Final Fantasy XIV (Patch 5.1) Crafting Simulator
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1. Abstract

1.1. Project Purpose
A tool to simulate crafting in Final Fantasy XIV (Patch 5.1).

1.2. Background/Motivation
I'm a player of Final Fantasy XIV (an online game). The game has an interesting crafting system which various projects have been developed to simulate. Most notably are:

https://ffxivteamcraft.com/simulator/custom

https://ffxiv-beta.lokyst.net/#/simulator

In the upcoming patch (5.1), major changes will be applied to crafting system in game (mainly the add /removal / remake of various crafting actions), so all major crafting simulators need to update accordingly. I want to build a crafting simulator that covers upcoming changes to

1. Learn how the simulator works, so that one day I can contribute to open sourced crafting simulator projects like teamcraft.

2. Learn how to interact with the game data (there's a popular api https://xivapi.com/ developed by players) so I might build other projects besides the crafting simulator.

3. Do something cool \o

The theory support of my simulator mainly comes from the following post, which explains the backend logic of crafting (it is written in Chinese):
https://nga.178.com/read.php?tid=18839082

2. Technical Specifications

2.1. **Platform:** Website / Java application

2.2. **Programming Languages:** Java

2.3. **Stylistic Conventions:**

2.4. **SDK:**

2.5. **IDE:** Intellij

2.6. **Tools/Interfaces:** Maven

2.7. **Target Audience:** myself, other players

3. Functional Specifications

3.1. **Features**

- User can search for the requirement of all crafting recipes in the game

- User can perform (a sequence of) any crafting actions and see the result in the simulator. The simulated result should reflect in game result.

- User can make macro (i.e. a fixed sequence of crafting actions) in the simulator and test the success rate of the macro by running it many times.

3.2. **Scope of project**

- The mechanism behind some of the new crafting actions might be unknown through out the development of the simulator.

4. Timeline:

4.1. Week 1

Simulator Logic

- Learn how other simulators work
- Learn to use https://xivapi.com/ to retrieve data at runtime
- Describe crafting actions programmatically
- Describe crafting recipes programmatically
- Describe the crafting process (including random condition) programmatically
- Simulate crafting process with implemented actions and recipes
- User can redo / undo crafting actions
- User can create macro to record a fixed sequence of crafting actions

4.2. Week 2

Web application (Java Server Page)

- Use Maven, JSP to build a web application
- Deploy simulator online, build user interface on the website
- Icons related to actions / items / recipes should be displayed on the website

4.3. Week 3

Crafting material list

- Retrieve information (quantity, acquiring method, spawn timer, etc.) for all the materials used to craft a recipe
- Save the information in an efficient data structure so it can be reused

Web application

- Improve the look of simulator
- Deploy crafting material list to the website.
- Display the related information of an item nicely on the web application, for example https://garlandtools.org/db/#

5. **Future Enhancements**

6. **Functional Rubric**

Week 1 Functional Requirements		
Requirement – Describe crafting actions	4	1.5: An Action class that provides implementation of all crafting actions in game. 2: Provides additional information for all crafting actions besides their mechanic: icon, level of acquiring.
Requirement – Describe recipe	3	1: A Recipe class that provides necessary information for all crafting recipes in game: recipe name, recipe difficulty. 1.5: Provides additional information for all crafting recipes: icon, material list, class restriction, level of acquiring.
Requirement – Describe crafting process	5	2: A Process class that describes a "crafting process" in game: given specified crafter attributes and target recipe, simulate the result of performing a sequence of crafting actions. 2.5: Provide a simple GUI to show the crafting process.
Requirement – Data retrieval	3	1.5: Retrieve actual game data using https://xivapi.com/
Testing Requirements		
Testing – Unit Tests	5	0: no test 1.5: 80% coverage 2.5: 95% coverage
Testing - Manual	5	0: no test 2.5: Manually use the simulator to accurately simulate a recorded crafting process in game.