Computer Science 2A

Practical Assignment X

2016-05-03

Time: Deadline — 2016-05-17 12h00 Marks: 100

This practical assignment must be uploaded to eve.uj.ac.za **before** 2016-05-17 12h00. Late or incorrect submissions **will not be accepted**, and will therefore not be marked. You are **not allowed to collaborate** with any other student.

Good coding practices include a proper coding convention and a good use of JavaDoc comments. Marks will be deducted if these are not present. Every submission **must** include a batch file. See the reminder page for more details.

The Java Development Kit (JDK) has been installed on the laboratory computers along with the Eclipse Integrated Development Environment (IDE).

No extensions will be given!

Late submissions will be capped at 50%.

Utilising your knowledge of Java and all content presented in this course you are required to produce a single player game of your choice. You are allowed to utilise 3rd party libraries for display and/or sound provided they are referenced correctly. **You are not allowed to use 3rd party libraries for game logic! This must be your own work!**

The game must be presented and played using a Java GUI. A customised **`JPanel`** must be used to present the game interface and game elements. The game can be played with either the keyboard and/or mouse. Additionally instructions on how to play the game must be included and be easily accessible.

The game must make use of textual *and* binary files with the data being used in a useful way. Just reading and writing names or scores will not be awarded full marks for the section concerned. For example textual data can be used for level information while binary data can be used for saving and loading a game in progress.

A minimum of *two* design patterns which have been presented in the course is required. The **`Singleton`** design pattern does not count towards the requirement of two design patterns.

Your submission must include a full UML class diagram which shows how all your classes interact. Additionally in the ***docs*** folder you must include 3 screen captures (screen shots) of your game:

1. Screen shot of game start-up.
2. Screen shot of the game being played.
3. Screen shot of the game over screen (win or lose).

The following types of games (including direct derivatives) are not allowed:

- Poker
- Checkers
- Black Jack
- Uno
- Memory
- Matching Pairs
- Tic-Tac-Toe
- Pong
- Tetris
- BattleShips
- 4 in a row
- Dots and Boxes
- Hangman
- Snake
- Pacman
- Space Invaders
- Breakout
- Slide Puzzles
- Asteroids
- Minesweeper
- Chess
- Jigsaw Puzzles
- Any textbook examples

Bonus

Bonus marks are awarded for exceptional quality and fidelity. Usage of images and sounds are allowed provided that the resources are referenced correctly. **No bonus marks will be awarded without properly referenced resources/material.**

Take note that the file size of eve is limited. Make sure all your images, sounds and source code fit into the file size limit on eve. (Reduce the size of your images and sounds if they are too large.)

Mark sheet

1. UML class diagram. (Interfaces/Classes from external libraries are not required) [10]
2. Reading/writing textual data. [05]
3. Reading/writing binary data. [05]
4. Fully featured GUI
   (a) Instruction manual [05]
   (b) Display of game info and game objects. [10]
   (c) User interaction via mouse and/or keyboard [05]
5. Usage of two design patterns (10 marks each) [20]
6. Game logic with a certain level of complexity (i.e. either real-time or turn based with animated elements). [10]
7. Screen captures [05]
8. Packages [05]
9. Coding convention (structure, layout, OO design) [05]
10. Commenting (inline code and JavaDoc commenting). [05]
11. Correct execution. [10]
12. Bonus. [25 (bonus)]

NB

Submissions which **do not compile** will be capped at 40%!

Execution marks are awarded for a correctly functioning application and not for having some related code.

Reminder

Your submission must follow the naming convention as set out in the general learning guide.

`SURNAME_INITIALS_STUDENTNUMBER_SUBJECTCODE_YEAR_PRACTICALNUMBER`

Example

Surname	Berners-Lee
Initials	TJ
Student number	209912345
Module Code	CSC2A10
Current Year	2016
Practical number	PX

`Berners-Lee_TJ_209912345_CSC2A10_2016_PX`

Your submission must include the following folders:

- `bin` - *(Required)* Should be empty at submission but will contain runnable binaries when your submission is compiled.
- `docs` - *(Required)* Contains the batch file to compile your solution, UML diagrams, and any additional documentation files. Do not include generated JavaDoc.
- `src` - *(Required)* Contains all relevant source code. Source code must be places in relevant sub-packages!
- `data` - *(Optional)* Contains all data files needed to run your solution.
- `lib` - *(Optional)* Contains all libraries needed to compile your solution.

NB

Every submission **must** include a batch file. This batch files must contain commands which will compile your Java application source code, compile the associated application JavaDoc and run the application. **Do not** include generated JavaDoc in your submission. All of the classes/methods which were created/updated need to have JavaDoc comments.