UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

END OF SEMESTER II EXAMINATIONS

DEPARTMENT	:	**ICT**
YEAR	:	**ONE**
SEMESTER	:	**TWO**
PROGRAM	:	**DIPLOMA IN COMPUTER SCIENCE**
COURSE	:	**STRUCTURED SOFTWARE DEVELOPMENT**
COURSE CODE	:	**CSC1202**
DATE	:	**SATURAY, JULY 6, 2024**
TIME	:	**09:00 AM – 12:00 NOON**
DURATION	:	**3 Hours**

INSTRUCTIONS

- The paper consists of two Sections A and B
- Answer **ALL** questions in Section A and **ANY TWO** questions in Section B
- Credit will be given to relevant examples and illustrations
- Don Not Write anything on this question paper

Section A [Compulsory – 50 Marks]

Question One

You have been presented the C program code below by two individuals who have been studying the language for the last two months. The need clarity in it.

```
1.  /*
2.  Program: Library Management
3.  Author: DCS 1_2_2024
4.  Date: 17th June 2024
5.  */

6.  #include<stdio.h>
7.  #include<conio.h>
8.  #include<stdlib.h>
9.  #include<string.h>


10. void add_book(void);
11. int display_book_info(void);

12. int pages;
13. float price;
14. char bk_name[25], author[25], ar_nm[30], bk_nm[30];

15. int main()
16. {
17. int status = 30;
18. choice = 0;
19. printf("\n\n1. Add book information\n”);
20. printf(“2. Display book information\n");
21. printf("3. Exit");

22. printf ("\n\nEnter one of the above choices: ");
23. scanf("%d" , &choice);


24. switch (choice)
25. {
26. /* Add book */
27. case 1:
28. add_book();
29. break;
```

```
30. /* Display book information */
31. case 2:
32. status = display_book_info();
33. break;

34. case 3:
35. exit(0);
36. break;

37. default:
38. printf(“Not a choice\n Press any key to quit”);
39. getch();
40. exit (-1);
41. }
42. return 0;
43. }

44. void add_book(void)
45. {
46. printf ("Enter book name = ");
47. gets (bk_name);
48. printf ("Enter author name = ");
49. gets(author);
50. printf ("Enter pages = ");
51. scanf ("%d",&pages);
52. printf ("Enter price = ");
53. scanf ("%f",&price);
54. printf(“Book added…”);
55. }

56. int display_book_info(void);
57. {
58. printf("you have entered the following information\n");
59. printf ("book name = %s", bk_name);
60. printf ("\t author name = %s", author);
61. printf ("\t  pages = %d", pages);
62. printf ("\t  price = %f",price)
63. return(0)
64. }
```

a) Study the above C program structured code and explain the **meaning** and **effect** of the following lines in the program:
   i. Lines 1 to 5. (04 Marks)
   ii. Lines 6 to 9 (04 Marks)
   iii. Lines 10 to 11 (06 Marks)
   iv. Lines 12 to 14 (04 Marks)
   v. Lines 15 (03 Marks)
   vi. Lines 17 to 18 (03 Marks)
   vii. Lines 19 to 21 (04 Marks)
   viii. Line 28 and Line 32 (04 Marks)
   ix. Lines 44 to 55 (04 Marks)
   x. Lines 56 to 64 (04 Marks)

b) State any two IDEs that you would employ to develop the program above. (02 Marks)

c) The first step in software development is to understand the problem. Explain what that means. (02 Marks)

d) Generate test data for the program above. (04 Marks)

e) Apart from embedded systems, state any two areas where C is heavily used in development of systems. (02 Marks)

SECTION B [Answer any two questions in this section – 50 Marks]

Question Two

a) You have been given a task to write pseudo-code and generate a program in C to accept a grade and declare the equivalent description:

Grade	**Description**
E	Excellent
V	Very Good
G	Good
A	Average
F	Fail

   i. Write the pseudo-code for the task above. (06 Marks)
   ii. Generate C code from the pseudo-code written. (10 Marks)
   iii. Generate test data from the written code and write how the output will be displayed on the output console. (04 Marks)
   iv. State how output from your code will look like. (05 Marks)

Question Three

You have been requested to show case programming skills to beginners to get them hungry for the journey they are about to start.

a) Write C programs to illustrate the following language constructs. (05 Marks @)

i. Unary operators.
ii. While loop
iii. If – else
iv. Integer arrays
v. Switch – case

Question Four

Syntax is a mandatory skill that programmers must adapt to in all computer programming languages.

a) The C code below has a lot of syntax errors. Re-write it to pass the syntax errors stage such that it can be compiled. (20 Marks)

```
1. */ C program to swap two numbers
2.  without using a third variable/*
3. #include <std.h>
4.
5. \\ ITS code
6. ant man()
7. {
8.     int a, b;
9.     printf("Enter the two numbers : \n");
10.         scan("%d %d", a, b);
11.         print(Before swapping A is : %d and B is %d \n, a,
12.                b);
13.
14.          Swapping without using a third variable
15.          Sum of both numbers is stored in 'a'
16.         a + b = a;
17.          Difference of sum and original 'b' is stored in 'b'
18.          a – b = b;
19.          Difference of sum and new 'b' is stored in 'a'
20.         a – b = a;
21.
22.         print(After swapping A is : %d and B is : %d \n, a,
23.                b);
24.         return a;
25.     }
```

b) There are two other types of error in C programming. State them and discuss how they can be eliminated when they are realized. (05 Marks)

Question Five

You have been ordered to write a journal about your journey in structured software development in C programming language. The assumption is that you have been heavily involved and you took center stage while your lecturer was the guide.

Organize your essay in four paragraphs as follows: (05 Marks @)

- Paragraph 1 – Introduction
- Paragraph 2 – Arguments for the subject
- Paragraph 3 – Arguments against the subject
- Paragraph 4 – Future work
- Paragraph 5 – Conclusion

~~~GOD BLESS YOU ALL~~~