

Pro-forma to accompany assignment /coursework2020/2021

This pro-forma should be the first page to any set assignment / coursework. A full assignment brief should accompany this pro-forma.

Module Code: **EE 1612** Module Leader: XU ZHANG Assessor: XU ZHANG
Module Title: C Programming

Assessment Title: C Programming Assignment Weighting: 20%

Main objectives of the assessment:

To introduce the students the key issues of C programming, including array, struct and loop, etc.
Learn to design a student management system.
Learn to write a report.

Brief Description of the assessment:

Finish a student transcript management project with multi-function.

Learning outcomes for the assessment:

Demonstrate knowledge and understanding (K)
cognitive (thinking) skills (C) and other skills and attributes (S)

(K) Knowledge and Understanding
Write practical C programs demonstrating knowledge of different data types, functions, flow control, standard input and output library functions, array, pointer and structure;
Design and implement multi-function C program.

(C) Cognitive (thinking) Skills
Understand the question and implement.
Find and correct errors in the process of writing code and reading existed code.

(S) Other Skills and Attributes
Design, compile and debug programs using an integrated development environment.

Assessment and marking criteria

Report(25%)
Source code(25%)
Screen shot(25%)
Flowchart(25%)

Assessment method by which a student can demonstrate learning outcomes:

Problem 1-6 has individual points. Each problem will be assessed with key statement and output.
Write a report, include all source code and output screenshot.

Format for the assessment/coursework (Guidelines on the expected format and length of submission):

Submission is completed via wiseflow system.

The assignment should be submitted in a .doc/.docx or pdf file, all the source code should be included, and output screenshot should be included.

Distribution date to students: 12:00, SAT, 19th Dec. 2020

Submission Deadline: 12:00, TUE, 3rd, Jan. 2021

Indicative Reading List:

Text Book / Standard Library of C

Further information: N/A

C Programming Language

Contribution to module (weighting: 20 %)

1st Semester 2020-2021

Out: SAT. 19th Dec. 2020 Due: SUN. 3rd Jan. 2021

Main objective of the assignment:

Understand C programming and practice to draw a flow chart to describe the problem and coding in C.

You are given a `struct` student, Table-1 and Table-2 as listed below. You are required to finish the assignment with given information.

- Write a report;
- Use a flow chart or another method, demonstrate the data flow;
- Explain how the structure/functions to be used;
- Program in C language;
- Output screenshot for each question;

1. You are required to finish `struct` student class[] = {} using Table-1.

```
struct student
{
    int stuno;
    char fullname[20]
    int age;
    struct transcript;
};
```

Table-1. Students' Record (Given as a file "stu.txt")

stuno	fullname	age
101	Keanu Reeves	21
102	Nicolas Cage	20
103	Tom Cruse	20
104	Susan Boyle	22
105	Mariah Carey	19
106	George Mikan	23
107	Bill Sharman	20

108	Paul Arizin	19
109	Bob Pettit	20
110	Jerry West	21
111	<Your Name>	19

*You are requested to modify the last record with your name, keep stuno and age.

- Sort the records based on student age. You are required to write an appropriate callback function, and output without transcript information on screen.
- Transcript can be accessed from Table-2. First, you need to sort student's records based on their scores. Then, write an appropriate callback function, and output with transcript information on screen.

Table-2. Transcript Information (Given as a file "records.txt")

stuno	cname	score
101	The C Programming	41
101	English	48
102	Math	50
103	Art	43
103	The C Programming	56
104	Math	64
105	The C Programming	71
105	Math	63
105	Database Theory and Appliation	33
106	The C Programming	88
106	Art	78
106	Physics	91
106	Math	65
106	Computer Architecture	82

107	Information Security	86
107	Database Theory and Appliation	48
107	Data Mining	41
108	The C Programming	38
108	Database Theory and Appliation	56
108	Math	58
108	Spatial Database	98
109	Art	63
110	The C Programming	73
110	Math	43
110	Computer Architecture	80
110	Database Theory and Appliation	65
111	The C Programming	95
111	Math	89
111	English	96

4. Calculate the average score of “C Programming” using recursive function. Write the appropriate callback function, and output the average score (AVG) on screen.
5. Output all “C Programming” scores with student information, write the result to a new txt file and name the file with your Brunel id. To achieve this, you need to use strcmp() function to select “C Programming” course. You are required to add a new column as remark(Ordinary Degree(Pass) / Lower-second Class Degree / First Honors Degree). Switch or if statement must be used to get remark information. Specifically,
 - 40-44 indicate “Ordinary Degree(Pass)”;
 - 45-49 indicate “Third Class Degree”;
 - 50-59 indicate “Lower-second Class Degree”;

60-69 indicate “Upper-second Class Degree”
70-100 indicate “First Honors Degree”.

An example is given below:

Stuno	cname	score	remark
101	C Programming	41	Ordinary Degree(Pass)
101	English	48	Third Class Degree
...

6. Write a flow chart for each function.

Remarks:

* Solutions to all questions above need to be included one *.c file. In addition, you are required to define a function for each question. e.g.: main(), Q1functionname(), Q2functionname(), Q3functionname(), Q4functionname() and Q5functionname(). Qxfuctionname() should be given by yourself.

* The output for each question should be done in main() function.

* Do not include any Chinese characters in your assignment.

* You are required to write annotation before each function, and annotation/description for important statements. e.g.:

```
/*
```

```
@function function_name
```

```
@desc describe what is this function used for.
```

```
*/
```

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