



# Lakshmi Narain College of Technology, Bhopal

Department of Electronics and Communication Engineering

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Enrollment No: 0103EC181006

Class: EC V SEM

Date: 31 Dec 2020

## C and C++ Interview Question for Project and placement

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1. What is the basic structure of a C program ?

Answer: The basic structure of a C++ program is shown below:

```
1. #include<iostream.h>
2. int main()
3. {
4.     cout<<"Hello,World!";
5.     return 0;
6. }
```

The first line that begins with “#” is a pre-processor directive. In this case, we are using include as a directive which tells the compiler to include a header while “iostream.h” which will be used for basic input/output later in the program.

The next line is the “main” function that returns an integer. The main function is the starting point of execution for any C++ program. Irrespective of its position in the source code file, the contents of the main function are always executed first by the C++ compiler.

In the next line, we can see open curly braces that indicate the start of a block of code. After this, we see the programming instruction or the line of code that uses the count which is the standard output stream (its definition is present in iostream.h).

This output stream takes a string of characters and prints it to a standard output device. In this case, it is, “Hello, World!”. Please note that each C++ instruction ends with a semicolon (;), which is very much necessary and omitting it will result in compilation errors.

Before closing the braces}, we see another line “return 0;”. This is the returning point to the main function.

Every C++ program will have a basic structure as shown above with a pre-processor directive, main function declaration followed by a block of code and then a returning point to the main function which indicates successful execution of the program.



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### 2. What are the Comments in C and C++?

Answer: Comments in C++ are simply a piece of source code ignored by the compiler. They are only helpful for a programmer to add a description or additional information about their source code.

In C++ there are two ways to add comments:

//single-line comment

/\* block comment \*/

The first type will discard everything after the compiler encounters "//". In the second type, the compiler discards everything between "/\*" and "\*/".

### 3. Difference between Declaration and Definition of a variable.

Answer: The declaration of a variable is merely specifying the data type of a variable and the variable name. As a result of the declaration, we tell the compiler to reserve the space for a variable in the memory according to the data type specified.

Example:

```
1. int Result;  
2. char c;  
3. int a,b,c;
```

All the above are valid declarations. Also, note that as a result of the declaration, the value of the variable is undetermined.

Whereas, a definition is an implementation/instantiation of the declared variable where we tie up appropriate value to the declared variable so that the linker will be able to link references to the appropriate entities.

```
1. From above Example,  
2.  
3. Result = 10;  
4.  
5. C = 'A';
```

These are valid definitions



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### 4. Comment on Local and Global scope of a variable.

Answer: The scope of a variable is defined as the extent of the program code within which the variable remains active i.e. it can be declared, defined or worked with.

There are two types of scope in C++:

**Local Scope:** A variable is said to have a local scope or is local when it is declared inside a code block. The variable remains active only inside the block and is not accessible outside the code block.

**Global Scope:** A variable has a global scope when it is accessible throughout the program. A global variable is declared on top of the program before all the function definitions.

Example:

```
1. #include <iostream.h>
2. Int globalResult=0; //global variable
3. int main()
4. {
5. Int localVar = 10; //local variable.
6. ....
7.
8. }
```

### 5. When there are a Global variable and Local variable with the same name, how will you access the global variable ?

Answer: Whenever there is a local variable with the same name as that of a global variable, the compiler gives precedence to the local variable.

```
1. Example:
2.
3. #include <iostream.h>
4. int globalVar = 2;
5. int main()
6. {
7. int globalVar = 5;
8. cout<<globalVar<<endl;
9. }
```



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The output of the above code is 5. This is because, although both the variables have the same name, the compiler has given preference to the local scope.

6. What is a Constant? Explain with an example.

Answer: A constant is an expression that has a fixed value. They can be divided into integer, decimal, floating-point, character or string constants depending on their data type.

