

# BaseIO

A library mod for many UWM mods

- Util Classes
  - Packet filtering
  - CommandSenderUtils
  - CommunicationUtils
  - Simple ItemStack creation
  - DataUtils
  - PlayerUtils
- Main Features
  - Player Storage
  - Simple Commands
  - Localization
- Background Features

# Util Classes

# Packet filtering

BaseIONetworkManager contains two fields: sendFilters and receiveFilters. You can filter packets just by adding your own filter to these filter sets. A filter is defined as `BiPredicate<Packet, NetworkManager>`. If the BiPredicate returns true the packet will be filtered and consequently no further processed. **For performance purposes you should always check for the correct packet type first.**

The `NetworkManager` instance is provided on purpose:

You can get Player connection information with

`((InetSocketAddress)net.channel().remoteAddress()).getAddress().getHostAddress()` (here: player's IP).

You can get the player object with

`((NetHandlerPlayServer)net.getNetHandler()).playerEntity`.

Keep in mind that depending on your packet you have other `INetHandler`s than `NetHandlerPlayServer`.

Example:

```
BaseIONetworkManager.receiveFilters.add((packet, networkManager) -> {
    if (packet instanceof CPacketLoginStart) {
        CPacketLoginStart packet = (CPacketLoginStart) p;
        GameProfile player = packet.getProfile();
        Logger.info("GameProfile " + player.toString() + " tries to connect");
    }
    return true;
});
```

# CommandSenderUtils

CommandSenderUtils provides methods for differentiating different `ICommandSender`s. You can differentiate between

- The console: `isConsole(sender)`
- Players `isPlayer(sender)`
- FakePlayers `isFakePlayer(sender)`
- Operators `isCommandSenderOp(sender)`

# CommunicationUtils

`CommunicationUtils` groups functions for communicating with users.

## Click events

This feature allows localized strings

Since 1.8 Minecraft provides the possibility to click on custom elements in chat. The method `clickEvent(sender, msg, options...)` gives this feature to the mod.

As this feature is being reworked, just a quick look-over:  
Currently this command creates a simple choice list. Example:

```
clickEvent(sender, "Stop server?", new Pair<>(" [Yes]", ()-> System.exit(0)), new Pair<>(" [No]", ()->
MessageUtils.messageToSender(sender, "Okay.")))
```

Player chat:

Stop server? [Yes] [No]

## Inventory Menus

`InventoryMenu` provides a system to create menus based on the ability to click on chest slots.  
`InvMenu.png`

To create your own menu `BaseIO` provides a fast construction method:

```
public InventoryMenu(String title, boolean doBackButton, Pair<ItemStack, TriConsumer<EntityPlayerMP,
InventoryMenu, Object[]>>... items) (same also available with items as an iterator)
```

**title** describes the name of the container (Example: "[Shop] Buy Menu")

**doBackButton** defines whether the first slot in the inventory should be a back button (to a menu before)

**items** is a list (or varargs) of Pairs. The index in the list defines the position of the item. The first element of the Pair is the item that should be displayed at the slot, the second is a method (`TriConsumer`, here implemented with a lambda) that will be called when the player clicks on the slot. The custom ItemStack creation helps creating the `ItemStack`.

An example constructor would be (Java 8):

```
InventoryMenu myMenu = new InventoryMenu("My Menu", false,  
    Pair.create(new DisplayStackGen(Items.APPLE).name("give apple!").gen(), (player, menu, args)->  
player.inventory.addItemStackToInventory(new ItemStack(Items.APPLE))),  
    null,  
    Pair.create(new DisplayStackGen(Blocks.STONE).name("STONE").ench().gen(), null)  
)
```

As you can see the menu creation is pretty simple.

This example would create a menu with an apple in the first slot and a stone in the third slot. If you click on the apple the server will give you an apple. The stone has no interaction.

## Value input

When the user is in an InventoryMenu it is not possible to make an input via chat. You should use AnvilEdit instead.

