

EEE101 – ASSESSMENT 1

Assessment Number	1
Contribution to Overall Marks	5%
Issue Date	Monday, 21st September 2015
Submission Deadline	Monday, 5th October 2015, 09:00

Assessment Overview

This assessment aims at testing some basic concepts of C programming and initiates the routine of code development using the software development process (**SDP**) presented in Lecture 1, namely the five main steps of the software development process:

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.

You will need to apply this methodology to each one of the following simple exercises.

Things to note:

1. Clear comments to make your code easy to be understood.
2. State how you design your testing procedures and what have you observed during the testing.
3. How you solved the problems.

EXERCISE 1 (3 POINTS OUT OF 10)

Write a C program that asks for your full name (e.g. Tom, Owen), followed by your student ID number (e.g. 1234567), then, prints your full name and student ID number in the following format:

Your name is: Tom Owen

Your student ID is: 1234567

EXERCISE 2 (4 POINTS OUT OF 10)

Write a C program to convert a person's height in meters to feet and inches, e.g. 1.8 m = 5 feet 10.866 inches rounded to the nearest 0.5 inch 5 feet 11 inches. Note that the short hand is 5' 11" where ' represents feet and " represents inches

Hints: the relevant conversion formulae are: **1 foot = 12 inches** and **1 inch = 2.54 cm**

EXERCISE 3 (3 POINTS OUT OF 10)

Write a C program to calculate volume of a sphere and its surface area for a user defined radius, given that $\pi=3.14159$.

Hints: The formulae for the volume and surface area of a sphere are: **Volume** $= \frac{4}{3}\pi r^3$ and **Surface Area** $= 4\pi r^2$, r here stands for the radius of the circle.

What should be submitted?

You should submit the followings:

- 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 + Robustness): your C source code including the comments. (40%)
 - c) **SDP** step 5 (testing): you will explain how you have tested the correctness of your C program and will include some sample runs of your C Programs. (20%)

Please refer to the file “EEE101 Marking Guidelines Assignments 1-3” on ICE for a detailed marking scheme.

- 2) The report in Microsoft Word or pdf format and C source code of your implementation for each question should be zipped into a single file, i.e. the zip file will contain 2 files for each assignment question, for 3 questions there will be 6 files. (It is a 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.doc

StudentID_AssignmentNumber-QuestionNumber.c

StudentID_LastName_FirstName_AssignmentNumber.zip

For example

10115085_Zhang_Hanqing_1-1.doc

10115085_1-1.c

10115085_Zhang_Hanqing_1.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.