Victoria University

of Bangladesh

Assessment Topic:

Mid Assessment

Course Title: Structure Programming Language

Course Code: CSE-211

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Semester: Fall-2023

Batch: 6th

Submission Date: 17th December 2023

Ans. to the question no-1 (a)

(a)

★ Ans:- "Structured Programming Language" is a programming paradigm that facilities the creation of programs with readable code and reusable components. All modern programming Language support structured programming but the mechanisms of support like the syntax of the programming Language vary.

Structured Programming encourages dividing an application program into a hierarchy of modules or autonomous elements. Within each element code may be futher structured using blocks of related logic designed to improve readability and maintainability.

There are three examples of structured programming following this —

(i) procedural programming.

(ii) object-oriented programming (OOP)

(iii) Model-based programming.

★ Procedural programming :- Defines modules as procedures or functions that are called with a set of parameters to perform a task. A procedural Language begins a process, which is

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then given data. It is also the most common category and is subdivided into the following—

(i) Service-oriented Programming.
(ii) Micro service Programming.
(iii) Functional Programming.

* Object-oriented Programming (OOP):- Defines a program as a set of object or resources to which commands are sent. An object oriented language defines a data resource and sends it to process commands. For Example — the procedural programmer might say "Print (object)" while the oop programmer might say "Tell object to Print".

* Model-based programming:- The most common example of this is database query language. In database programming units of code are associated with steps in database access and update on run when those steps occur. The database and database access structure determine the structure of the code.

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Ans: to the question no - 1(b)

(b)

★ **Ans:-** Each variable in C has an associated data type. It specifies the type of data that the variable can store like integer, character, floating, double etc. Each data type requires different amounts of memory and has some specific operations which can be performed over it. The data type is a collection of data with values having fixed values, meaning as well as its characteristic.

The data types in C can be classified as follows -

Types	Description
Primitive Data types	Primitive data types are the most basic data types that are used for representing simple values such as integers, float, characters etc.
User Defined Data types	The user-defined data types are defined by the user himself.
Derived Types	The data types that are derived from the primitive or built-in data types are referred to as Derived Data Types.

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Ans: to the question no- 02 (a)

(a)

* Ans:- **Variable in C Programming:-** A variable in C programming language is the name associated with some memory location to store data of different types. There are many types of variables of C depending on the scope, storage class, lifetime, type of data they store etc. A variable is the basic building block of a C program that can be used in expressions as a substitute in place of the value it stores.

A variable in C is a memory location with some name that helps store some form of data and retrieves it when required. We can store different types of data in the variable and reuse the same variable for storing some other data any number of times.

Such as —
① Data type - Type of data that a variable can store.
② Variable name - Name of the variable given by the user.
③ Value - value assigned to the variable by the user.

Example:-
① int variable; // integer variable
② char a; // Character variable
③ float ff; // float variables.

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Ans:- to the question no - 02 (b)

(b)

* Ans:- Rules of Declaring variable in C Programming:-

In C language we need to declare a variable with suitable data types and variable name.

Some of the rules of declaring variable in C Programming we need to follow while declaring a variable in C -

I) Variables should not be declared with the same name in the same scope.

II) A variable name can start with anything like the alphabet and underscore. But the variable name should not start with a number.

III) A variable name must not be a reserved keyword in C. For Example - if you declare a variable name as label, int, float, char, etc.

IV) A variable name can contain any combination of alphabets, numbers and underscores.

V) All the declaration statements must end with a semi-colon (;).

VI) It is suggested to declare the variable of same data types in the same line.

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Ans: to the question no - 4 (a)

(a)

★ Ans:- Loop:- A Loop in the context of technology and Programming refers to a sequence of instructions that is repeatedly executed until a certain condition is met. Its main purpose is to automate repetitive tasks thereby making programs more efficient and simpler. Loops make it possible to run the same block of code using different values each time, reducing the amount of code and making it easier to read and manage. Loop control structures are an essential part of coding used for tasks ranging from traversing data structures to repeat a process for a specified number of times or until a certain criterion is fulfilled. Loops are particularly useful in dealing with arrays and Collections. Assuming you have a list of orders and you want to print out each order, without a loop you would have to write an individual line of instruction for each record. Besides easing the developer's job, loops also enhance software productivity and functionality.

Examples:- (1) Traffic signal systems:- In many traffic control systems, loops are used to repeatedly check the traffic status.

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If the traffic at a junction gets too heavy, the system might change the signal from red to green. This action keeps repeating, making the system efficient and responsive to real-time data.

② Automatic washing Machine — The functionality of automatic washing machines is another good example of a loop. Once you provide the input by choosing the washing mode, the machine continuously checks if the washing is done or not. It keeps on repeating the operations like washing, rinsing and spinning until to completes the loop or cycle.

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Ans: to the question no - 04 (b)

(b)

☆ Ans:- C-program to print leap year:- Generally, a year has 365 Days in a year but a leap year has 366 days which comes after four year. Below are some points related to leap year.

I. A leap year is a year which is different than a normal year having 366 days instead of 365.

II. A leap year comes once in four years, in which Febuary month has 29 days. With this additional day in Febuary a year becomes a leap year.

III. Some leap years examples are - 1600, 1988, 1992 1996 and 2000.

IIII. Although 1700, 1800 and 1900 are century years not leap years.

Below conditions are used to check that years is a leap year or not.

1. year must be divisible by 4
2. year is divisible by 400 and not divisible by 100.

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By putting these conditions in your code you can check year is a leap year or not. If the above conditions are satisfied the year will be leap year. These conditions can be put with if-else or with && (and) and || (or), with the help of a C program we will make easy to find a leap year

Example:- See the below example in which we check a leap year by taking input from user:-

```
#include <stdio.h>
#include <conio.h>
Void main() {
 int year;
 Printf("Enter a year:");
 Scanf("%d", &year);
if((( year %4 ==0) && (( year %400 ==0) || (year %100 !=0))
 }
Printf("%d is a Leap year", &year);
 } else {
Printf("%d is not a Leap year", &year);
 }
```

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