AnvilEdit opens an anvil GUI

# Simple ItemStack creation

`DisplayStackGen` is a simple util class that is able to generate your own `ItemStack` in one line.

To create a new `ItemStack` with this class just create a new `DisplayStackGen` object, configure it and at the end call `.gen()`, witch creates the `ItemStack`. Examples:

```
new DisplayStackGen().gen(); // RuntimeException, you forgot to define an item.  
new DisplayStackGen().item(Items.APPLE).gen(); // An apple.  
new DisplayStackGen().block(Blocks.STONE).gen(); // A stone.  
new DisplayStackGen(Blocks.STONE).gen(); // Same as above, works for both blocks and items.  
new DisplayStackGen(Items.APPLE).ench().count(2).name("APPLE").tooltip("not android").gen(); // Two shiny apple
```

## Methods

<code>item(Item)</code>	set the displayed item
<code>block(Block)</code>	set the displayed item corresponding to the block
<code>ench()</code>	set the item glowing (enchanted)
<code>name(String)</code>	set the name of the item. Color codes accepted
<code>tooltip(String...)</code>	set the item tooltip. Multiple strings are allowed for multiple lines for the tooltip
<code>count(int)</code>	set the item count displayed
<code>damage(int)</code>	set the item damage (metadata)

# DataUtils

DataUtils is a class designed to load and save all data from or to a file (e.g. [PlayerIO](#) is based on it) and is frankly just a wrapper for Google's gson project, adding some Minecraft-related type adapters.

## Simple setup

### Loading

### Saving

In the most simple way you save your object by just calling `DataUtils.saveData(Object obj, Type objType, String filename)`.

ObjType has to be the type of the object to save. If your object has no generics you can simply use your objects class, otherwise I recommend using `new TypeToken<your object>(){}.getType()`. The filename is a string that will be handed over to a `java.io.File` constructor. If the filename has no extension `.json` will be used as default.

#### Example:

```
List<String> list = new ArrayList<>();
Type listType = new TypeToken<List<String>>(){}.getType();

// DataUtils.saveData(list, List.class, "testfile"); // WRONG - only use for objects without generics

DataUtils.saveData(list, listType, "testfile"); // CORRECT - will be saved to ./testfile.json
```

## Adding your own TypeAdapters

If you want to save a class that can't be serialized (e.g. abstract classes) like a normal object (just fields) you have to write a TypeAdapter for it. You should inform yourself how to do that, here's a simple TypeAdapter:



```

public class UUIDTypeAdapter extends TypeAdapter<UUID> {
    @Override
    public void write(JsonWriter out, UUID value) throws IOException {
        out.value(value.toString() + " (" + Utils.orDefault(PlayerUtils.getName(value), "unknown") + ')');
    }

    @Override
    public UUID read(JsonReader in) throws IOException {
        return UUID.fromString(in.nextString().replaceFirst(" \\.+\\",
            "").replaceFirst("(\\w{8})(\\w{4})(\\w{4})(\\w{4})(\\w{12})", "$1-$2-$3-$4-$5"));
    }
}

```

To use this TypeAdapter in conjunction with DataUtils you can use

`DataUtils.with(Collections.singletonMap(UUID.class, new UUIDTypeAdapter()))`. This returns you a DataUtils instance with additionally registered UUIDTypeAdapter. `DataUtils.with` accepts a Map with the Type as key and either TypeAdapter or TypeAdapterFactory (Also all other type adapters gson is supporting).

