

MINECRAFT

Craft your World!



Learn to Code with Minecraft
By Joseph Dean

Environment Setup

- Sublime Text Editor is installed
- Java 7 is installed
- Download CraftBukkit (version 1.6.4-R2.0)
- (Windows Only!) BusyBox is installed



Introduction to Command Line

\$ cd – change directory

\$ pwd – print working directory

\$ ls – list files in directory

\$ mkdir – make a new directory

\$ cp – copy file

\$ mv – move file

\$ rm – remove a file

```
joe@casper:~/minecraft-plugins$ cd code
joe@casper:~/minecraft-plugins/code$ pwd
/home/joe/minecraft-plugins/code
joe@casper:~/minecraft-plugins/code$ ls
HelloWorld  mkplugin.sh
joe@casper:~/minecraft-plugins/code$ mkdir TestPlugin
joe@casper:~/minecraft-plugins/code$ ls
HelloWorld  mkplugin.sh  TestPlugin
joe@casper:~/minecraft-plugins/code$ cp mkplugin.sh mkp.sh
joe@casper:~/minecraft-plugins/code$ ls
HelloWorld  mkplugin.sh  mkp.sh  TestPlugin
joe@casper:~/minecraft-plugins/code$ mv mkp.sh TestPlugin/
joe@casper:~/minecraft-plugins/code$ ls TestPlugin/
mkp.sh
joe@casper:~/minecraft-plugins/code$ rm TestPlugin/mkp.sh
joe@casper:~/minecraft-plugins/code$ ls TestPlugin/
joe@casper:~/minecraft-plugins/code$ rm -rf TestPlugin/
joe@casper:~/minecraft-plugins/code$ ls
HelloWorld  mkplugin.sh
joe@casper:~/minecraft-plugins/code$
```



Create Your Server (Part I)

- Go to home directory

```
joe@casper:~$ cd
```

- Make Directory "minecraft-plugins/server"

```
joe@casper:~$ mkdir -p minecraft-plugins/server
```

- Change Directory to "minecraft-plugins/server"

```
joe@casper:~$ cd minecraft-plugins
```

- Move downloaded craftbukkit.jar into folder

```
joe@casper:~/minecraft-plugins/server$ mv ~/Downloads/craftbukkit.jar .
```

* Note: Your craftbukkit.jar file may be in a different folder.

- Download start-minecraft-server.sh

```
~$ wget http://www.simplecupofjoe.com/downloads/start-minecraft-server.sh
```

- Make the downloaded script executable

```
joe@casper:~/minecraft-plugins/server$ chmod +x start-minecraft-server.sh
```

- Start server

```
joe@casper:~/minecraft-plugins/server$ ./start-minecraft-server.sh  
22:37:37 [INFO] Starting minecraft server version 1.6.4  
22:37:59 [INFO] Done (21.228s)! For help, type "help" or "?"
```



Create Your Server (Part II)

```
joe@casper:~$ cd
joe@casper:~$ mkdir -p minecraft-plugins/server
joe@casper:~$ cd minecraft-plugins
joe@casper:~/minecraft-plugins$ ls
server
joe@casper:~/minecraft-plugins$ cd server
joe@casper:~/minecraft-plugins/server$ mv ~/Downloads/craftbukkit.jar .
joe@casper:~/minecraft-plugins/server$ wget http://www.simplecupofjoe.com/downloads/start-minecraft-server.sh
--2014-01-26 22:36:50-- http://www.simplecupofjoe.com/downloads/start-minecraft-server.sh
Resolving www.simplecupofjoe.com (www.simplecupofjoe.com)... 173.255.216.38
Connecting to www.simplecupofjoe.com (www.simplecupofjoe.com)|173.255.216.38|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 111 [application/octet-stream]
Saving to: 'start-minecraft-server.sh'

100%[=====>] 111          --.-K/s   in 0s

2014-01-26 22:36:50 (17.4 MB/s) - 'start-minecraft-server.sh' saved [111/111]

joe@casper:~/minecraft-plugins/server$ ls
craftbukkit.jar  start-minecraft-server.sh
joe@casper:~/minecraft-plugins/server$ chmod +x start-minecraft-server.sh
joe@casper:~/minecraft-plugins/server$ ls -al
total 14972
drwxrwxr-x 2 joe joe      4096 Jan 26 22:36 .
drwxrwxr-x 3 joe joe      4096 Jan 26 22:34 ..
-rw-rw-r-- 1 joe joe 15295007 Jan 26 22:08 craftbukkit.jar
-rwxrwxr-x 1 joe joe      111 Jan 26 22:25 start-minecraft-server.sh
joe@casper:~/minecraft-plugins/server$ ./start-minecraft-server.sh
22:37:37 [INFO] Starting minecraft server version 1.6.4
22:37:59 [INFO] Done (21.228s)! For help, type "help" or "?"
>
```



