `item` condition - list separated by commas, every item can have amount separated by colon. Default amount is 1. If the player doesn't have required space in the inventory, the items are dropped on the ground, unless they are quest items. Then they will be put into the backpack. You can also specify `notify` keyword to display a simple message to the player about receiving items.

Example: `give emerald:5,emerald_block:9`

Take Items: `take`

Removes items from player's inventory or backpack (in that order). If the items aren't quest items don't use `take` event with player options in conversations! The player can drop items before selecting the option and pickup them after the event fires. Validate it on NPC's reaction! Defining instruction string is the same as in give event. You can also specify `notify` keyword to display a simple message to the player about losing items.

Example: `take emerald:120,sword`

Potion Effect: `effect`

Adds a specified potion effect to player. First argument is potion type. You can find all available types [here](#). Second is integer defining how long the effect will last in seconds. Third argument, also integer, defines level of the effect (1 means first level). You can also add `--ambient` parameter to make potion particles appear more invisible (just like beacon effects).

Example: `effect ABSORPTION 120 1 --ambient`

Conversation: `conversation`

Starts a conversation at location of the player. The only argument is ID of the conversation. This bypasses the conversation permission!

Example: `conversation village_smith`

Kill: `kill`

Kills the player. Nothing else.

Example: `kill`

Spawn Mob: `spawn static`

Spawns specified amount of mobs of given type at the location. First argument is a location. Next is [type of the mob](#). The last, third argument is integer for amount of mobs to be spawned. You can also specify `name:` argument, followed by the name of the mob. All `_` characters will be replaced with spaces. You can also mark the spawned mob with a keyword using `marked:` argument. It won't show anywhere, and you can check for only marked mobs in `mobkill` objective.

You can specify armor which the mob will wear and items it will hold with `h:` (helmet), `c:` (chestplate), `l:` (leggings), `b:` (boots), `m:` (main hand) and `o:` (off hand) optional arguments. These take a single item without amount, as defined in `items.yml`. You can also add a list of drops with `drops:` argument, followed by a list of items with amounts after colons, separated by commas.

Example: `spawn 100;200;300;world SKELETON 5 marked:targets`

Example:

```
spawn 100;200;300;world ZOMBIE name:Bolec 1 h:blue_hat c:red_vest drops:e
```

Time: `time`

Sets or adds time. The only argument is time to be set (integer) or time to be added (integer prefixed with +), in 24 hours format. Subtracting time is done by adding more time (if you think of this, it actually makes sense). Minutes can be achieved with floating point.

Example: `time +6`

Weather: `weather`

Sets weather. The argument is `sun`, `rain` or `storm`.

Example: `weather rain`

Folder: `folder persistent, static`

It's something like a container for multiple events. You can use it to clarify your code. It also features optional delay measured in seconds (you can use ticks or minutes if you add `ticks` or `minutes` argument). It is persistent for events marked as *persistent*, which means that the events will be fired even after the player logs out. Beware though, all conditions are false then the player is offline (even inverted ones), so those events should not be blocked by any conditions! The

only required argument is a list of events separated by commas. There are also two optional arguments: `delay:` and `random:`. Delay is a number of seconds and it's optional (leaving it blank is the same as `delay:0`). Random is the amount of events, that will be randomly chosen to fire. If set to 0 or omitted, it does nothing (all events will fire).

Example: `folder event1,event2,event3 delay:5 random:1`

Set Block: `setblock` *persistent, static*

Sets a block at given location to specified material. Useful for triggering redstone contraptions. There are two required arguments. First is required, and should be material's name ([List of materials](#)). Second is a location and is also required. Last, optional is `data:` with an integer, which defines block's data value. Default is 0.

Example: `setblock REDSTONE_BLOCK 100;200;300;world`

Damage player: `damage`

Damages the player by specified amount of damage. The only argument is a number (can have floating point).

Example: `damage 20`

Party event: `party`

Runs the specified list of events (third argument) for every player in a party. More info about parties in "Party" chapter in **Reference** section.

Example: `party 10 has_tag1,!has_tag2 give_reward`

Clear mobs: `clear`

This event removes all specified mobs from the specified area. The first required argument is a list of mobs (taken from [here](#)) separated by commas. Next is location. After that there is the radius around the location (a positive number or a variable). You can also optionally specify `name:` argument, followed by name which removed mobs must have. You can use `marked:` argument to remove only mobs marked in `spawn` event.

Example: `clear ZOMBIE,CREEPER 100;200;300;world 10 name:Monster`

Run events: `run`

This event allow for specifying multiple instruction strings in one, longer string. Each instruction must be started with `^` character and no other dividers should be used. It's not the same as `folder` condition, because you can specify an instruction string, not an event name. It is also

fired on the same tick, not on the next one like in `folder` . Don't use conditions here, it behaves strangely. I'll fix this in 1.9 version.

Example: `run ^tag add beton ^give emerald:5 ^entry add beton ^kill`

Give journal: `givejournal`

This event simply gives the player his journal. It acts the same way as `/j` command would.

Example: `givejournal`

Sudo: `sudo`

This event is similar to `command` event, the only difference is that it will fire a command as the player.

Example: `sudo spawn`

Chest Give: `chestgive` *persistent, static*

This works the same as `give` event, but it puts the items in a chest at specified location. The first argument is a location, the second argument is a list of items, like in `give` event. If the chest is full, the items will be dropped on the ground. The chest can be any other block with inventory, i.e. a hopper or a dispenser. BetonQuest will log an error to the console when this event is fired but there is no chest at specified location.

Example: `chestgive 100;200;300;world emerald:5,sword`

Chest Take: `chesttake` *persistent, static*

This event works the same as `take` event, but it takes items from a chest at specified location. The instruction string is defined in the same way as in `chestgive` event.

Example: `chesttake 100;200;300;world emerald:5,sword`

Chest Clear: `chestclear` *persistent, static*

This event removes all items from a chest at specified location. The only argument is a location.

Example: `chestclear 100;200;300;world`

Compass: `compass`

When you run this event, the player will be able to select a specified location as a target of his compass. To select the target the player must open his backpack and click on the compass icon.

The first argument is either `add` or `del` , and second one is the name of the target, as defined in *main.yml*.

The destination must be defined in the *main.yml* file in `compass` section. You can specify a name for the target in each language or just give a general name, and optionally add a custom item (from *items.yml*) to be displayed in the backpack. Example of a compass target:

```
compass:
  beton:
    name:
      en: Target
      pl: Cel
    location: 100;200;300;world
    item: scroll
```

Example: `compass add beton`

Cancel quest: `cancel`

This event works in the same way as a quest canceler in the backpack. Running it is equal to the player clicking on the bone. The only argument is a name of a quest canceler, as defined in *main.yml*

Example: `cancel wood`

Scoreboard: `score`

This event works in the same way as `point` event, the only difference is that it uses scoreboards instead of points. You can add, subtract, multiply and divide scores in objectives on the scoreboard. The first argument is the name of the objective, second one is a number. It can be positive for addition, negative for subtraction or prefixed with an asterisk for multiplication. Multiplying by fractions is the same as dividing.

