NATIONAL SCHOOL OF BUSINESS MANAGEMENT
BSc in Management Information Systems (Special) (NSBM)– 20.3
BSc (Hons) in Software Engineering (NSBM)– 20.3
BSc (Hons) in Computer Science (NSBM)– 20.3
BSc (Hons) Software Engineering (PU) – 20.3
BSc (Hons) Computer Networks (PU) – 20.3
BSc (Hons) Computer Security (PU) – 20.3
Bachelor of Information Technology (VU)- 20.3

Year 01 Semester 01 Examination
17 May 2021
CS 102.3 - Programming in C Language

Instructions to Candidates

1) **Answer all questions.**
2) Time allocated for the examination is three (03) hours and 30 minutes (Including downloading and uploading time)
3) Weightage of Examination: 60% out of final grade
4) Download the paper, provide answers to the selected questions in a word document.
5) Please upload the document with answers (Answer Script) to the submission link before the submission link expires.
6) Answer script should be uploaded in PDF Format
7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
8) The Naming convention of the answer script – Module Code_Subject name_Index No
9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

Note: It is compulsory to follow the answer format provided on page 2 when answering the questions.

Answer format

You **MUST** use comments as much as possible in the source code to explain the code. Refer to the following sample question and answer before you start answering.

Sample Question: Write a program to input two numbers and display the average.

Sample answer with comments.

```
//Write your index number and name as the first comment in each of the program (as name
//appears in the attendance sheet)
#include <stdio.h>
int main()
{
        //declare the variables
        int no1,no2,total;
        float avg;
        //input values
        printf("Enter two numbers ");
        scanf("%d %d",&no1,&no2);
        //calculate the average
        total=(no1+no2);
        avg=(float) total/2;  // (float) is used for the casting (converting an integer into float)
        //display the output
        printf("The Average is %.2f ", avg);
return 0;
}
```

Answer ALL questions.

1. **(Total= 30 Marks)**

a. Write a C program to input the Celsius value and display the Fahrenheit value.

Fahrenheit Value= Celsius Value * (9/5) +32.

(5 marks)

b. Write a C program to check whether a number is divisible by 5 and 11 or not.

(5 marks)

c. Write a C program (using loops) to display the following output.

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

(10 marks)

d. Write a C language program to input marks of 50 students in a class for a subject and display the COUNT of A, B, C, S, and F grades.

The grades are calculated as follows.

Marks	Grade
>=75	A
65-75	B
55-65	C
45-55	S
<45	F

(10 marks)

2. **(Total= 20 Marks)**

a. Write a C program to find the cube of a number using a function (use no return type, with parameter).

(5 marks)

b. Write C program function, which accepts temperature level in Fahrenheit as a parameter and displays the level of fever. The levels are defined as follows.

Low-grade fever	100 F-101 F
Intermediate grade	102 F
High-grade fever	103 F-104 F.
Dangerous fever	105 F-107 F

(15 marks)

3. Write a C program to declare two single-dimensional arrays with the size of 10 to store whole numbers. **(Total= 30 Marks)**

a. Input Values into the array and displays each of the array values separately in reverse order.

(15 marks)

b. Find and display the maximum value of any of the array and the minimum value of the other array.

(15 marks)

4. Write a C program to declare two multi-dimensional arrays with the size 3 x 3. **(Total= 20 Marks)**

a. Input values into the array and displays the values (in the form of a matrix).

(10 marks)

b. Display the matrix subtraction.

The following image demonstrates the matrix subtraction with sample data.

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} - \begin{bmatrix} 9 & 8 & 7 \\ 6 & 5 & 4 \\ 3 & 2 & 1 \end{bmatrix} = \begin{bmatrix} 1-9 & 2-8 & 3-7 \\ 4-6 & 5-5 & 6-4 \\ 7-3 & 8-2 & 9-1 \end{bmatrix}$$

$$= \begin{bmatrix} -8 & -6 & -4 \\ -2 & 0 & 2 \\ 4 & 6 & 8 \end{bmatrix}$$

(10 marks)

End of Paper