Apart from the decimal, C++ also supports two more constants i.e. octal (to the base 8) and hexadecimal (to the base 16) constants.

```
1. Examples of Constants:
2.
3. 75 //integer (decimal)
4. 0113 //octal
5. 0x4b //hexadecimal
6. 3.142 //floating point
7. 'c' //character constant
8. "Hello, World" //string constant
```

Note: When we have to represent a single character, we use single quotes and when we want to define a constant with more than one character, we use double-quotes.

7. Comment on Assignment Operator in c and C++.

Answer: Assignment operator in C++ is used to assign a value to another variable.

```
1. a = 5;
```

This line of code assigns the integer value 5 to variable a.

The part at the left of the =operator is known as an lvalue (left value) and the right as rvalue (right value). Lvalue must always be a variable whereas the right side can be a constant, a variable, the result of an operation or any combination of them.

The assignment operation always takes place from the right to left and never at the inverse.



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One property which C++ has over the other programming languages is that the assignment operator can be used as the rvalue (or part of an rvalue) for another assignment.

Example:

```
1. a = 2 + (b = 5);
```

is equivalent to:

```
1. b = 5;  
2. a = 2 + b;
```

Which means, first assign 5 to variable b and then assign to a, the value 2 plus the result of the previous expression of b(that is 5), leaves a with a final value of 7.

Thus, the following expression is also valid in C++:

```
1. a = b = c = 5;
```

assign 5 to variables a, b and c.

8. What is the difference between equal to (==) and Assignment Operator (=) ?

Answer: In C++, equal to (==) and assignment operator (=) are two completely different operators.

Equal to (==) is an equality relational operator that evaluates two expressions to see if they are equal and returns true if they are equal and false if they are not.

The assignment operator (=) is used to assign a value to a variable. Hence, we can have a complex assignment operation inside the equality relational operator for evaluation.



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9. What are the various Arithmetic Operators in c and C++ ?

Answer: C++ supports the following arithmetic operators:

- + addition
- subtraction
- \* multiplication
- / division
- % module

Let's demonstrate the various arithmetic operators with the following piece of code.

Example:

```
1. #include <iostream.h>
2. int main ()
3. {
4.     int a=5, b=3;
5. cout<<"a + b = "<<a+b;
6. cout<<"\na - b = "<<a-b;
7. cout<<"\na * b = "<<a*b;
8. cout<<"\na / b = "<<a/b;
9. cout<<"\na % b = "<<a%b;
10.
11. return 0;
12. }
```

Output:

```
1. a + b = 8
2. a - b =2
3. a * b =15
4. a / b =2
5. a % b=1
```

As shown above, all the other operations are straightforward and the same as actual arithmetic operations, except the modulo operator which is quite different. Modulo operator divides a and b and the result of the operation is the remainder of the division.



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10. What are the various Compound Assignment Operators in c and C++ ?

Answer: Following are the Compound assignment operators in C++:

```
1. +=, -=, *=, /=, %=, >>=, <<=, &=, ^=, |=
```

Compound assignment operator is one of the most important features of C++ language which allow us to change the value of a variable with one of the basic operators:

Example:

```
1. value += increase; is equivalent to value = value + increase;
2. if base_salary is a variable of type int.
3.     int base_salary = 1000;
4.     base_salary += 1000; #base_salary = base_salary + 1000
5.     base_salary *= 5; #base_salary = base_salary * 5;
```

11. difference between Pre and Post Increment/Decrement Operations.

Answer: C++ allows two operators i.e ++ (increment) and --(decrement), that allow you to add 1 to the existing value of a variable and subtract 1 from the variable respectively. These operators are in turn, called increment (++) and decrement (--).

Example:

```
1. a=5;
2. a++;
```

The second statement, a++, will cause 1 to be added to the value of a. Thus a++ is equivalent to

```
1. a = a+1; or
2. a += 1;
```



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A unique feature of these operators is that we can prefix or suffix these operators with the variable. Hence, if a is a variable and we prefix the increment operator it will be

```
1. ++a;
```

This is called Pre-increment. Similarly, we have pre-decrement as well.