Example: `score kills 1`

Lever: `lever` ***persistent, static***

This event can switch a lever. The first argument is a location and the second one is state: `on` , `off` or `toggle` .

Example: `lever 100;200;300;world toggle`

Door: `door` ***persistent, static***

This event can open and close doors, trapdoors and fence gates. The syntax is exactly the same

as in `lever` event above.

Example: `door 100;200;300;world off`

If else: `if`

This event will check a condition, and based on the outcome it will run the first or second event. The instruction string is `if condition event1 else event2`, where `condition` is a condition ID and `event1` and `event2` are event IDs. `else` keyword is mandatory between events for no practical reason.

Example: `if sun rain else sun`

Variable: `variable`

This event has only one purpose - to change variables stored in `variable` objective. The first argument is the ID of a `variable` objective (if you use any other type you will get an error). Second one is the key of the variable and the third is the value. Both can use `%. . . %` variables. Refer to `variable` objective documentation for information about storing variables.

Example: `variable some_var_obj name %player%`

Title: `title`

This event displays a title or a subtitle. The first argument is the type (`title` or `subtitle`), second argument are title's duration times (in ticks) separated by semicolons - fade in, stay and fade out: `20;100;20` . If you set it to three zeros (`0;0;0`) the plugin will use default Minecraft values. After these two required arguments there is a title message, formatted like in the `message` event, which supports multiple languages, color codes and variables. Keep in mind that the subtitle will only appear if the title is visible - that's how Minecraft works.

Example: `title subtitle 0;0;0 {en} Lobby joined! {pl} Dołączono do lobby!`

Language: `language`

This event changes player's language to the specified one. There is only one argument, the language name.

Example: `language es`

Play sound: `playsound`

This event will play a specified sound for the player. The only required argument is the sound name (can take custom values if you're using a resource pack). There are also a few optional arguments.

`location:` makes the sound play at specified location, `category:` is the [sound category](#) (if not specified it will use `MASTER`), `volume:` is a decimal responsible for the sound's volume and `pitch:` specifies the pitch.

Objectives List

Location: `location`

This objective completes when player moves in specified range of specified location and meets all conditions. The first argument after objective's name must be location, the second - radius around the location. It can be a variable.

Location objective contains one property, `location` . It's a string formatted like

```
X: 100, Y: 200, Z:300 .
```

Example:

```
location 100;200;300;world 5 condition:test1,!test2 events:test1,test2
```

Block: `block`

To complete this objective player must break or place specified amount of blocks. First argument after name is type of the block and data value after a colon (WOOD:2 means birch wooden planks). You can find possible types at Bukkit reference page there: [material types](#). Next is amount. It can be more than 0 for placing and less than 0 for destroying. You can also use `notify` keyword to display messages to the player each time he updates amount of blocks.

This objective has two properties, `amount` and `left` . Amount is current amount of blocks in the objective, left is amount needed to complete the objective. Note that it may sometimes be negative!

Example: `block LOG:2 -16 events:reward notify`

Mob Kill: `mobkill`

The player must kill specified amount of mobs You must specify mob type first and then amount. You can find possible mob types here: [mob types](#). Additionally you can specify names for mobs with `name:Uber_Zombie` , so only killing properly named mobs counts. All `_` are replaced with spaces, so in this example you would have to kill 5 zombies with "Uber Zombie" above their heads. You can also specify `notify` keyword to display messages to the player each time he kills a mob. If you want to accept only mobs marked with `spawn` event, use `marked:` argument followed by the keyword used in that event.

This objective also has two properties, `amount` and `left` . Amount is current amount of killed mobs, left is amount needed to complete the objective.

Example: `mobkill ZOMBIE 5 name:Uber_Zombie conditions:night`

Action: `action`

This objective completes when player clicks on given block type. This can be further limited by location condition and item in hand condition. First argument is type of the click, it can be right, left or any. Next is block type, optionally with data value after colon. You can also specify `loc:` argument, followed by standard location format and `range:` followed by a number (or variable). It will define where the clicked block needs to be, as opposed to "where you must be" in location condition. If you add argument `cancel`, the click will be canceled (chest will not open, button will not be pressed etc.)

Action objective contains one property, `location`. It's a string formatted like

```
X: 100, Y: 200, Z:300
```

. It does not show the radius.

Example:

```
action right DOOR:1 conditions:holding_key loc:100;200;300;world range:5
```

Death: `die`

Death objective completes when the player dies meeting all conditions. You can optionally cancel death with `cancel` argument. It will heal player and optionally teleport him to respawn location. There can be two arguments: `cancel`, which is optional, and `respawn:`, which is also optional and only used if there is the `cancel` argument set. You can add them right after type of objective.

Example: `die cancel respawn:100;200;300;world;90;0 events:teleport`

Crafting: `craft`

To complete this objective the player must craft specified item. First argument is ID of the item, as in *items.yml*. Next is amount (integer).

Crafting objective has two properties, `amount` and `left`. Amount is current amount of crafted items and left is amount needed to complete the objective.

Example: `craft saddle 5 events:reward`

Smelting: `smelt`

To complete this objective player must smelt specified item. Note that you must define item as output from furnace, not the ingredient. This one does not support data values (it doesn't have to). First argument is material name. Next is amount (integer).

Smelting has the same properties as crafting objective.

Example: `smelt IRON_INGOT 5 events:reward`

Taming: `tame`

To complete this objective player must tame some amount of mobs. valid mob types are: WOLF, OCELOT and HORSE First argument is type, next is amount.

Taming has the same properties as mob kill objective.

Example: `tame WOLF 2 events:wolfs_tamed`

Delay: `delay`

This objective is just a long, persistent delay for firing events. It will run only after certain amount of time (measured in minutes) and only when player is online and meets all conditions. If a player is offline at that time it will just wait for them to log in. You should use it for example to delete tags so the player can complete quests multiple times. First argument is time, by default in minutes. You can also use `ticks` or `seconds` argument to use different units, but keep in mind that it's not very precise - it will complete roughly after the time ends. To control that precision you can specify an optional `interval:` argument, which specifies how many ticks should pass between checks. One second is 20 ticks. Less makes the objective more precise, at the expense of performance. The rest is just like in other objectives.

Delay has two properties, `left` and `date`. The first one will show how much time needs to pass before the delay is completed (i.e. `23 days, 5 hours and 45 minutes`), the second one will show a date of completing the objective formatted using `date_format` setting in `config.yml` (it will look like the one above every journal entry).