Got Git?

- Download and install git
<http://git-scm.com/book/en/Getting-Started-Installing-Git>
- Signup for a GitHub Account at github.com (not required but, nice to have)

```
joe@casper:~$ git --version
git --version
git version 1.8.1.2
joe@casper:~$ git clone https://github.com/joedean/minecraft-plugins.git
git clone https://github.com/joedean/minecraft-plugins.git
Cloning into 'minecraft-plugins'...
remote: Counting objects: 9, done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 9 (delta 0), reused 6 (delta 0)
Unpacking objects: 100% (9/9), done.
joe@casper:~$ cd minecraft-plugins/server/
cd minecraft-plugins/server/
joe@casper:~/minecraft-plugins/server$ ls
ls
start-minecraft-server.sh
joe@casper:~/minecraft-plugins/server$ mv ~/Downloads/craftbukkit.jar .
mv ~/Downloads/craftbukkit.jar .
joe@casper:~/minecraft-plugins/server$ ./start-minecraft-server.sh
./start-minecraft-server.sh
23:09:52 [INFO] Starting minecraft server version 1.6.4
23:10:15 [INFO] Done (22.017s)! For help, type "help" or "?"
>
```



Server Commands

- Give op to your user (Server operator)

```
>op Daford  
op Daford  
23:38:45 [INFO] CONSOLE: Opped Daford
```

- Put server into creative mode
 - survival = 0 (default)
 - creative = 1
 - adventure = 2

```
>gamemode 1 Daford  
gamemode 1 Daford  
23:43:03 [INFO] CONSOLE: Set Daford's game mode to CREATIVE mode
```