If we prefix the variable a with an increment operator, we will have,

```
1. a++;
```

This is the post-increment. Likewise, we have post-decrement too.

The difference between the meaning of pre and post depends upon how the expression is evaluated and the result is stored.

In the case of the pre-increment/decrement operator, the increment/decrement operation is carried out first and then the result passed to an lvalue. Whereas for post-increment/decrement operations, the lvalue is evaluated first and then increment/decrement is performed accordingly.

Example:

```
1. a = 5; b=6;  
2. ++a;      #a=6  
3. b--;      #b=6  
4. -a;       #a=5  
5. b++;      #6
```





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12. What are the Extraction and Insertion operators in C++ ? Explain with examples.

Answer: In the iostream.h library of C++, cin, and cout are the two data streams that are used for input and output respectively. Cout is normally directed to the screen and cin is assigned to the keyboard.

“cin” (extraction operator): By using overloaded operator >> with cin stream, C++ handles the standard input.

```
1. int age;  
2. cin>>age;
```

As shown in the above example, an integer variable 'age' is declared and then it waits for cin (keyboard) to enter the data. “cin” processes the input only when the RETURN key is pressed.

“cout” (insertion operator): This is used in conjunction with the overloaded << operator. It directs the data that followed it into the cout stream.

Example:

```
1. cout<<"Hello, World!";  
2. cout<<123;
```

13. What is the difference between while and do while loop? Explain with examples. 14. What do you mean by 'void' return type?

Answer: The format of while loop in C++ is:

While (expression)  
{statements;}

The statement block under while is executed as long as the condition in the given expression is true.

Example:



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```
1. #include <iostream.h>
2. int main()
3. {
4.     int n;
5.     cout<<"Enter the number : ";
6.     cin>>n;
7.     while (n>0)
8.     {
9.         cout<<" "<<n;
10.        --n;
11.    }
12.    cout<<"While loop complete";
13. }
```

In the above code, the loop will directly exit if n is 0. Thus in the while loop, the terminating condition is at the beginning of the loop and if it's fulfilled, no iterations of the loop are executed.

Next, we consider the do-while loop.

The general format of do-while is:

do {statement;} while(condition);

Example:

```
1. #include<iostream.h>
2. int main()
3. {
4.     int n;
5.     cout<<"Enter the number : ";
6.     cin>>n;
7.     do {
8.         cout<<n<<" ";
9.         --n;
10.    }while (n>0);
11.    cout<<"do-while complete";
12. }
```

In the above code, we can see that the statement inside the loop is executed at least once as the loop condition is at the end. These are the main differences between the while and do-while.



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In case of the while loop, we can directly exit the loop at the beginning, if the condition is not met whereas in the do-while loop we execute the loop statements at least once.

15. Explain call by Value and call by Reference.

16. What are Default Parameters ? How are they evaluated in the C++ function ?

Answer: Default Parameter is a value that is assigned to each parameter while declaring a function.

This value is used if that parameter is left blank while calling to the function. To specify a default value for a particular parameter, we simply assign a value to the parameter in the function declaration.

If the value is not passed for this parameter during the function call, then the compiler uses the default value provided. If a value is specified, then this default value is stepped on and the passed value is used.

Example:

```
1. int multiply(int a, int b=2)
2. {
3.     int r;
4.     r = a * b;
5.     return r;
6. }
7.
8. int main()
9. {
10.
11.     Cout<<multiply(6);
12.     Cout<<"\n";
13.     Cout<<multiply(2,3);
14. }
```

Output:

12  
6

As shown in the above code, there are two calls to multiply function. In the first call, only one parameter is passed with a value. In this case, the second parameter is the default value provided. But in the second call, as both the parameter values are passed, the default value is overridden and the passed value is used.



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17. What is the keyword auto for ?

Answer: By default, every local variable of the function is automatic i.e. auto. In the below function both the variables 'i' and 'j' are automatic variables.

