OBJECT ORIENTED PROGRAMMING PROJECT TOPIC

GROUP PROJECT

Choose one of the topics below. Analyze the requirements of the topic, study the implementation processes and proceed to build a complete system using the Java programming language.

TOPIC 1

Exercise code : OOP.001 *Difficulty: 4/5*

Building a student management system for a university. There are two main types of students that the university manages are credit-based students and part-time students .

For credit-based students, students need to register for courses in their education program to participate in the course. Courses may have prerequisites, which require students to take before they can register for the course. Meanwhile, part- time students must take a pre-determined list of courses for that class. Each course has a midterm and final grade with weights corresponding to that course.

The system must have functions for student management, course registration, input course results for students and validate graduation requirements for students.

Note: Students should familiarize themselves with the registration and administration procedures for both part-time and credit-based students .

TOPIC 2

Exercise code : OOP.002 *Difficulty: 4/5*

Build a SimpleRPG (Role-playing game) .

The player controls one or more characters in a map stored in a data structure similar to the one shown below, where each cell corresponds to a different map type (land, grass, water, etc.). On the map there are monsters that can move.

Player characters and monsters have stats that determine their status and stamina (e.g. HP, MP, Attack, Defense, Speed...). Players can attack monsters and use special skills. Likewise, monsters can also approach and attack players.

Players can move back and forth between different maps (for example when entering areas M0, M1, M2... on the map) or go to the end of the game (for example when entering area END on the map)

Note: Students can develop additional features such as graphics, inventory system, plot system, etc.

M1	1	1	1	2	2	0	0	0	**END**
1	1	1	0	0	0	0	0	0	0
1	3	3	3	0	0	0	0	0	5
1	3	3	3	3	0	0	0	5	5
1	3	3	3	3	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	1	0
0	0	0	0	0	1	0	0	0	1
M0	0	1	1	1	1	0	4	0	1
1	1	1	1	1	1	1	1	1	1

TOPIC 3

Exercise code : OOP .00 3 *Difficulty: 3/5*

Build a exam creation system for teachers. The system is capable of managing a question bank including both multiple choice questions and essay questions. Each essay question has a topic and suggested answers. Each multiple choice question has a topic , answer options and answers for that question. The number of options is unlimited. A multiple choice question can also have multiple correct answers. Each question must belong to a certain subject. Each question can also be assigned a difficulty level, and be in one or more chapters of that subject.

When generating exam, teachers can create exam that can mix multiple-choice and essay questions or have separate essay and multiple-choice sections. Questions are hand-selected or randomly generated based on chapters and difficulty levels pre-selected by the teacher.

Note: Students can develop additional functions such as reversing answers, reversing questions for the same test, generating doc or pdf files...

TOPIC 4

Exercise code : OOP.004 *Difficulty: 5/5*

Build a management system for HUST Book stores .

The store specializes in selling books as well as stationaries and toys. Each type of product has different information. For example; a book must have information about the Publisher, Author, ISBN...; a stationary must have information about the brand, stationary type,...; a toy must have information about the brand, suitable ages, etc. In addition to managing products according to each individual attribute, the manager can also manage products according to quantity as well as purchase price and selling price of the items , manage other costs such as paying salaries to employees and periodic costs of the store .

The system requires payment functions for customers, statistics on revenue, profits over a specific period of time, and other costs incurred.