- Stop server

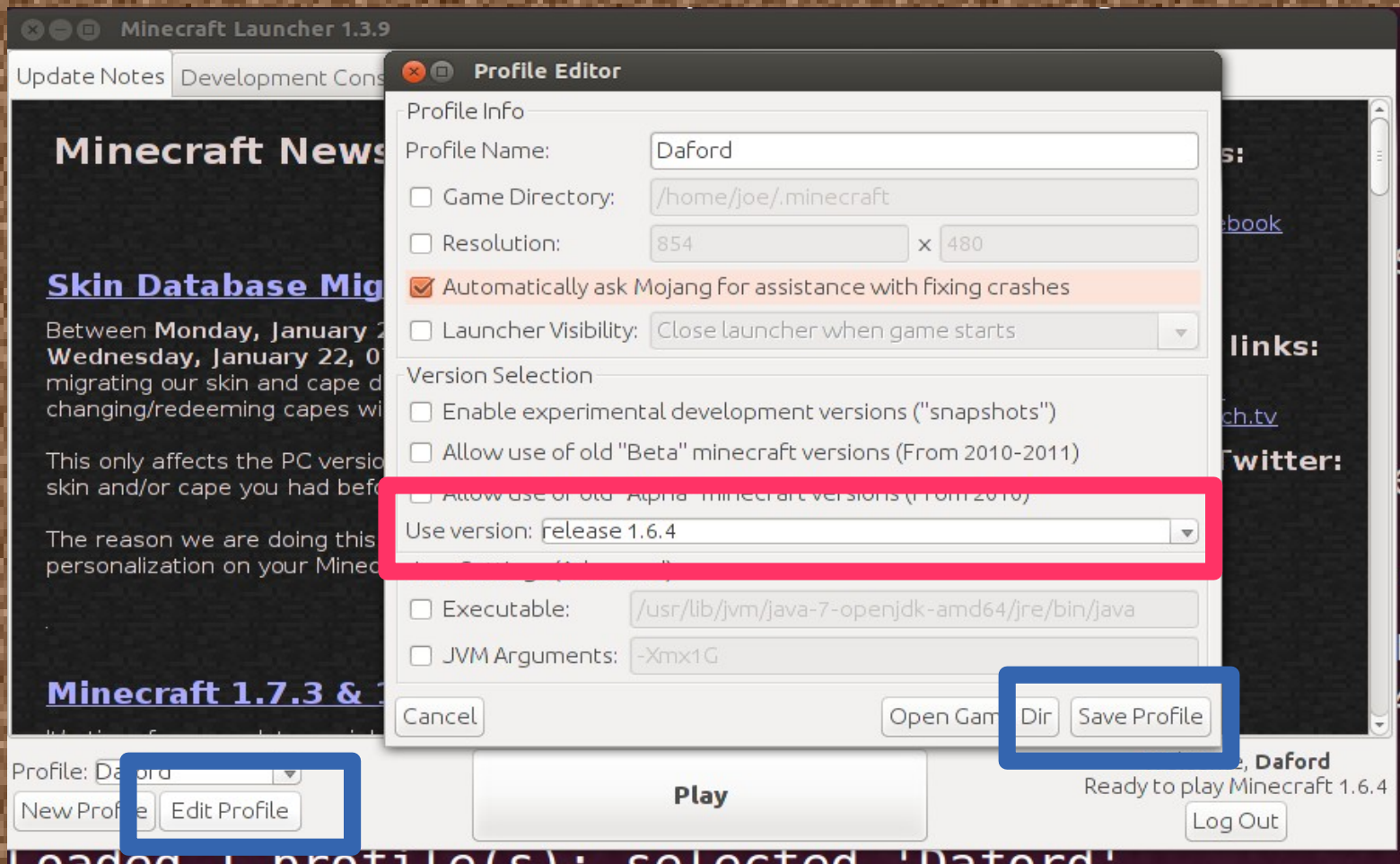
```
>stop  
stop  
23:43:25 [INFO] CONSOLE: Stopping the server..
```

- Refer to this site for more server commands
http://wiki.bukkit.org/CraftBukkit_commands



Connect Client to Server (Part I)

- Set Client to use version: release 1.6.4



Connect Client to Server (Part II)

- Select Multiplayer
- Click “Add Server”
- Server Name “My Server”
(or any name you want)
- Server Address: localhost
(or your IP Address
or your friends IP address)
- Select newly created server and click “Join Server”



Finite State Machines

- Let's have fun with our new server's and learn about “Finite State Machines”
- **Finite State Machine** = An abstract machine that can be in one or a finite number of states. The Machine is in only one state at at time.
 - **Current state** = The state that the machine is in at any given time
 - **Transition** = Changes from one state to another when initiated by a triggering event or condition.



