EEE101 C Programming and Software Engineering 1 – ASSESSMENT 3

Assessment Number	3
Contribution to Overall Marks	35%
Issue Date	13/11/2017
Submission Deadline	11/12/2017 at 0900 (9am)

Assessment Overview

This assessment aims to test your ability to design a modular program which makes use of files and structures. Application of the software development process (**SDP**) is also under assessment; the five main steps of the software development process are:

1. Problem statement: formulate the problem.
2. Analysis: determine the inputs, outputs, variables, etc
3. Design: define the list of steps (the algorithm) needed to solve the problem.
4. Implementation: the C code has to be submitted as a separate file. Just indicate here the name of the file.
5. Testing: explain how you have tested and verified your C program.

EXERCISE

In undertaking assessment 2 you have developed a two-player game of tic-tac-toe. An entertainment company would now like you to develop a new piece of software which allows users to play tic-tac-toe against the computer, i.e. as a one player game. Users should have an account which will record and save their wins and losses.

There are a number of requirements as described in the following section.

Program Requirements

- Your program should provide users with the ability to create an account. An account should be a structure type variable containing: a username, a password and accumulative numbers of wins and losses.
- All of the accounts should be stored in a data file and accessed by the program.
- Once a user is logged on to the game they should be able to choose:
  (i) To go first or second
  (ii) To play again, or not at the end of each game
- On choosing not to play again the users account information should be updated in the file i.e. number of wins and losses.

Ideas

Note: the following are only to provide you with ideas of how to implement the required functionality. They do not represent the “best” or only ways to implement the functions.

All of the player accounts are structure variables and will be stored in a file. The login process can be achieved using a single structure variable, where each account can be read

from the file into the program one by one, each time checking the username until you find the players account.

Perform the gaming operations using the same structure variable and then when the player finishes write the data back to the file to save.

You can use the random number generator to provide the computer's square choice.

Try to create your own functions to simplify the programming task. Try to use local variables where possible.

What should be submitted?
You should submit the following:

1) A short report (up to a few pages of text plus C source codes) detailing for each question:

   a) SDP steps 1 to 3 in the report (Report + Specification + Analysis + Algorithm Design) (40%)

   b) SDP step 4 (Implementation(35%) + Robustness(10%)): your C source code including the comments. (45%)

   c) SDP step 5 in the report: you will explain your testing methodology including: what you wanted to test, how you have tested it and the outcome of your tests. (15%). Note: screenshots of your testing are useful in demonstrating the operation of your program, however you do not need to include screenshots of **all** test results.

   Please refer to the file "EEE101 Marking Guidelines Assignment 3" on ICE for a detailed marking scheme.

2) The report (in Microsoft Word or pdf format) and C source code should be zipped into a single file, i.e. the zip file will contain 2 files, one document and one source code. (It is good practice to include comments in your code stating the aim of the program, what are the inputs, what are the outputs, which algorithm is used, who is the author and so on.)

The naming of Report (.doc or .pdf), Source Code (.c) and Compressed file (.zip, or .rar)

- StudentID_LastName_FirstName_AssignmentNumber-QuestionNumber.docx or .pdf
- StudentID_ AssignmentNumber-QuestionNumber.c
- StudentID_LastName_FirstName_AssignmentNumber.zip or .rar

For example
- 10115085_Zhang_Hanqing_3.docx
- 10115085_3.c

Zipped together into:
- 10115085_Zhang_Hanqing_3.zip

How the work should be submitted?
Should be submitted electronically through ICE so that the marker can run your programs during marking. Feedback and your grade will also be given through ICE.