



FIRST SEMESTER EXAM

Level : I

Academic year: 2021/2022

February 2022 Session

Specialty : Software Engineering

C LANGUAGE

Duration : 01h30

**Exercise 1: (3 marks)**

Give the interpretation of the following variable declarations or prototypes:

- a) `int (*f1)[20][20];` (0.75 mk)
- b) `double *(*f2())();` (0.75 mk)
- c) `int (*f3)(int, int *t[5][10]);` (0.75 mk)
- d) `int *(*f4)(int, void*)[5];` (0.75 mk)

**Exercise 2: (5 marks)**

What is the output of the following c programs:

- a) `main(){ int x= 16, y=24; x=y++ + x--; y=--y + ++x; printf("%d%d\n",x,y);}` (1 mk)
- b) `main(){ char s1[]="Ramco"; char s2[]="Systems"; s1=s2; printf("%s\n",s1);}` (0.75 mk)
- c) `main(){ int i=1; i = --i + 2*i++; printf("%d\n",i);}` (1 mk)
- d) `main(){ int x=5; while(x==1) { x=x-1; } printf("%d\n",x);}` (0.75 mk)
- e) `#define MAX(x,y) (x)>(y)?(x):(y) main(){int i=5; j=10; k=0; k= MAX(i--,--j); printf("%d%d%d",i,j,k);}` (1.5 mk)

**Exercise 3: (6 marks)**

A valid telegram is composed of words separated by spaces. Each word of a valid telegram has a length less than or equal to 20 characters. A valid telegram ends with the word STOP.

Write a program that:

- a) Reads a telegram ending with the word STOP
- b) Verifies if the length of each word is less than or equal to 20
- c) Counts the number of words in the telegram
- d) Display a message indicating if the telegram is valid (i.e if the length of each word in the telegram is less than or equal to 20) or not
- e) Displays the cost of the telegram by billing each word for 100 francs CFA (the word STOP is also billed)

NB: If the telegram is not valid, a message is displayed to indicate that the telegram is not valid and the price is not calculated in this case.

**Exercise 4: (6 marks)**

Given a data file structured in a series of lines containing each the serial number of an article, the designation, the quantity and the price. For example:

A1Q62 Cement 10 4700

A2Q63 Bucket 20 850

Write a procedure main in which the following variables are declared:

- cSerial and cDesignation : Arrays of 80 characters,
- iQuantity and iPrice: integers.

The body of the procedure will consist of a loop in which each iteration will read a line from the file then display it. The reading will be done through a call to the function `fscanf` while assigning the four fields read from the line to the four variables `cSerial`, `cDesignation`, `iQuantity` and `iPrice`. Displaying will consist of printing `cSerial`, `cDesignation` and the product `iQuantity*iPrice`.

Course Instructor : Mr NDENGE