Finite State Machines



MINECRAFT

Plugin Setup

```
joe@casper:~/minecraft-plugins$ ls
ls
README.md  server
joe@casper:~/minecraft-plugins$ mkdir code
mkdir code
joe@casper:~/minecraft-plugins$ cd code
cd code
joe@casper:~/minecraft-plugins/code$ wget http://www.simplecupofjoe.com/downloads/mkplugin.sh
wget http://www.simplecupofjoe.com/downloads/mkplugin.sh
--2014-01-26 23:58:25-- http://www.simplecupofjoe.com/downloads/mkplugin.sh
Resolving www.simplecupofjoe.com (www.simplecupofjoe.com)... 173.255.216.38
Connecting to www.simplecupofjoe.com (www.simplecupofjoe.com)|173.255.216.38|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2511 (2.5K) [application/octet-stream]
Saving to: 'mkplugin.sh'

100%[=====] 2,511      --.-K/s   in 0.001s

2014-01-26 23:58:25 (2.27 MB/s) - 'mkplugin.sh' saved [2511/2511]

joe@casper:~/minecraft-plugins/code$ ls
ls
mkplugin.sh
joe@casper:~/minecraft-plugins/code$ chmod +x mkplugin.sh
chmod +x mkplugin.sh
joe@casper:~/minecraft-plugins/code$ ls
ls
mkplugin.sh
joe@casper:~/minecraft-plugins/code$ ./mkplugin.sh HelloWorld
./mkplugin.sh HelloWorld
joe@casper:~/minecraft-plugins/code$ ls
ls
HelloWorld  mkplugin.sh
joe@casper:~/minecraft-plugins/code$ cd HelloWorld/
cd HelloWorld/
joe@casper:~/minecraft-plugins/code/HelloWorld$ ls
ls
bin  build.sh  dist  plugin.yml  src
joe@casper:~/minecraft-plugins/code/HelloWorld$
```



Creating your First Plugin

```
1 package helloworld;
2
3 import java.util.logging.Logger;
4 import org.bukkit.command.Command;
5 import org.bukkit.command.CommandSender;
6 import org.bukkit.entity.Player;
7 import org.bukkit.plugin.Plugin;
8 import org.bukkit.plugin.java.JavaPlugin;
9
10 public class HelloWorld extends JavaPlugin {
11     public static Logger log = Logger.getLogger("Minecraft");
12     public void onEnable() {
13         log.info("[HelloWorld] Start up.");
14     }
15     public void onReload() {
16         log.info("[HelloWorld] Server reloaded.");
17     }
18     public void onDisable() {
19         log.info("[HelloWorld] Server stopping.");
20     }
21
22     public boolean onCommand(CommandSender sender, Command command,
23                             String commandLabel, String[] args) {
24         if (commandLabel.equalsIgnoreCase("helloworld")) {
25             if (sender instanceof Player) {
26                 Player me = (Player)sender;
27                 // Put your code after this line:
28
29                 // ...and finish your code before this line.
30                 return true;
31             }
32         }
33         return false;
34     }
35 }
```

Create package

Imports Classes

Create class

Initialize Logger

Implement onEnable

Implement onReload

Implement onDisabled

Implement onCommand

Validate command label

Add new command
customization code

Return boolean val

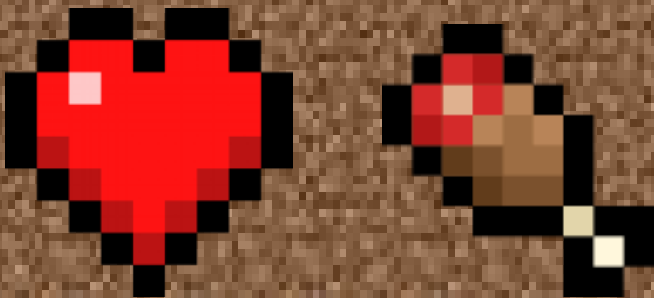




HelloWorld



```
22     public boolean onCommand(CommandSender sender, Command command,  
23                             String commandLabel, String[] args) {  
24         if (commandLabel.equalsIgnoreCase("helloworld")) {  
25             if (sender instanceof Player) {  
26                 Player me = (Player)sender;  
27                 // Put your code after this line:  
28                 String msg = "Hello there!  Let's get ready to code some plugins! ";  
29                 sender.getServer().broadcastMessage(msg);  
30                 // ...and finish your code before this line.  
31                 return true;  
32             }  
33         }  
34         return false;  
35     }
```



