PROPOSAL OF THE DIPLOMA PROJECT

CraftMastery: Tools of Tomorrow

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1. Project proposal and objectives

By including new components like bricks, tools, crafting recipes, this project seeks to improve Minecraft. In addition to bringing new status attributes that are dependent on the materials used, it will completely revamp the current system and procedures for obtaining resources, processing them, and creating tools.

The main objective of this project are:

- aviod radically changing the gameplay style
- to be compatible and able to integrate with other mods
- adding new tools: lumber axe, mining hammer, mining pickaxe
- adding new machinery: generator which work with coal or petrol, extruder, rolling mill, metallurgic press
- adding new equipment: belt, magnet

2. Project description

Mojang created the innovative sandbox game Minecraft, which Microsoft purchased in 2014. It offers players countless creative and adventurous opportunities as they explore, construct, and survive in randomly created environment. With multiple updates, Minecraft has expanded while preserving its essential gameplay, which combines survival, exploration and creativity.

Due to Steve's size (player character) and skill restrictions, the game can be difficult in the original version of Minecraft. For instance, cutting down trees takes a lot of time because each block needs to be broken separately, and Steve's tiny 2x1 frame prevents him from making massive swings or cutting more quickly. Since Steve can only excavate one block at a time, mining can be boring as well. This makes it challenging to build extensive tunnels or locate minerals fast. Building mines is also slow because Steve must continuously chip away at the stone layers, which gets tiring over time because it's a repetitive activity.

I would like to present the lumber-axe, mining hammer and mining pickaxe, which will be acquired through specialized machinery, as solutions to these problems. These tools will be a little more powerful than what players cand make by default, which will speed up and improve the efficiency of operations like mining, tunnelling, and wood chopping. However, to maintain the game's balance, I intend to make sure that players time investment and the strength of these tools are fairly matched, resulting in a more engaging and fulfilling experience.

3. Related work

Mods for Minecraft are collections of Java classes that run alongside the original game and alter the way it works and behaves. They are packaged as .jar files. Anything from simple adjustments to major changes is possible with mods. For instance, GregTech presents a difficult tech tree with complex machineries and multiblock structures, while Mekanism includes sophisticated equipment, automation and energy systems. These kinds of mods give additional tools, techniques, and ways to explore the Minecraft environment greatly extending the gameplay.

Some of the problematic elements I've found are partially addressed by other mods. GregTech, for instance, has a mining hammer but no lumber-axe or mining pickaxe. Mekanism offers electricity-consuming devices like generators, but it doesn't completely address the problems with tools.

I would like to integrate my mod with other mods that are frequently included in most Minecraft mod packs: the Thinkets mod adds new equipment, like items with more slots, which allows for greater customization and utility; the One Probe is helpful for indicating what you are looking at, which provides useful information while playing; and the Roughly Enough Items mod helps players craft and use different items by displaying item information and crafting recipes.

Minecraft Forge is a modding platform that provides a powerful API for developers to create and integrate mods with the base game. By enabling extensive changes to Minecraft's mechanics, makes it perfect for big, complex mods by allowing deep modifications to the Minecraft's system. Playing numerous mods at once is made easier for gamers by Forge's support for mod compatibility.

Minecraft Fabric API was created to improve speed and enable rapid changes following new Minecraft releases. With less overhead than Forge, Fabric is the best option for developers looking for a quicker and easier approach to make mods. It is superior at enabling smaller mods to swifty adjust to new game version but having less built-in functionality.

Fabric will be used in my project since it offers quicker upgrades upon the release of new versions of Minecraft. This guarantees compatibility and seamless integration by enabling me to keep my mod updated with the newest features and improvements in the game. Because Fabric is lightweight, it is also simpler to create and maintain the mod without the extra effort of a more complex framework like Forge.

A popular 3D modeling program for making unique models, textures, and animations for resource packs and mods for Minecraft is Blockbench. With its user-friendly interface for creating entities, blocks, and items that can be instantly added to Minecraft, it is ideal for begginers.

A popular pixel art and animation program for making sprites, textures, and animated elements for video games like Minecraft is called Aseprite. It is perfect for producing intricate textures for resource packs or mods since it offers a set of tools made especially for pixel graphics, such as color palettes, layers, and frame-by-frame animation.

4. Resources

The developing process requires the following resources:

a) Working copy of the Minecraft game
b) Copy of the Fabric API
c) IntelliJ IDE
d) Asprite
e) Blockbench
f) Laptop or PC with a least 4GB of RAM

5. Expected results

Implementing these changes and integrations is expected to yield several positive results:

- enjoyable game with the addition of new tools and machinery
- allow players to focus on exploration and creativity by reduce the time for mining or chopping trees (also known as griding for resources)
- a .jar file containing classes and methods that add the three tools (lumber axe, mining hammer, mining pickaxe), the new equipment (belt, magnet), and the new machinery (generator, extruder, rolling mill, metallurgic press)

6. Project timeline

Week	Research	Implementation	Writing
1-5	Bibliographic Study		
6	Software Obfuscation		
7		Setup necessary software	
8		Setup Fabric API	
9			
10-13		Add necessary equipment	
14-17		Add necessary blocks	
18-19		Add the machines	Introduction
20-21		Test current iteration	Bibliographic study
22-23		Add the tools	Analysis & design
24-25		Test second iteration	Implementation
26		Performance test	Evaluation report
27		Setup demo	Tests & conclusions
28-29		Setup demo	Improve documentation

7. Preliminary "Table of contents"