```
1. void f()  
2. {  
3.   int i;  
4.   auto int j;  
5. }
```

NOTE: A global variable is not an automatic variable.

18. What is a Static Variable ?

Answer: A static variable is a local variable that retains its value across the function calls. Static variables are declared using the keyword "static". Numeric variables which are static have the default value as zero.

The following function will print 1 2 3 if called thrice.

```
1. void f()  
2. {  
3.   static int i;  
4.   ++i;  
5.   printf("%d ", i);  
6. }
```

If a global variable is static, then its visibility is limited to the same source code.

19. What are the various Access Specifier in C++?

Answer: C++ supports the following access specifiers:

Public: Data members and functions are accessible outside the class.

Private: Data members and functions are not accessible outside the class. The exception is the usage of a friend class.

Protected: Data members and functions are accessible only to the derived classes.

Example:

Describe PRIVATE, PROTECTED and PUBLIC along with their differences and give examples.

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```
1. class A{
2.     int x; int y;
3.     public int a;
4.     protected bool flag;
5.     public A() : x(0) , y(0) {} //default (no argument) constructor
6. };
7.
8. main(){
9.
10. A MyObj;
11.
12. MyObj.x = 5; // Compiler will issue a ERROR as x is private
13.
14. int x = MyObj.x; // Compiler will issue a compile ERROR MyObj.x is private
15.
16. MyObj.a = 10; // no problem; a is public member
17. int col = MyObj.a; // no problem
18.
19. MyObj.flag = true; // Compiler will issue a ERROR; protected values are read
    only
20. bool isFlag = MyObj.flag; // no problem
```

20. Explain how functions are classified in C++ ?

A function is a group of statements that together perform a task. Every C++ program has at least one function, which is main(), and all the most trivial programs can define additional functions.

You can divide up your code into separate functions. How you divide up your code among different functions is up to you, but logically the division usually is such that each function performs a specific task.

21. What are the basic Data types supported in C Programming Language ?

Data types specify how we enter data into our programs and what type of data we enter. C language has some predefined set of data types to handle various kinds of data that we can use in our program. These datatypes have different storage capacities.

C language supports 2 different type of data types:

Primary data types:



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These are fundamental data types in C namely integer(int), floating point(float), character(char) and void.

Derived data types:

Derived data types are nothing but primary datatypes but a little twisted or grouped together like array, stucture, union and pointer. These are discussed in details later.

Data type determines the type of data a variable will hold. If a variable x is declared as int. it means x can hold only integer values. Every variable which is used in the program must be declared as what data-type it is.

22. What do you mean by the Scope of the variable? What is the scope of the variables in C ?

A scope is a region of the program, and the scope of variables refers to the area of the program where the variables can be accessed after its declaration.

In C every variable defined in scope.

22. Differentiate between calloc() and malloc()

Malloc() function will create a single block of memory of size specified by the user. Calloc() function can assign multiple blocks of memory for a variable. Malloc function contains garbage value. The memory block allocated by a calloc function is always initialized to zero.

24. What are the valid places where the programmer can apply Break Control Statement ?

Break Control statement is applicable to be used within a loop and Switch control statements.

25. Differentiate between Actual Parameters and Formal Parameters.

An identifier is a name used for a class, a variable, a method, or a parameter. The following definitions are useful:



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formal parameter — the identifier used in a method to stand for the value that is passed into the method by a caller.

For example, amount is a formal parameter of processDeposit

actual parameter — the actual value that is passed into the method by a caller.

For example, the 200 used when processDeposit is called is an actual parameter.

actual parameters are often called arguments

When a method is called, the formal parameter is temporarily "bound" to the actual parameter. The method uses the formal parameter to stand for the actual value that the caller wants to be used.