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Plugin.yml

```
1  name: HelloWorld
2
3  author: Joe Dean
4
5  main: helloworld.HelloWorld
6
7  commands:
8      helloworld:
9          description: Simple hellow world app.  Type hello and see custom message.
10     helloworld_admin:
11         description: Type hello and see message
12
13  version: 0.1
14
```



Build and Reload Plugin

Build plugin

```
joe@casper:~/minecraft-plugins/code/HelloWorld$ pwd
pwd
/home/joe/minecraft-plugins/code/HelloWorld
joe@casper:~/minecraft-plugins/code/HelloWorld$ ./build.sh
./build.sh
Compiling with javac...
warning: [options] bootstrap class path not set in conjunction with -source 1.6
1 warning
Creating jar file...
Deploying jar to /home/joe/minecraft-plugins/server/plugins...
Completed Successfully.
joe@casper:~/minecraft-plugins/code/HelloWorld$
```

Reload Server

```
>reload
01:48:39 [INFO] [HelloWorld] Disabling HelloWorld v0.1
01:48:39 [INFO] [HelloWorld] Server stopping.
01:48:39 [INFO] [HelloWorld] Loading HelloWorld v0.1
01:48:39 [INFO] [HelloWorld] Enabling HelloWorld v0.1
01:48:39 [INFO] [HelloWorld] Start up.
01:48:39 [INFO] Server permissions file permissions.yml is empty, ignoring it
01:48:39 [INFO] CONSOLE: Reload complete.
```

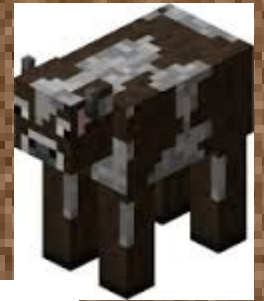


Test Plugin



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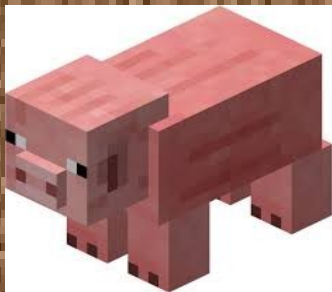
Cowabonga



```
24 public boolean onCommand(CommandSender sender, Command command,  
25                           String commandLabel, String[] args) {  
26     if (commandLabel.equalsIgnoreCase("cowabonga")) {  
27         if (sender instanceof Player) {  
28             Player me = (Player)sender;  
29             // Put your code after this line:  
30             Location location = me.getLocation();  
31             for (int i = 0; i < 10 ; i++) {  
32                 me.getWorld().spawn(location, Cow.class);  
33             }  
34             // ...and finish your code before this line.  
35             return true;  
36         }  
37     }  
38     return false;  
39 }
```



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When Pigs Fly



```
27 public boolean onCommand(CommandSender sender, Command command,
28                           String commandLabel, String[] args) {
29     if (commandLabel.equalsIgnoreCase("pigsfly")) {
30         if (sender instanceof Player) {
31             Player me = (Player)sender;
32             // Put your code after this line:
33             Location location = me.getLocation();
34             location.setY(location.getY() + 5);
35             Bat bat = me.getWorld().spawn(location, Bat.class);
36             Pig pig = me.getWorld().spawn(location, Pig.class);
37             bat.setPassenger(pig);
38             PotionEffect potion = new PotionEffect(
39                                     PotionEffectType.INVISIBILITY,
40                                     Integer.MAX_VALUE,
41                                     1);
42             bat.addPotionEffect(potion);
43             // ...and finish your code before this line.
44             return true;
45         }
46     }
47     return false;
48 }
```



Create your own!

- Have fun creating your own plugin using the “onCommand” method.
- Refer to the documentation for more ideas
 - <http://jd.bukkit.org/rb/apidocs/>
 - <http://jd.bukkit.org/rb/doxygen/>



Show and Tell