For easy mapping of multiple type adapters you can use `Utils.map(key, value, key, value, ...)`

# PlayerUtils

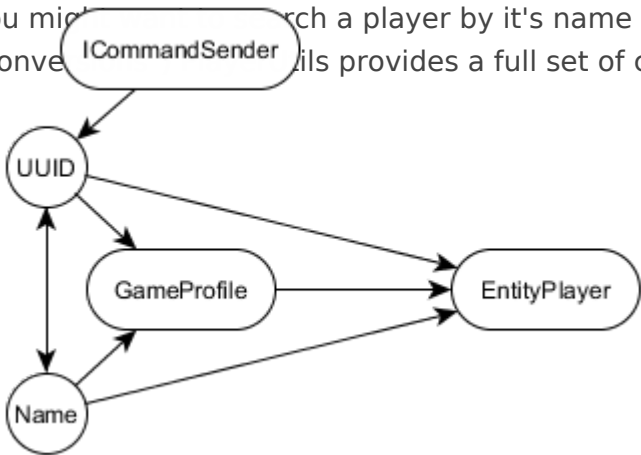
## Player Teleportation

In version 1.10 BaseIO contains multiple teleport implementations. If you encounter issues regarding teleportations, try switching the implementation in BaseIO's config file

`PlayerUtils.teleportPlayerUnsafe(EntityPlayerMP player, Position position)` teleports a player to the specified position forcibly. If you want to be sure the player doesn't teleport into blocks, use `PlayerUtils.teleportPlayer(EntityPlayerMP player, Position position, boolean noisy)`. When the destination is an unsafe block this method won't teleport the player, returning false and (with noisy = true) printing a message to the player specifying the problem. For convenience teleportPlayer is overloaded with a ICommandSender instead of EntityPlayerMP (other senders than EntityPlayerMP will be discarded).

## Identifier conversion

You might want to search a player by it's name quite often. For such cases (and many more "conversion" cases) PlayerUtils provides a full set of conversion methods:



↓ From   To →	UUID	Name	GameProfile	EntityPlayer	ICommandSender
UUID		PlayerUtils:getName	PlayerUtils:getGameProfile	PlayerUtils:getPlayer	PlayerUtils:getPlayer
Name	PlayerUtils:getUUID		PlayerUtils:getGameProfile	PlayerUtils:getPlayer	PlayerUtils:getPlayer

<b>GameProfile</b>	GameProfile:getId	GameProfile:getName		PlayerUtils:getPlayer	PlayerUtils:getPlayer
<b>EntityPlayer</b>	EntityPlayer:getId	ICommandSender:getName	EntityPlayer:getName		typecast
<b> ICommandSender</b>	PlayerUtils:getId	ICommandSender:getName	(only via typecast)	typecast	

If no player is found `null` will be returned.

In 1.7, ICommandSender:getName was named ICommandSender:getCommandSenderName

PlayerUtils is capable to convert **any** ICommandSender to an UUID, including console and command blocks. This UUID might not be a valid UUID of Minecraft but it can be used to identify it and additionally PlayerUtils:getName supports these UUIDs. Every Command Sender of one class has the same UUID.

## Ranges

All conversion methods have a range parameter that determines how broad the search should be.

Range	Inclusion	Full search area
ONLINE	Includes online players	online players
FAKE	Includes fake players	online (fake)players
SERVER	Includes offline players	online/offline (fake)players
ALL	Includes players that have never been on the server	all minecraft players

# Main Features

# Player Storage

BaseIO provides an easy way to store data for the players. To use this feature just create a new class extending `com.unitedworldminers.BaseIO.storage.PlayerStorage`. This will be your storage class. Every player will have an instance of this class. You have to implement `void onNewUser()`, this method will be called everytime BaseIO has to create a new user. With `getUUID()` you can always retrieve the players UUID. `onNewUser` allows to throw a `NewInstanceException` when you don't want to create a storage for that user. But be warned, when retrieving userdata you will have to check for *null* storages.

BaseIO saves your storage based on your modID! Changing the modID will result in data loss!

The data itself on the other hand won't be deleted. You can try to modify the storage for that, but there will be no support for this.

To now save some values you just create your fields in your storage class. Every field in that class will be stored, if you don't want this you can give the `transient` attribute to that field.

An example storage might be:

```
public class MyStorage extends PlayerStorage {
    boolean aBool;
    String aString;
    transient String bString;

    @Override
    protected void onNewUser() throws NewInstanceException {
        aString = "UUID: " + getUUID();
        bString = "This value won't be saved";
    }
}
```

To get a player's storage instance you just use one of the methods of the `PlayerIO` class.