For example, here the processDeposit method uses the formal parameter amount to stand for the actual value used in the procedure call:

```
1. balance = balance + amount ;
```

26. Can a C program be compiled or executed in the absence of a main() ?

**Yes, you can write a C program without main().**

Here is the universally acclaimed "Hello World" program without main().

```
1. #include <stdio.h>
2. extern void _exit(register int);
3. int _start(){
4. printf("Hello World\n");
5. _exit(0);
6. }
```

We are taught in almost every book that main () is the entry point of a program execution. It is not completely true. At an abstract level, it is true just from the perspective of programmer. But from systems perspective **\_start()** is the first function that is called. \_start() sets up the environment for program execution and then calls main().



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27. What do you mean by a Nested Structure ?

Nested structure in C is nothing but structure within structure. One structure can be declared inside other structure as we declare structure members inside a structure. The structure variables can be a normal structure variable or a pointer variable to access the data.

28. What is a C Token ?

C tokens are the basic building blocks in C language which are constructed together to write a C program. Each and every smallest individual units in a C program are known as C tokens.

29. What is Pre-processor ?

In simple terms, a C Preprocessor is just a text substitution tool and it instructs the compiler to do required pre-processing before the actual compilation. We'll refer to the C Preprocessor as CPP. All preprocessor commands begin with a hash symbol (#).

30. Why is C called the Mother of all Languages ?

C is often referred to as the mother of all programming language because it is one of the most popular programming languages. Right from the time, it was developed, C has become the most widely used and preferred programming languages. Most of the compilers and kernels are written in C today

31. Mention the features of C Programming Language.

Features of C Programming Language:

Procedural Language

Fast and Efficient

Modularity

Statically Type

General Purpose Language





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Rich set of built in Operators

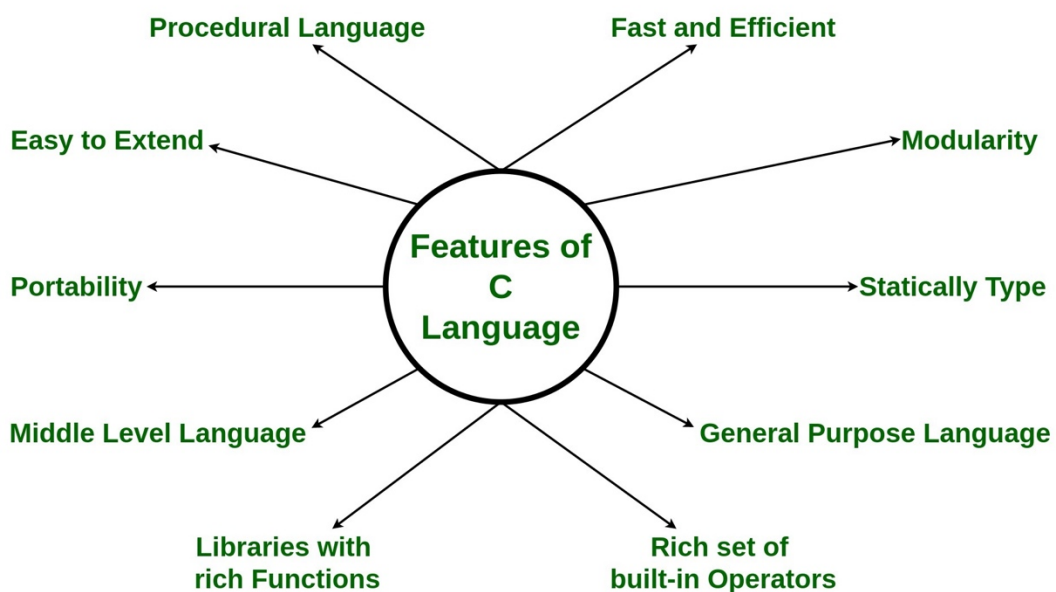
Libraries with rich Functions

Middle Level Language

Portability

Easy to Extend

### Features of C Programming Language



Let us see the features one by one:

**Procedural Language:** In a procedural language like C step by step predefined instructions are carried out. C program may contain more than one function to perform a particular task. New people to programming will think that this is the only way of a particular programming language works. There are other programming paradigms as well



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in the programming world. Most of the commonly used paradigm is an object-oriented programming language.

