MINI PROJECTS

General description:

- *Each topic consists of basic requirements, encouraging students to expand and add functions and operations related to the topic.*
- *Build a graphical user interface demo application (GUI), for example: java swing, …*
- *Maximum group size is four (four members per group). Individuals may be able to work by themselves with good reason.*
- *Submission:*
    - *Due: 28/05/2019*
    - *Present your solution design*
    - *Demo your application (demo day 28/05/2019)*
    - *Documentation: printed report*
        - *Problem analysis – Usecase diagram*
        - *Solution design – Sequence diagram, class diagram*
        - *Major Features/Screens - Include short descriptions of each (at least 3 of these)*
        - *Usage - Include any special info we need to run the app (username/passwords, etc.)*
        - *Lessons Learned - What did you learn about mobile development through this process?*
    - *Compress your source files into a ZIP file and send via email to tuannm@soict.hust.edu.vn*
- *Groups may have same mini project topic*
- *The demo application can store data in files or use databases*

TOPIC 1: Simple Bug Manager Application

This application developed in JAVA programming language for software companies. The main aim of the application is to manage the errors or bugs occur during software development phase and cycle. Bugs can be classified into several categories, with general and specific information of each type. The application is capable of storing old bug details and providing record search facility:
- Managing the bugs that occur during development of software and to track the older issues
- It facilitates searching facility to bug history and solution
- It stores the older bug reports so that they can be easily solved when they reappear

TOPIC 2: Simple Hospital Management System

The proposed system will keep a track of Doctors, Patients, and generation of report regarding the present status. This application will help in storing, updating and retrieving the information through GUI:
- Keeping records of admission of patient
- Keeping the appointment of Patient with Doctor (Consultant) to make it convenient for both
- Keeping details about the Doctors, their Prescriptions and treatments, surgery reports etc
- Keeping explicit details about the patient's diseases, diagnosis

TOPIC 3: SIMPLE RPG GAME

The player controls one or more characters in a map stored in a data structure, for example, a two-dimensional array as shown, in which each cell corresponds to a different type of map (soil, grass, Water ...) On the map there are monsters that can be moved.

The player characters and monsters have indicators to determine their status and fitness (eg HP, MP, Attack, Defense, Speed ...). Players can attack monsters and use special skills. Similarly, monsters can also come and attack players.

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

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

- Display map and objects on the map
- Control moving characters
- There are operations to attack monsters.
- Monsters have the ability to attack players.

TOPIC 4: Simple Exam Management System

Develop a system to create exam questions for teachers. The system has the ability to manage a question bank including multiple choice questions and essay questions. Each self-essay question has a topic and suggestions. Each multiple choice question is part of the problem, the options and the answer of that question. The number of options is four. A multiple choice question may also have many correct answers. Each question belongs to a certain subject.

- Managing questions by subject, chapter, difficulty level
- At the beginning of the exam, teachers can create test questions that mix multiple-choice questions and essays or have separate essays and quizzes.
- Questions are selected by hand or randomly generated according to the preceding chapter and teacher difficulty levels.
- Store exam information

TOPIC 5: Simple Store Management System

The store specializes in selling music, movie discs and books. Each type of product has a different information. For example, a music disc has information on singers, music genres ...; movie disc with information of Director, Actor ...; Books with information of Publishers, Authors ...

Managing products by individual properties, managers also have the ability to manage products according to quantity, purchase price and selling price of items, make payment for customers to

purchase.
- Managing products, orders, ...
- Managing customer's payments
- Statistics of revenues and profits according to specific time periods
- Manage other costs

TOPIC 6

Building a simple management system for materials and equipment at a company. For machinery and equipment, the company needs to manage the information such as user units, detailed specifications, cost, current status, supply units, and time of issuance. As for depreciated materials or materials, the company must manage information such as units of use, specifications, quantity provided, quantity remaining, units, cost, supplier, time of grant ...
- Managing material and equipment assets.
- Detailed statistics of assets of each unit
- Consumption statistics of materials and materials according to specific time periods

TOPIC 7

Building a simple farm simulation system.
Simulate a farm with a variety of livestock such as cows, dogs, chickens, ducks, fish ... Every pet has health states like hunger, thirst and these states will change over time. When healthy, these pets will operate on a certain schedule (sleep, play, eat, nap, etc.). When hungry or thirsty, this can affect the animals' schedules. If this situation occurs for a long time, the animal can die. Users can provide food and water for each type of pet.
- Managing and simulating the activity of pets
- Allow users to give arbitrary time information
- Calculate the amount of food needed to maintain the farm.

TOPIC 8

Build a simple encyclopedia dictionary application. To use the application, users can type in a word, the application will display the relevant information. Each word can belong to a certain category.
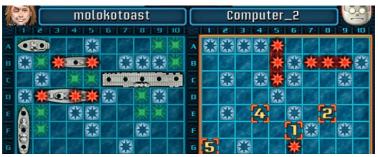For example:
For the words of the National category, the content to be displayed is the national flag, national anthem, population, area, capital, development history ...;
For the company category, the content to be displayed is the logo, general manager, company value, development history ...
- Add new words to the list of available categories
- Each word may have a list of related words
- There is an interface for searching words and displaying information
- Users can mark some favorite words

TOPIC 9

Construction a simple game shooting aircraft or ship:

1. *Allow players to play with the machine.*
    a. *Allows players to choose warships, arrange formation (Each type of warship has different size and value points)*
    b. *Mark the coordinates of the missile shot, hit each shot*
    c. *Save the results of the scores achieved (score and number of players' guesses made) and battle history (player's prediction steps and hit / miss results).*
2. *Game configuration: turn off the sound / music / reset the score*
3. *View score history*

…/…