Example: `delay 1000 ticks interval:5 events:event1,event2`

Arrow Shooting: `arrow`

To complete this objective the player needs to shoot the arrow into the target. There are two arguments, location of the target and precision number (radius around location where the arrow must land, should be small). Note that the position of an arrow after hit is on the wall of a *full* block, which means that shooting not full blocks (like heads) won't give accurate results. Experiment with this objective a bit to make sure you've set the numbers correctly.

Example:

```
arrow 100.5;200.5;300.5;world 1.1 events:reward conditions:correct_player
```

Experience: `experience`

This objective can be completed by reaching specified level (default Minecraft experience, whole levels). The conditions are checked when the player levels up, so if they are not met the first time, the player will have to meet them and levelup again. Instruction string consists only from integer - level to reach.

Example: `experience 25 events:reward`

Step on pressure plate: `step`

To complete this objective the player has to step on pressure plate at given location. The type of plate does not matter. The first and only required argument is a location. If the pressure plate is not present at that location, the objective will not be completable and will log errors in the console.

Step objective contains one property, `location`. It's a string formatted like `X: 100, Y: 200, Z:300`. It shows an exact location of the pressure plate.

Example: `step 100;200;300;world events:done`

Logout: `logout`

To complete this objective the player simply needs to leave the server. Keep in mind that running `folder` event here will make it run in "persistent" mode, since the player is offline on the next tick.

Example: `logout events:delete_objective`

Password: `password`

This objective requires the player to type the password in the chat. The first argument is the password. All `_` characters are replaced with spaces. It's checked with [regular expressions](#) (if your password will be `^beton.*beton$` the objective will accept all passwords that starts and ends with `beton` word (`^` represents beginning of a string, `.` represents any character, `*` allows the previous character (in this case any) repeat any number of times, and `$` means end of the string), but you can also use something like `beton` - it will work). If you want the objective to ignore case of the letters you can add optional `ignoreCase` argument. For this to work your regular expression needs to use lower case letters. To answer, the player needs to type (in his language, configurable in `messages.yml`) `password: here goes player's guess`. If he fails, the message will not be displayed in the chat.

Example: `password beton ignoreCase events:message,reward`

Fishing: `fish`

Requires the player to catch a fish. It doesn't have to be a fish, it can also be a treasure or junk. The first argument is [material](#) name of the item to catch, optionally with data value after a colon. Second argument must be amount of fish to catch. You can also add `notify` argument if you want to display progress.

Fishing has the same properties as mob kill objective.

Example: `fish raw_fish:1 5 notify events:tag_fish_caught`

Sheep shearing: `shear`

To complete this objective the player has to shear specified amount of sheep, optionally with specified color and/or name. The first, required argument is amount (integer). Optionally, you can add `name:` argument with the name and `color:` with [color name](#).

Sheep shearing has the same properties as mob kill objective.

Example: `shear 1 name:Bob color:black`

Enchant item: `enchant`

This objective is completed when the player enchants specified item with specified enchantment. The first argument is an item name, as defined in *items.yml*. Second one is the [enchantment](#) and a level, separated with a colon.

Example: `enchant sword damage_all:1 events:reward`

Put items in a chest: `chestput`

This objective requires the player to put specified items in a specified chest. First argument is a location of the chest, second argument is a list of items (from *items.yml* file), separated with a comma. You can also add amount of items after a colon. The items will be removed upon completing the objective unless you add `items-stay` optional argument.

Example: `chestput 100;200;300;world emerald:5,sword events:tag,message`

Potion brewing: `potion`

To complete this objective the player needs to brew specified amount of specified potions. The first argument is a potion ID from *items.yml*. Second argument is amount of potions. You can optionally add `notify` argument to make the objective display progress to players.

The brewing will be accepted if the player was the last one to click the ingredient slot in the brewing stand and there were no matching potions there already.

Potion objective has `amount` and `left:` properties.

Example: `potion weird_concoction 4 event:add_tag`

Eat/drink: `consume`

This objective is completed by eating specified food or drinking specified potion. The only required argument is the ID of an item from *items.yml*.

Example: `consume tawny_owl events:faster_endurance_regen`

Variable: `variable`

This objective is different. You cannot complete it, it will also ignore defined events and conditions. You can start it and that's it. While this objective is active though, everything the player types in chat (and matches special pattern) will become a variable. The pattern is `key: value`. So if you type that, it will create a variable called `key`, which will resolve to `value` string. These are not global variables, you can access them as objective properties. Let's say you defined this objective as `var` in your `objectives.yml` file. You can access the variable in any conversation, event or condition with `%objective.var.key%` - and in case of this example, it will resolve to `value`. The player can type something else, and the variable will change its value. Variables are per-player, so my `key` variable will be different from your `key` variable, depending on what we were typing in chat. You can have as much variables here as you want. To remove this objective use `objective delete` event - there is no other way.

You can also use `variable` event to change variables stored in this objective. There is one optional argument, `no-chat`. If you use it, the objective won't be modified by what players type in chat.

Example: `variable`

Kill player: `kill`

To complete this objective the player needs to kill another player. The first argument is amount of players to kill. You can also specify additional arguments: `name:` followed by the name will only accept killing players with this name, `required:` followed by a list of conditions separated with commas will only accept killing players meeting these conditions and `notify` will display notifications when a player is killed.

Example: `kill 5 required:team_B`

Breed animals: `breed`

This works only on Spigot 1.10.2 and later!

This objective is completed by breeding animals of specified type. The first argument is animal type (`types`) and second is amount (positive integer). You can add `notify` argument to display a message with remaining amount each time the animal is bred. While you can specify any entity, the objective will be completable only for breedable ones.

Example: `breed cow 10 notify events:reward`

Interact with entity: `interact`

The player must click on an entity to complete this objective. The first argument is the type of a click. Available values are `right`, `left` and `any`. Second required argument is the [mob type](#). Next is an amount of mobs required to click on. These must be unique, so the player can't simply click twenty times on the same zombie to complete it. There is also an optional `name:` parameter which specifies what name the entity must have and `marked:` if the clicked entity needs to be marked by the `spawn` event (see its description for marking explanation). You can also add `notify` argument to make the objective notify players whenever they click a correct entity and `cancel` if the click shouldn't do what it usually does (i.e. left click won't hurt the entity).

Example:

```
interact right creeper 1 marked:sick condition:syringeInHand cancel
```


Variables List

Player: `player`

This variable will be replaced with the name of the player. If you add `display` argument, it will use display name instead of real name.

Example: `%player.display%`

NPC: `npc`

It's a very simple variable. It's replaced by the name of the NPC in player's language.

Example: `%npc%`

Objective: `objective`

Using this variable you can display a property of an objective. The first argument is an ID of the objective as defined in *objectives.yml* (not the type). Make sure that the player has this objective active or it will be replaced with nothing (""). Second argument is the name of a property you want to display. All properties are described in "Objectives List" chapter.