- `get(String modID, UUID uuid)` is the fastest way to get your storage. *ModID* is the id you defined in your `@Mod` annotation. Use this method for cases running multiple times per second (e.g. tick events).

- `get(UUID uuid)` will retrieve your modID automatically, which is more expensive. Use this method only for user-input purposes (e.g. in commands).
- `get(String name)` will retrieve the player's UUID by the name and uses the method above next.
- `get(ICommandSender sender)` is a simplified method for general purpose, but only `EntityPlayer` is allowed (*FakePlayer* is a subclass of *EntityPlayer*).

Additionally you can retrieve all storages of a player by calling `ensuredGet(UUID uuid)`.

Additionally you can retrieve all your storages by calling `getAll(Class clazz)` with *clazz* as your storage class.

PlayerIO will save your storage automatically.

To manually save or reload the data, use `PlayerIO.save()` or `PlayerIO.load()`.

An example working with your storage:

```
ICommandSender caller;  
MyStorage storage = PlayerIO.get(caller);  
if (storage.aBool) {  
    storage.bString = "Permission granted.";  
    PlayerIO.save();  
}
```

# Simple Commands

BaseIO simplifies command creation with the class `SimpleCommand`. Instead of implementing `ICommand` you extend `SimpleCommand`.

If you don't like the simplifications made by this feature just override the original method from `ICommand`.

This is what `SimpleCommand` can do for you:

- **Simple command names**

`getCommandName()` and `getCommandAliases()` are combined in `commandNames()` where the first command name is the actual command name and the others are aliases. Example:

- ```
public List<String> commandNames() {  
    //return Collections.singletonList("name1");  
    return Arrays.asList("name1", "name2", "name3");  
}
```

- **localized/default command usage**

Provide a localization key in `commandUsage()` and it will be localized as described in [Localization](#). Provide an invalid or no (*null*) localization key and `SimpleCommand` creates a default command usage for you based on the arguments.

- **redundancy removal**

`isUsernameIndex` and `compareTo` are removed.

- **Options**

You can define command options in `getOptions()`. Options are arguments starting with a hyphen that can be used at any position of the arguments. Additionally options might have arguments attached to themselves. When implemented, `getOptions()` must return a map with the option string as the key and a string array of potential option arguments, the elements describing the option argument at its index. If found, the options will be cut out of the argument array and added to the option set that will be passed to the run method you have to implement in your command.

## Example:

- ```
@Override
public void run(MinecraftServer server, ICommandSender sender, String[] args, Map<String, String[]> option) {
    System.out.println("Args: " + String.join(" ", args));
    for (Map.Entry<String, String[]> option: options.entrySet()) {
        System.out.println("Option " + option.getKey() + ": " + (option.getValue == null ? "null" : String.join(" ",
    }
}

@NotNull
@Override
protected Map<String, String[]> getOptions() {
    //return Utils.mapKeys("opt1", "opt2", "opt3");
    return Utils.map("opt1", new String[]{"oa1", "oa2"}, "opt2", null, "opt3", null);
}
```

If now a player uses the command `/mycommand arg1 arg2 -opt1 A B arg3 -opt3` the output would be:

```
“ Args: arg1 arg2 arg3
   Option opt1: A B
   Option opt3: null
```

## • Tab Completion

Tab completions can be defined by the return string in `tabCompletions()`. The syntax allows highly configurable tab completions:

1. The completions for each argument are separated by a space.
2. The different completions for an argument are separated by a pipe ("|").
3. Conditions for a completion are written in braces directly before it.
4. If you have multiple completions for a condition you can separate them by a comma instead of a pipe.

Conditions are arguments that have to be typed anywhere before the completion. With that you are able to implement completely different tab completions based on the arguments the user used. See the example for usage.

