updated May 2023

ICS 4U1 PROGRAMMING ISP

Write a program in Java. This final project will give you an opportunity to demonstrate an understanding of many of the programming concepts learned throughout the course. ~~You will be expected to follow the stages of the software development process including planning, design, coding, documentation, and debugging.~~ Assessment of this programming project takes into considerations both the process and the product.
★Your choice of program must be approved in the proposal stage before proceeding to code.

PREPARATION AND PLANNING

You need to consider a few things:

1. **Time management.** It is easy to waste time at the beginning in the first week and then not have enough time to finish the program. It is better to get the project done first and then have extra time at the end of the semester. I will be monitoring your use of class time and the progress of your programming.
   DO NOT spend massive amounts of time doing custom pixel graphics for your program. You should be programming rather than doing graphic design.
2. **Complexity.** There are obviously different ways you can program your game. The more complete and complex versions will get better marks, as will more complicated games. For example, a five in a row game for two people is quite simple, but to make an AI for it is much more complicated. A game like PacMan is more complicated than five-in-a-row.

Due Date: In the last week of classes you will be demonstrating your game to the class.
Note that there will be some review for final exam in the last week as well.

- You must complete the proposal and the design phase before starting to type code into the computer.

Proposal

Your proposal must describe what your program will do, be typed and follow the format below

- Program Name
- Problem Definition
- Describe the problem / goal of the program
- Details / Rules (if a game)

Program Planning and Design

- Layout of your main screen (if GUI)
- Input and Output (list of all input/output from user or files to screens)
- Flow Chart, UML(?), pseudocode, … ← a flowchart is really helpful even though it is annoying to make
- List and describe the classes
- How is the data being stored? What objects are you using?
- What are the global (instance or static) variables in your program? (name and contents)
- What are the main methods in each class? List them.
  Write method headers (indicating parameters to be passed and return values)

You have to sit down with the teacher and go over your proposal and planning before your idea for the ISP is approved and you can start coding – even if you are doing one of the recommended programs.

Documentation

You'll have appropriate comments in your code, but you also need to submit two other documents with your final project.

1. A user document explaining how to play the game, what all of the controls are, and what you need to do to win. (You might think that this is obvious, but I've often had to read through the code to find out that the spacebar or 'P' does something special.). *This document can be fairly short if you have a good UI with an intro screen that explains the goal and the controls to the user.*
2. A programmer document for any programmers who want to fix or modify or improve your code. This should explain how the data is stored, any special features (especially things that can't be modified because they'll break something), the program flow and order of events. Some of this will be done in the planning and design phase, but things get modified and the planning might not have anticipated everything that you had to do.

Recommended Programs to do:

1. <u>Top down zombie attack game.</u>
   Enemies track the player and move towards him/her.
   Player has various weapons.
   Add in obstacles (buildings), power ups, images instead of rectangles
   Have the player remain the centre of the screen always.

2. <u>Rush Hour game</u>
   Do it with coloured rectangles first, then add in images if you wish.
   Load in 3 different levels for the user to try (from files)

3. <u>Klotski game</u>
   It's basically a variation of Rush Hour with different sized blocks

4. <u>A card game (maybe)</u>
   I can show you how to read in a spritesheet for card images.
   Examples: Blackjack, Crazy 8s, Memory Game

5. Something else that you're passionate about.
   (Paint program, Battleship, Scrabble, ...)