Example: `%objective.kill_zombies.left%`

Point: `point`

This variable displays the amount of points you have in some category or amount of points you need to have to reach a number. The first argument is the name of a category and the second argument is either `amount` or `left:x`, where `x` is a number.

Example: `%point.reputation.left:15%`

Global point: `globalpoint`

Works the same as normal point variable but instead of displaying points from a players category it displays points in a global, player independent category.

Example: `%globalpoint.global_knownusers.left:100%`

Item: `item`

With this variable you can display amount of specific items in player's inventory or a number needed to reach specific amount. The first argument is the name of an item (as defined in

items.yml) and the second one is either `amount` or `left:x`, where `x` is a number.

Example: `%item.stick.amount%`

Version: `version`

This variable displays the version of the plugin. You can optionally add the name of the plugin as an argument to display version of another plugin.

Example: `%version.Citizens%`

Location: `location`

This variable resolves to player's current location, formatted as an absolute location format (more about it in the *Reference* chapter). The location will contain yaw and pitch. You can use it instead of coordinates as location arguments in events, conditions and objectives.

Example: `%location%`

Compatibility

BetonQuest can hook into other plugins to extend its functionality. Currently there are 19 plugins: Citizens, Vault, EffectLib, MythicMobs, Magic, Skript, Denizen, WorldEdit, WorldGuard, mcMMO, Heroes, SkillAPI, RacesAndClasses, LegendQuest, Shopkeepers, Quests, PlaceholderAPI, HolographicDisplays and PlayerPoints.

Citizens

If you have this plugin you can use its NPCs for conversations. I highly recommend you installing it, these NPCs are way more immersive. Having Citizens also allows you to use NPCKill objective.

Notice: When you use Citizens, in main.yml you need to specify the ID of the NPC instead of the name!

NPC kill objective: `npckill`

NPC Kill objective requires the player to kill an NPC with the given ID. You can also define how many times an NPC has to be killed. Right after objective's name there must be an ID of the NPC. You can also add an amount by `amount: .`

Example: `npckill 16 amount:3 events:reward`

NPC interact objective: `npcinteract`

The player has to right-click on the NPC with specified ID. It can also optionally cancel the action, so the conversation won't start. The first argument is number (ID of the NPC), and the second is optional `cancel .`

Example: `npcinteract 3 cancel conditions:sneak events:steal`

Move NPC event: `movenpc`

This event will make the NPC move to a specified location. It will not return on its own, so you have to set a single path point with `/npc path` command - it will then return to that point every time. If you make it move too far away, it will teleport or break, so beware. You can change maximum pathfinding range in Citizens configuration files. The first argument in this event is ID of the NPC to move. Second one is a location in a standard format (like in `teleport` event). You can also specify additional arguments: `wait:` is a number of ticks the NPC will wait at its destination before firing events, `done:` is a list of events fired after reaching the destination, `fail:` is a list of events fired if this event fails. Move event can fail if the NPC is already moving for another player.

Example:

```
movenpc 121 100;200;300;world wait:20 done:msg_were_here,give_reward fail
```

Vault

By installing Vault you enable Permission event and Money condition/event.

Permission event: `permission`

Adds or removes a permission or a group. First argument is `add` or `remove`. It's self-explanatory. Second is `perm` or `group`. It also shouldn't be hard to figure out. Next thing is actual string you want to add/remove. At the end you can also specify world in which you want these permissions. If the world name is omitted then permission/group will be global.

Example: `permission remove group bandit world_nether`

Money event: `money`

Deposits, withdraws or multiplies money on player's account. There is only one argument, amount of money to modify. It can be positive, negative or start with an asterisk for multiplication.

Example: `money -100`

Money condition: `money`

Checks if the player has specified amount of money. You can specify only one argument, amount integer. It cannot be negative!

Example: `money 500`

Money variable: `money`

There is only one argument in this variable, `amount` for showing money amount or `left:` followed by a number for showing the difference between it and amount of money.

Example: `%money.left:500%`

MythicMobs

Having MythicMobs allows you to use MythicMobs MobKill objective and MythicMobs SpawnMob event.

MobKill objective: `mmobkill`

To complete this objective you need to kill specified amount of MythicMobs. The first argument must be the mob's internal name (the one defined in MythicMobs' configuration). You can optionally add `amount:` argument to specify how many of these mobs the player needs to kill. You can also add "notify" keyword if you want to display to players the amount of mobs left to kill.

Example: `mmobkill SkeletalKnight amount:2 events:reward`

SpawnMob event: `mspawnmob`

Spawn specified amount of MythicMobs at given location. The first argument is a location defined like `100;200;300;world`. Second is MythicMobs internal name (the one defined in MythicMobs' configuration) followed by a colon and a level. Third one is amount and it's required!

Example: `mspawnmob 100;200;300;world SkeletalKnight:1 5`

McMMO

Level condition: `mcmmllevel`

This conditions checks if the player has high enough level in the specified skill. The first argument is the name of the skill, second one is the minimum level the player needs to have to pass this condition.

Example: `mcmmllevel woodcutting 50`

Experience event: `mcmmoexp`

This event adds experience points in a specified skill. The first argument is the name of the skill, second one is the amount of experience to add.

Example: `mcmmoexp swords 1500`

Skript

BetonQuest can also hook into Skript. Firstly, to avoid any confusion, I will refer to everything here by name of the plugin (Skript event is something else than BetonQuest event). Having Skript on your server will enable using BetonQuest events and conditions in scripts, and also trigger them by BetonQuest event.

Skript event triggered by BetonQuest `skript` **event**

This entry will describe two things: Skript event and BetonQuest event.

1. **Skript event** - `on [betonquest] event "id"` - this is the line you use in your scripts to trigger the code. `betonquest` part is optional, and `id` is just some string, which must be equal to the one you specified in BetonQuest event.
2. **BetonQuest event** - `skript` - this event will trigger the above Skript event in your scripts. The instruction string accepts only one argument, id of the event. It has to be the same as the one defined in Skript event for it to be triggered.

Example: *in your script:* `on betonquest event "concrete":` *in events.yml:*

```
fire_concrete_script: skript concrete
```

Skript condition

You can check BetonQuest conditions in your scripts by using the syntax

```
player meets [betonquest] condition "id" .
```

`betonquest` is optional, and `id` is the name of the condition, as defined in *conditions.yml*.

Example: *in your script:* `player meets condition "has_ore"` *in conditions.yml:*

```
has_ore: item iron_ore:5
```

Skript event

You can also fire BetonQuest events with scripts. The syntax for Skript effect is

```
fire [betonquest] event "id" for player .
```

 Everything else works just like in condition above.