Examples:

- `"comp1|comp2|comp3" =>` The completions "comp1", "comp2" and "comp3" for the first argument  
  
`"compA compB1|compB2 compC" =>`  
"compA" for the first, "compB1" and "compB2" for the second and "compC" for the third argument  
  
`"compA1|compA2 (compA1)compB1,compB2|compB3" =>`  
"compA1" and "compA2" for the first argument, "compB3" for the second argument, "compB1" and "compB2" for the third argument



Variables are available for tab completions. They are defined by a leading "%" and are also customizable. Build-in variables are:

- %d: Dimensions (can be resolved to the dimension id by WorldUtils).
- %p: Players
- %null: No completions (explicitly)

Additionally you can define your own variable by implementing `customTabCompletions`. This method will be called if the tab completion contains an unknown variable and requests a list of completions for this variable. The currently requested variable is found in the parameter `tag` without the leading `%`. Other parameters are the command sender, the currently typed arguments and the completions up to that point (**read-only**).

Example:

```
@Override
protected String tabCompletions() {
    return "compA|%p|%var1";
}

@Override
protected Collection<String> customTabCompletions(String tag, List<String> current, ICommandSender sender,
    if (tag.equals("var1")) {
        return Collections.singletonList("result1");
    }
    return null;
}
```

# Localization

It is highly recommended that you use this feature as it also allows server admins to customize your strings.

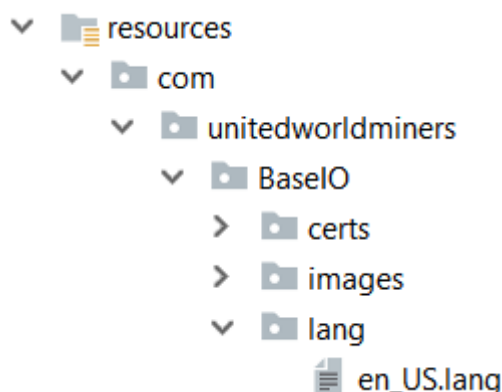
Localization is a feature of MessageUtils.

## Setup

To start working with BaseIO's localization feature just call

`MessageUtils.setupTranslations(langResourcePath)`. For the most basic setup use `null` as parameter and you're done. Now server admins can add translations for your strings as they wish.

If you want to add your own translations to your mod fill `langResourcePath` with a string path pointing to a folder in your mod resources.



For example BaseIO has `MessageUtils.setupTranslations("com/unitedworldminers/BaseIO/lang")`. It is recommended to call this method in your init method ( `FMLInitializationEvent` ).

## Creating localization mappings

The default language file is `en_US.lang`. This file will be used if you aren't providing the correct language.

You can use almost any string as a key, but it's recommended to abstract them.

The mapping files itself are the same as the ones from Minecraft: `<key>=<mapping>`, an example file can be found on the right sidebar. This files have to be named by the language tag given by

Minecraft and must have the extension `.lang`.

In the mappings you can use arguments following the same format of the java formatter (`String.format`). These arguments can be injected in the method calls using localizations.

If you are a modder you put the files in your resource folder that you pointed at in `setupTranslations`. If you are a server admin you can put the files into `config/lang/<modid>/`.

You can reload the mappings with `/baseio reloadMessages <modid>`.

## Using localizations

Your localizations can be used in

- `MessageUtils.messageToSender()`
- Simplecommand's `commandUsage()`
- Manually: `MessageUtils.getTranslation()`

# Background Features

## Help Fixer

BaseIO contains the fixed /help command from matthewprenger.

[Mod Page](#)

[Source](#)

## Ban Entry Fixer

Minecraft contains a bug/bug/irritating feature that causes a new ban to forget the ban date and replaces it with the ban end date. Problem is that you can't see when the user got banned. BaseIO fixes that.

## Duplicate Command

BaseIO adds support for multiple commands with the same name by adding a duplicate command. If you execute a command with multiple meanings a selector will be displayed so you can choose for the command you want. Additionally your choice will be saved so you don't need to do select everytime.

You can disable this feature in the config located in config/BaseIO.cfg