CSCI 2120:

Software Design & Development II

Homework 1: RPG Item System (API)

Assignment Goal

Create your own RPG Item System. Use Lecture Code as a reference for:

- Effectively use Interfaces/Classes
- Author JavaDoc documents
- Perform JUnit tests

This Item System should contain multiple interfaces, abstract, & concrete classes.

The system should be designed for reusability, flexibility, and robustness.

Note: This Item System may be used as the basis for future homework projects but is not intended to be a game in and of itself.

Learning Objectives

You must perform Object Oriented decision-making for designing your project. You must effectively use Interfaces to design a compelling and deep Item system that is reusable, flexible, and robust. For some, this may be the first time “building” something on your own in Java.

- OOP Inheritance & Polymorphism
- Effective use of Interfaces, Abstract classes, & Concrete classes
- Design by Contract, Programming to the Interface
- JavaDocs to generate an API
- JUnit to Unit Test your Item System

Implementation Advice

Focus on defining interfaces that define behaviors that items may implement to qualify as a member of that defined trait. Here's some tips to make it easier:

- Start by planning out all your interfaces that will represent micro-API.
- Each interface contains only those methods that represent that trait.
  For example, the interface Flammable might have one method burn().
- Classes should implement multiple interfaces
- Use both abstract classes and concrete classes in your design.
- Be creative & experimental!

Resources

You may use Lecture code or Lab code to start!

Showcases & Demos

https://codepen.io/MadLittleMods/pen/vYdrWo

Why Write Your Own Item System?

1. **OOP Design Practice:** Designing complex hierarchical systems forces you to create many different interfaces and classes with a variety of related and divergent elements.

2. **Portfolio project:** Employers and recruiters commonly prefer candidates who have project portfolios to demonstrate their technical capabilities. Passion and creative projects are often good additions.

Item System Inspirations

- Fantasy Item System
- Scifi Item System
- Cooking Item System
- Hint: A crafting or mini-RPG may be a future assignment that expands this.

JUnit Testing

Design a Test Plan for your Item System

You should create a Test Fixture for each class and a Test Case for each class. Make sure your Test plan includes checking routine, challenging, and edge-case instances.

JavaDocs

Full API documentation should be included with your Item System

Your Item System is designed to be used by external client code. The API is your contract as an implementer with clients. Ensure you use JavaDoc documentation to produce the necessary API file.

Grading Rubric

Part 1:	[OOP]	interfaces, abstractions, compositions	[50%]
Part 2:	[API]	documentation, comments	[20%]
Part 3:	[JUnit]	test plan, test coverage	[30%]
Part 4:	[Bonus]	Outstanding Submission;	[0-10%]

Submission

Tools

Java, IntelliJ, JavaDocs, JUnit 5

Submission:

Submit your source code to gitlab or github. Publish your HTML file into a doc folder of your project. To receive a grade, you must schedule a zoom audit with me where you walk-through your codebase.