Example: *in your script:* `fire event "give_emeralds" for player` *in events.yml:*

```
give_emeralds: give emerald:5
```

WorldGuard

Region objective: `region`

To complete this objective you need to enter WorldGuard region with specified name. The only argument in instruction string is name of the region.

Example: `region beton events:kill`

Region condition: `region`

This condition is met when the player is inside the specified region. The only argument is the name of the region.

Example: `region beton`

WorldEdit

Paste schematic event: `paste`

This event will paste a schematic at the given location. The first argument is a location and the second one is the name of schematic file. The file must be located in `WorldEdit/schematics` and have a name like `some_building.schematic` .

Example: `paste 100;200;300;world some_building`

EffectLib

If you install this plugin on your server you will be able to set a particle effect on NPCs with conversations and use `particle` event.

You can control the behaviour of particles around the NPCs in `custom.yml` file, in `npc_effects` section. Each effect is defined as a separate subsection and consists of EffectLib options (described on the EffectLib page) and several BetonQuest settings. `npcs` is a list of all NPCs on which this effect can be displayed. `conditions` is a list of conditions the player has to meet in order to see the effect. BetonQuest will find the first effect which can be displayed and show it to the player. `interval` controls how often the effect is displayed (in ticks). The effect will be fired from the exact location of the NPC, upwards.

Particle event: `particle`

This event will load an effect defined in `effects` section in `custom.yml` file and display it on player's location. The only argument is the name of the effect. You can optionally add `loc:` argument followed by a location written like `100;200;300;world;180;-90` to put it on that location.

Example in `custom.yml`:

```
effects:
  beton:
    class: HelixEffect
    iterations: 100
    particle: smoke
    helixes: 5
    circles: 20
    grow: 3
    radius: 30
```

Example: `particle beton loc:100;200;300;world;180;-90`

PlayerPoints

PlayerPoints event: `playerpoints`

This event simply adds, removes or multiplies points in the PlayerPoints plugin. The only argument is a number, it can be positive, negative or prefixed with an asterisk for multiplication.

Example: `playerpoints *2`

PlayerPoints condition: `playerpoints`

This condition simply checks if the player has specified amount of points in the PlayerPoints plugin.

The only argument is a number.

Example: `playerpoints 100`

Heroes

When you install Heroes, all kills done via this plugin's skills will be counted in MobKill objectives.

Experience event: `heroesexp`

This event simply gives the player specified amount of Heroes experience. The first argument is either `primary` or `secondary` and it means player's class. Second one is the amount of experience to add.

Example: `heroesexp primary 1000`

Class condition: `heroesclass`

This condition checks the classes of the player. The first argument must be `primary`, `secondary` or `mastered`. Second is the name of a class or `any`. You can optionally specify `level:` argument followed by the required level of the player.

Example: `heroesclass mastered warrior`

Skill condition: `heroesskill`

This condition checks if the player can use specified skill. The first argument is the name of the skill.

Example: `heroesskill charge`

Magic

Wand condition: `wand`

This condition can check wands. The first argument is either `hand`, `inventory` or `lost`. If you choose `lost`, the condition will check if the player has lost a wand. If you choose `hand`, the condition will check if you're holding a wand in your hand. `inventory` will check your whole inventory instead of just the hand. In case of `hand` and `inventory` arguments you can also add optional `name:` argument followed by the name of the wand (as defined in `wands.yml` in Magic plugin) to check if it's the specific type of the wand. You can also use optional `spells:` argument, followed by a list of spells separated with a comma. Each spell in this list can have defined minimal level required, after a colon.

Example: `wand hand name:master spells:flare,missile:2`

Denizen

Script event: `script`

With this event you can fire Denizen task scripts. Don't confuse it with `skript` event, these are different. The first and only argument is the name of the script.

Example: `script beton`

SkillAPI

Class condition: `skillapiclass`

This condition checks if the player has specified class or a child class of the specified one. The first argument is simply the name of a class. You can add `exact` argument if you want to check for that exact class, without checking child classes.

Example: `skillapiclass warrior`

Level condition: `skillapilevel`

This condition checks if the player has specified or greater level is the specified class. The first argument is class name, the second one is the required level.

Example: `skillapilevel warrior 3`

Quests

Quests is another questing plugin, which offers very simple creation of quests. If you don't want to spend a lot of time to write advanced quests in BetonQuest but you need a specific thing from this plugin you can use Custom Event Reward or Custom Condition Requirement. Alternatively, if you have a lot of quests written in Quests, but want to integrate them with the conversation system, you can use `quest` event and `quest` condition.

Event Reward (Quests)

When adding rewards to a quest or a stage, choose "Custom reward" and then select "BetonQuest event". Now specify event's name and it's package (like `package.eventName`). Quests will fire BetonQuest event when this reward will run.

Condition Requirement (Quests)

When adding requirements to a quest, choose "Custom requirement" and then select "BetonQuest condition". Now specify condition's name and it's package (like `package.conditionName`). Quests will check BetonQuest condition when starting the quest.

Quest event: `quest` (BetonQuest)

This event will start the quest for the player. The first argument must be the name of the quest, as defined in `name` option in the quest. If the name contains any spaces replace them with `_`. You can optionally add `check-requirements` argument if you want the event to respect this quest's requirements (otherwise the quest will be forced to be started).

Example: `quest stone_miner check-requirements`

Quest condition: `quest` (BetonQuest)

This condition is met when the player has completed the specified quest. The first and only argument is the name of the quest. If it contains any spaces replace them with `_`.

Example: `quest stone_miner`

Shopkeepers

Open shop window event: `shopkeeper`

This event opens a trading window of a Villager. The only argument is the uniqueID of the shop. You can find it in *Shopkeepers/saves.yml* file, under `uniqueID` option.

Example: `shopkeeper b687538e-14ce-4b77-ae9f-e83b12f0b929`

Shop amount condition: `shopamount`

This condition checks if the player owns specified (or greater) amount of shops. It doesn't matter what type these shops are. The only argument is a number - minimum amount of shops.

Example: `shopamount 2`

PlaceholderAPI

If you have this plugin, BetonQuest will add a `betonquest` placeholder to it and you will be able to use `ph` variable in your conversations.

Placeholder: `betonquest`

In any other plugin which uses PlaceholderAPI you can use BetonQuest variables with `%betonquest_package:variable%` placeholder. The `package:` part is the name of a package. If you skip this, the plugin will assume you're using that variable in `default` package. The `variable` part is just a BetonQuest variable without percentage characters, like `point.beton.amount`.

Example: `%betonquest_someGreatQuest:objective.killZombies.left%`

Variable: `ph`

You can also use placeholders from other plugins in BetonQuest. Simply insert a variable starting with `ph`, the second argument should be the placeholder without percentage characters.

