DEFINATIONS

◆ Variables:

Variables are the basic unit of storage in a programming language.Variables are used to store and reference information in a computer program. The sole purpose of a variable is to store and manipulate data in a program while developing any software. These variables consist of a data type, the variable name, and the value to be assigned to the variable.They cannot be used in the program unless and until the variables are declared and initialized.

◆ Variable Declaration:

Declaration of a variable in a computer programming language is a statement used to specify the variable name and its data type. Declaration tells the compiler about the existence of an entity in the program and its location. When you declare a variable.

◆ Variable Initialization:

Initialization is the process of assigning a value to the Variable. Every programming language has its own method of initializing the variable. If the value is not assigned to the Variable, then the process is only called a Declaration.

❖ Syntax:

:: data_type variable_name = value ; ::

First of all data type e.g int,string,char,bool etc
Secondly variable name e.g rollno, student name etc
Third value ,value and data type must match e.g (0) for int, (“”) for string,(‘ ‘) for char,(true) for bool etc.

Then place semicolon “;” at end.

◆ Constant Variables:

Constant variables is also a type of variable which are used exactly the same way and serve the same purpose except that their value stays the same during program execution. A classic example of a constant can be value of PI(3.14159) which is used in many mathematical operations. Constants also need to be declared and assigned values before they are used and serve as read only variables means new values cannot be assigned to such variables.The keyword “const” is written before the variable's data type.

:: const data_type variable_name = value ; ::

◆ Static Variable:

Static variables are those variables which retain their value through the execution of program.These are the variables that initialized only once and then retain their value even thorough function call .The static variables are stored on static storage area ,not in stack.In C++ if we want to declare a static variable we need to use a keyword "static" in front of variable deceleration statement just like this:

```
static int num=0
```

The life span of static variable is the execution of entire program.

◆ Arguments:

The values that are declared within a function when the function is called are known as an argument. These values are considered as the root of the function that needs the arguments while execution, and it is also known as Actual arguments or Actual Parameters.

◆ Parameters:

The parameter is referred to as the variables that are defined during a function declaration or definition. These variables are used to exchange values from other functions during a function call. These parameters within the function prototype are used during the execution of the function for which it is defined.

Arguments	Parameters
1.The values that are declared within a function when the function is called are known as an argument.	1.The variables that are defined when the function is declared are known as parameters.
2.These are used in function call statements to send value from the calling function to the receiving function.	2.These are used in the function header of the called function to receive the value from the arguments.
3.During the time of call each argument is always assigned to the parameter in the function definition.	3.Parameters are local variables which are assigned values of the arguments when the function is called.

◆ Pointers:

A pointer is a variable that stores the memory address of an object.In C and C++, pointers are primarily used for three things: allocating new objects on the heap, passing functions to other functions, and modifying existing functions. to loop over the components of various data structures, such as arrays.

◆ Array:

Array is a type of data structure that allow us to store a set of values of same data type in single variable rather than have separate/multiple variables for each value.

In this type of data structure each value in the variable is referred by its index or its position in that array.

```
string  names[5];
```

◆ Single Dimension Array:

A One-Dimensional Array is the simplest form of an Array in which the elements are stored linearly and can be accessed individually by specifying the index value of each element stored in the array.

```
Int numbers[5];
```

◆ Double Dimension Array:

It represents data of different positions of a single variable in a tabulated form,just like a matrix.In double dimension array each value is referred by its position in the table by specifying rows and columns .

```
Int numbers[5][5];
```

◆ Structure:

A Structure is a user-defined data type in C/C++ that is used to store similar, different data types or a combination of both under a single variable. Unlike Array, a Structure is used to store a collection of different types of data elements under a single variable name.e.g

```
struct
 {
    int num;
    string name;
 }studentdata;
```

Now this variable “studentdata” can store both values integer and string and to access those values we will call it like this.

```
Cout<<studentdata.num;
 Cout<<studentdata.name;
```

◆ Named Structure:

Named structure is similar to structure but in named structure you are making a custom data type which you can use with different variables and arrays. Example:

```
struct info
{
    string itemname;
    int price;
};
```

Now you created a data type named info in which you can store price and name of item in a single variable while using this data type.You can declare a variable/array using this data type like this.

info grocery[10];

◆ Functions:

A function in C++ is a group of statements that together perform a specific task. Every C/C++ program has at least one function that the name is main. The main function is called by the operating system by which our code is executed There are two types of functions.

Buit-in functions

User defined functions

➢ User defined functions:

C++ allows the programmer to define their own function. A user-defined function groups code to perform a specific task and that group of code is given a name (identifier). When the function is invoked from any part of the program, it all executes the codes defined in the body of the function.

There are 4 sub-types of user defined functions.

1. Function with no arguments and no return value.
2. Function with no arguments and a return value.
3. Function with arguments and no return value.
4. Function with arguments and with return value.

➢ Built-in functions:

Built-in function is a function that is already available in a programming language, application, or another tool that can be accessed by end users.For example .substr()

.length()

.toupper() etc.

◆ Integrated Development Environment:

An integrated development environment (IDE) is a software application that helps programmers develop software code efficiently. It increases developer productivity by combining capabilities such as software editing, building, testing, and packaging in an easy-to-use application.

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