Example: `%ph.player_item_in_hand%`

HolographicDisplays

Installing this plugin will enable you to create hidden holograms, which will be shown to players only if they meet specified conditions. Note that you need to have [ProtocolLib](#) installed in order to hide holograms from certain players.

In order to create a hologram, you have to add `holograms` section in your *custom.yml* file. Add a node named as your hologram to this section and define `lines`, `conditions` and `location` subnodes. The first one should be a list of texts - these will be the lines of a hologram. Color codes are supported. Second is a list of conditions separated by commas. Third is a location in a standard format, like in `teleport` event. An example of such hologram definition:

```
holograms:
  beton:
    lines:
      - '&bThis is Beton.'
      - '&eBeton is strong.'
    location: 100;200;300;world
    conditions: has_some_quest, !finished_some_quest
```

The holograms are updated every 10 seconds. If you want to make it faster, add `hologram_update_interval` option in *config.yml* file and set it to a number of ticks you want to pass between updates (one second is 20 ticks). Don't set it to 0 or negative numbers, it will result in an error.

RacesAndClasses

Another race/class/skill plugin. By installing RacesAndClasses you gain access to these events, conditions and variables:

Class condition: `racclass`

This condition checks if the player has specified class. You can use `none` to check if he does not have any class.

Example: `racclass warrior`

Class event: `racclass`

This event sets player's class to the specified one.

Example: `racclass magician`

Class variable: `racclass`

This variable resolves to class name.

Example: `%racclass%`

Race condition: `racrace`

This condition checks if the player has specified race. You can use `none` to check if he does not have any race.

Example: `racrace Elv`

Race event: `racrace`

This event sets player's race to the specified one.

Example: `racrace Orc`

Race variable: `racrace`

This variable resolves to race name.

Example: `%racrace%`

Level condition: `raclevel`

This condition is met if the player has a level equal or greater than specified.

Example: `raclevel 5`

Level event: `raclevel`

This event adds (or removes if negative) levels.

Example: `raclevel -2`

Level variable: `raclevel`

This variable has 2 possible arguments: `amount` will resolve to player's level and `left:` will display how many levels the player lacks to the specified number.

Example: `%raclevel.left:5%`

Experience condition: `racexo`

This condition is met if the player has experience equal or greater than specified.

Example: `racexo 600`

Experience event: `racexo`

This event adds (or removes if negative) experience.

Example: `racexo 100`

Experience variable: `racexo`

This variable has 2 possible arguments: `amount` will resolve to player's experience and `left:` will display how much experience the player lacks to the specified number.

Example: `%racexo:amount%`

Mana condition: `racmana`

This condition is met if the player has mana equal or greater than specified.

Example: `racmana 1`

Mana event: `racmana`

This event adds (or removes if negative) mana. You can use `refill` instead of a number to simply set mana to player's maximum.

Example: `racmana refill`

Trait condition: `ractrait`

This condition checks if the player has the specified trait.

Example: `ractrait SwordDamageIncreaseTrait`

LegendQuest

Class condition: `lqclass`

Checks if the player has specified class. It can also check subclass if you add `--subclass` argument.

Example: `lqclass Cleric`

Race condition: `!qrace`

Checks if the player has specified race.

Example: `!qrace Dwarf`

Attribute condition: `!qattribute`

Checks player's attributes. The first argument is attribute (STR, CON, DEX, INT, WIS, CHR) and the second argument is a number - minimal required level of the attribute.

Example: `!qattribute INT 10`

Karma condition: `!qkarma`

Checks if the player has specified amount of karma. The only argument is a number - minimal amount of karma required.

Example: `!qkarma 20`

Class variable: `!qclass`

Resolves to player's class.

Example: `!qclass%`

Race variable: `!qrace`

Resolves to player's race.

Example: `!qrace%`

Attribute variable: `!qattribute`

Resolves to player's attribute. The first argument is name of the attribute (like in `!qattribute` condition), second one is either `amount` or `left:` followed by a number. First of these will simply display attribute level and second will display the difference between attribute level and the number.

Example: `!qattribute.str.left:13`

Karma variable: `!qkarma`

Resolves to player's karma. The only argument here is either `amount` or `left:` followed by a number. First of these will simply display karma amount and second will display the difference between karma amount and the number.

Example: `!qkarma.amount%`

BetonLangAPI

When BetonLangAPI is installed on the server BetonQuest will integrate its translation system with that plugin. Changing the language with `/lang` command or `language` event will change the language globally, not only in one of those plugins. The `/questlang` command will not modify BetonLangAPI language though!

BountifulAPI

Title event: `title`

BountifulAPI enables you to use `title` event without spamming the console with `/title` command output. The syntax is exactly the same as in regular `title` event described in *Events List*.

Example: `title subtitle 0;0;0 {en} Lobby joined! {pl} Dołączono do lobby!`

ProtocolLib

Having ProtocolLib installed will let you hide Citizens NPCs if specified conditions are met. You can do that by adding `hide_npcs` section to `custom.yml` file in your package. There you can assign conditions to specific NPC IDs:

```
hide_npcs:  
  41: killedAlready,questStarted  
  127: '!questStarted'
```

Tips and tricks

Handling death in your quests

Sometimes, while writing a dangerous quest you will want something specific to happen when the player dies. If it's a boss battle you may want to fail the quest, if it's a dungeon you may want to respawn the player at the beginning of a level etc. You can do that with `die` objective - simply start it for the player at the beginning of the quest and make it fire events that will do the thing you want (like teleporting the player to desired respawn point, removing tags set during the quest etc). You can add `persistent` argument to the objective instruction string to make it active even after completing it. Remember to `delete` it after the quest is done!

Creating regions for one player at the time

Imagine you have a room to which the player is teleported. Then suddenly mobs start to spawn and the player must kill them (because it's a trap or something). The player has killed all the mobs, he got a tag and wants to proceed but all of the sudden another player teleports into the room and all the mobs start to spawn again. The first player is quickly killed and the second one easily kills all mobs. You can prevent such situations by using `party` condition. Just check with it if the party consisting of "players inside the room" has greater amount of players that 1. Set the range to something big enough so it covers the room and the party condition can be tag or location.

Racing with folder event

Since `folder` event can run `tag` events even for offline players you can create races. Create `location` objective where you want the finish line to be and condition it with negated "race_failed" tag (or similar). It will mean that "if the player has not failed the race, he can win it by reaching the location". Now when the race starts fire `folder` event with the amount of time you want to give your players to complete the race. This event should set "race_failed" tag. If the player reaches the location before this tag is set, he will fire all events in that `location` objective, but if the time has passed, the objective will not be completed. You can figure the rest out for yourself.

Random daily quests

Starting the random quest must be blocked with a special tag. If there is no such tag, the conversation option should appear. Create a few quests, each of them started with single `folder` event (they **must** be started by single event!). Now add those events to another `folder` event and make it `random:1`. At the end of every quest add `delay` which will reset the special blocking tag. Now add that `folder` event to the conversation option. When the player chooses it he will start one random quest, and the conversation option will become available after defined in `delay` objective time after completing the quest.

Each day different quest (same for every player)

To do this use something called "Static event". Using the static event run `folder` event every day at some late hour (for example 4am). The `folder` event should be `random:1` and contain several different `setblock` events. These events will set some specific block to several different material types (for example dirt, stone, wood, sand etc). Now when the player starts the conversation and asks about the daily quest the NPC should check (using `testforblock` condition) which type of block is currently set and give the player different quest, depending on the block type.

Make the NPC react randomly

Imagine you want to lie to NPC and he has 15% chance of believing you completely, 35% of being suspicious and 50% of not believing at all. The common denominator for those percentages is 20, so we can write it as 3/20, 7/20 and 10/20. The NPC will check options one after another until it finds one which meets all conditions. We will use `random` condition with our options. The first one will have `3-20` chance (that's the format used by `random` condition). If this condition fails, the NPC will check next option. But it won't be `7-20`, because we already "used" 3 of 20. If you wrote it like that, the chance would be too low. That's why it will be `7-17`. The third option should have `10-10` (because $17 - 7 = 10$ and 50% is 10/20), but as you can see it will always be true. It's because we want the last option to be shown if both previous fail. You don't have to add the last condition at all.

Quest GUI

If you want your players to be able to choose a quest everywhere, every time, then you can create a conversation which can be started with an item. This one is a little hacky but it shows flexibility of BetonQuest. First you need a conversation which behaves as a quest choosing GUI. Name the NPC "Quester", add one option for each quest etc. Now you need an objective which will start this conversation using `conversation` event. It should be `action` objective, set to right click on any block. Add `hand` condition to make it accept only clicks with a specific item and make the objective `persistent` (so players can use it multiple times). The item used here should be marked as Quest Item so players can't drop it. Now define new global location covering your whole map and using it start the objective and give players the item. This way all players (existing and new) will get the quest item, which opens a GUI with quests when right clicked.

Frequently Asked Questions

If you have any questions please read it first. It's very likely that it has been already asked and answered. If not, feel free to make an Issue or a comment on any of plugin's pages across the Internet.

Q: *I updated to 1.9 version and I'm getting a lot of errors in the console.*

A: Unless these are stack traces ([that impossible to understand code stuff](#)), the errors are correct. Version 1.9 has an improved quest checking mechanism and it can detect more bugs in your setup. Most notably, it detects usage of undefined events, conditions and objectives.

Q: *Can you make conversation options clickable?*

A: Open `config.yml` file and set `default_conversation_IO` option to "tellraw". You can also set it to "chest" if you want conversations to be displayed in an inventory GUI.

Q: *Can you add particles over NPCs' heads like in `Quests` plugin?*

A: Install [EffectLib](#).

Q: *The players don't know they have to end a conversation, can you add "auto-ending" when they walk away?*

A: Set `stop` option to "false" in conversation file.

Q: *I have an error which says "Cannot load plugins/BetonQuest/{someFile}.yml", what is wrong?*

A: You have incorrect YAML syntax in your conversation file. Check it with [YAML Lint](#) to see what's wrong. Usually it's because you started a line with `!` or `&`, forgot colons or made some weird things with apostrophes.

Q: *Where is a command for creating quests?*

A: There is no such command. BetonQuest is too complex to edit it with chat, commands and inventory windows. If you don't like editing files directly you can get [the editor](#).

Q: *Conversations are not working! I created NPC "Innkeeper" and he won't talk to me.*

A: Conversations are not linked to an NPC through names, as you can have multiple Innkeepers. You need to connect them with their ID. Read [this](#).

Q: *Could you add some feature?*

A: Check if it wasn't already added in [development versions](#). You can see all changes in [the changelog](#).

Info for developers

Accessing the plugin

You can either add BetonQuest.jar directly to your build path or use Maven. First option if you're using Eclipse:

1. Create a folder called lib in your project folder.
2. Put BetonQuest.jar in this folder.
3. Refresh your project in Eclipse.
4. In Eclipse Project Explorer right click on BetonQuest.jar and select `Build Path -> Add to Build Path`.

And if you're using Maven simply add this to your *pom.xml*:

```
<repositories>
  <repository>
    <id>betonquest-repo</id>
    <url>https://betonquest.pl/mvn</url>
  </repository>
</repositories>

<dependencies>
  <dependency>
    <groupId>pl.betoncraft.betonquest</groupId>
    <artifactId>BetonQuest</artifactId>
    <version>1.8.5</version>
  </dependency>
</dependencies>
```

Writing events

Writing events is the easiest. You need to create a class extending `QuestEvent` for each new event. The constructor must take one argument, an `Instruction` object. In the constructor you must extract all information from the instruction, for example skill names, locations etc. The description of the `Instruction` class is down below. Don't worry about checking event conditions, these are handled by the rest of BetonQuest's logic.

Events are not bound to any player so firing it is done through `fire(String playerID)` method. You have to override it with your code responsible for doing stuff your event should do. Here you should use data previously parsed by the constructor. Don't access `Instruction` object here, it will lower the performance. You can convert `playerID` to `Player` object using the `PlayerConverter` class (it's a relict of times when both UUIDs and names could be used in Bukkit to identify players).

If you want your event to be *persistent*, you need to set `super.persistent` variable to `true` in the constructor. This will make BetonQuest run this event even if the `playerID` points to an offline player, so prepare your code for that.

If you want your event to be *static*, you need to set `super.staticness` variable to `true` in the constructor. This will allow BetonQuest to run this event with `playerID` set to `null`, so prepare your code for that.

When you'll finish your class you need to invoke

`registerEvents(String name, Class<? extends QuestEvent> class)` from BetonQuest instance (which you can get using `BetonQuest.getInstance()` static method). The name for your event will be used in instruction strings (such as "journal" for journal event). The class argument is the `Class` object of your event. You can get it using `YourEvent.class`. That's it, you created an event. Don't forget to check it for bugs!

Writing conditions

Writing conditions is easy too. They must extend `Condition` and override

`check(String playerID)` method, which should return `true` or `false`, depending on if the condition was met. You register them using

`registerConditions(String name, Class<? extends Condition> method)` from BetonQuest instance as well. The rest is almost the same, you're defining the constructor which will parse the `Instruction` object and overriding `check(String playerID)` method to check if the player meets the condition. Don't worry about inverting it, as it's automatically done by BetonQuest.

Conditions are always getting an online player in the `check(String playerID)` method, so you don't need to check that manually.

Writing objectives

Objectives are more complicated because they use event handlers and they must store players' data. They extend `Objective` class. As always, you need to extract all data from supplied `Instruction` object in the constructor. Don't register listeners in the constructor!

If your objective handles changing data (like amount of mobs left to kill) you should create a class extending `ObjectiveData`. For example `block` objective does need to store amount of blocks left to place/break, and it does that using "BlockData" class. In the constructor it receives three strings: data string, ID of the player and ID of the objective. The latter two are used by BetonQuest to correctly save and load the former one from the database.

The data string should contains all the information you need in your objective. You must write a parser which will extract the information, methods used in the objective to alter the information, and override the `toString()` method in so it returns data string in the format parsable by your parser. Everytime the data in your object changes (like when killing a mob), you need to call

`update()` method. It will save the data to the database.

Now you should override `getDefaultDataInstruction()` method. It must return the default data instruction understandable by your parser. For example in `tame` objective it will return the amount of mobs to tame. If you don't use data objects, just return an empty string (not `null`, just `""`).

In order for your objective to use the data object you have created you need to set the `template` variable to this object's class. If you're not defining the data object (because you don't need to handle the changing data), you should set the `template` simply to `ObjectiveData.class`.

Every time your objective accepts the player's action (for example killing the right mob in `MobKill` objective) it must be also verified with `checkConditions()` method. You don't want your objective ignoring all conditions, right? When you decide that the objective is completed you should call `completeObjective()` method. It will fire all events for you, so you don't have to do this manually.

`start()` and `stop()` methods must start objective's listeners and stop them accordingly. It's because the plugin turns the objective's listeners off if there are no players having it active. Here usually you will register/unregister listeners, but some objectives may be different. For example `delay` objective starts and cancels a runnable, instead of using listeners.

If your objective has some properties (used in variables) you should override the `String getProperty(String property, String playerID)` method. At runtime, if anyone uses `%objective.yourObjective.theProperty%` variable, `BetonQuest` will call that method with `theProperty` keyword as the first argument. Using it you should parse the data of the objective and return it as a `String`. If the supplied property name is incorrect or there was an error during getting the value, return an empty `String` and optionally log an error (`Debug.error(String message)`).

Objectives are registered the same way as conditions and events, using `registerObjective(String name, Class<? extends Objective>)` method.

Reading Instruction object

The `Instruction` object parses the instruction string defined by the user and splits it into arguments. You can ask it for required arguments one by one with `next()` method or a parser method like `getQuestItem()`. Required arguments are the ones specified at the very beginning of an instruction string, for example `add someTag` in `tag` event. It will automatically throw `InstructionParseException` for you if it encounters an error, for example when there were no more arguments in user's instruction or it can't parse the argument to the type you asked for.

You can also ask for optional arguments: if the instruction string contains argument `arg:something` and you ask for optional `arg`, it will give you `something`. If there is no

optional argument, it will return `null` . Don't worry about passing that `null` to parser methods like `getLocation(String)` , they won't throw an error, they'll simply return that `null` .

Parser methods are there for your convenience. You could write a location parser for yourself, but there's no need for that, you can just use `getLocation()` or `getLocation(String)` method and receive `LocationData` object. The former method is simply `getLocation(next())` .

If your instruction is more complicated and `Instruction` class doesn't provide necessary methods, you can still parse the instruction string manually. You can get it with `getInstruction()` method. Just remember to throw `InstructionParseException` when the instruction supplied by the user is incorrect. BetonQuest will catch them and display a message in the console.

Writing variables

All variables need to extend `Variable` class. In the constructor you must parse the instruction and extract all information about your variable's behavior. Then you have to override the `String getValue(String playerID)` method. It should return the value of the variable for the supplied player. If it's impossible, it should return an empty String. Registering variables is done via

```
BetonQuest.registerVariable(String name, Class<? extends Variable> variab  
method.
```

Firing events

The plugin has a static method for firing events -

```
event(String playerID, EventID eventID)
```

 . First parameter is ID of the player. Second one represents ID of the event. To get it, simply create an instance of the `EventID` class. You can't fire an event directly using an instruction string.

Checking conditions

BetonQuest has static boolean method

```
condition(String playerID, String conditionID)
```

 . It works similarly as `event` method described above.

Starting objectives

The `newObjective(String playerID, String objectiveID)` method will launch the objective from start. You can however use

```
resumeObjective(String playerID, String objectiveID, String instruction)
```

 to pass your own `ObjectiveData` instruction to the objective. It will not be saved to the database, because it is assumed that the objective has just been loaded from it and it exists there

without any change. You should save it manually.

Creating additional conversation input/output methods

In order to register an object as the conversation input/output it needs to implement

`ConversationIO` interface. The constructor will receive three arguments: Conversation object, playerID String and NPC name String. It needs to parse the required data here and register all needed listeners. The `setResponse(String response)` method will receive NPC's text from the conversation. The `addOption(String option)` method will be called by the conversation for each reply option for this NPC text. The object must store all this data and when `display()` is called, it must use it to display the player the output. When it detects that the player chose an answer, it should pass it to the conversation using

`Conversation.passPlayerAnswer(int number)` method. The integer is the number of the answer, starting at 1. `clear()` method will be called at the beginning of the new conversation cycle. It should clear all the previous options, so they do not overlap. `end()` method will be called when the conversation ends and it should unregister all listeners. You can also call that message when you detect that the player forced conversation ending (for example by moving away from the NPC). Remember to notify the conversation about that using `Conversation.end()`.

Registering the conversation inputs/outputs is done in the same way as objectives, events and conditions, through

`BetonQuest.registerConversationIO(String name, Class<? extends Conversati`
method.

Listening to BetonQuest (Bukkit) events

BetonQuest calls Bukkit events on a few occasions: when a conversation is started, finished and when an option is selected. You can find these events in `pl.betoncraft.betonquest.api` package and use them in your plugins. If you need any additional events just open an issue on GitHub or send me a pull request.

Debugging

You can debug your code using Debug class.

Contributing

Do you like my work here? There are some ways you can help to make this plugin even better:

New ideas

Need something? Or just have a brilliant idea? Head to the [Issues](#) and create new one. Just remember to start the title with uppercase letter or I will edit it!

Bug reports

Found a bug? Great, create new [issue](#) so I can fix it in the next version!

Translations

I love to see this plugin used by people from other countries. I would be happy if you could translate it to your language and share the translation with me. You can send me the edited *messages.yml* file or submit a pull request.

Contributing code

If you know Java and Bukkit you can take some issue and create pull request. Just let me know and remember these few things:

- The contributed code should be well tested and fully working.
- Use only spaces for indentation.
- Wrap your code at 120th character.
- Comment everything so the code is easy to understand for everyone.
- Use block comments to document classes, methods and fields.

Positive feedback

I really like to hear that people are using my plugin. If you've got a server and have made a few quests just let me know so I can check it out ^^

Donations

If you have some spare money and REALLY like this plugin you can donate [here](#). This project however is not dependent on donations, so it's really optional :)