**Fast and Efficient:** Newer languages like java, python offer more features than c programming language but due to additional processing in these languages, their performance rate gets down effectively. C programming language as the been middle-level language provides programmers access to direct manipulation with the computer hardware but higher-level languages do not allow this. That's one of the reasons C language is considered as the first choice to start learning programming languages. It's fast because statically typed languages are faster than dynamically typed languages.

**Modularity:** The concept of storing of C programming language code in the form of libraries for further future uses is known as modularity. This programming language van does a very little on its own most of its power is held by its libraries. C language has it's own library to solve common problems like in this we can use a particular function by using a header file stored in its library.

**Statically Type:** C programming language is a statically typed language. Meaning the type of variable is checked at the time of compilation but not at run time. Means each time a programmer type a program they have to mention the type of variables used.

**General Purpose Language:** From system programming to photo editing software, C programming language is used in various applications. Some of the common applications where it's used are as follows:

**Operating systems:** Windows, Linux, iOS, Android, OXS

**Databases:** PostgreSQL, Oracle, MySQL, MS SQL Server etc.

**Rich set of built-in Operators:** It is a diversified language with a rich set of built-in operators which are used in writing complex or simplified C programs.

**Libraries with rich Functions:** Robust libraries and functions in C help even a beginner coder to code with ease.

**Middle-Level Language:** As it is a middle-level language so it has the combined form of both capabilities of assembly language and features of the high level language.

**Portability:** C language is lavishly portable as programs which are written in C language can run and compile on any system with either none or small changes.



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Easy to Extend: Programs written in C language can be extended means when a program is already written in it then some more features and operations can be added into it.

32. What is the purpose of printf() and scanf() in C Program ?

printf() is used to display the output and scanf() is used to read the inputs. printf() and scanf() functions are declared in "stdio. h" header file in C library. All syntax in C language including printf() and scanf() functions are case sensitive.

33. What is an array ?

An array is a data structure that contains a group of elements. Typically these elements are all of the same data type, such as an integer or string. Arrays are commonly used in computer programs to organize data so that a related set of values can be easily sorted or searched.

34. What is /0 character ?

A null character is a character with all its bits set to zero. Therefore, it has a numeric value of zero and can be used to represent the end of a string of characters, such as a word or phrase. This helps programmers determine the length of strings.

35. What is the main difference between the Compiler and the Interpreter ?

Interpreter translates just one statement of the program at a time into machine code. Compiler scans the entire program and translates the whole of it into machine code at once. An interpreter takes very less time to analyze the source code. However, the overall time to execute the process is much slower.

36. What is Dynamic Memory allocation? Mention the syntax.

"malloc" or "memory allocation" method in C is used to dynamically allocate a single large block of memory with the specified size. It returns a pointer of type void which can be cast into a pointer of any form. It initializes each block with default garbage value. Syntax: ptr = (cast-type\*) malloc(byte-size).



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37. What do you mean by Dangling Pointer Variable in C Programming ?

Sometimes the programmer fails to initialize the pointer with a valid address, then this type of initialized pointer is known as a dangling pointer in C. Dangling pointer occurs at the time of the object destruction when the object is deleted or de-allocated from memory without modifying the value of the pointer.

38. Where can we not use &(address operator in C ?

The Address Operator in C also called a pointer. This address operator is denoted by "&". This & symbol is called an ampersand. This & is used in a unary operator. The purpose of this address operator or pointer is used to return the address of the variable. Once we declared a pointer variable, we have to initialize the pointer with a valid memory address; to get the memory address of the variable ampersand is used. When we use the ampersand symbol as a prefix to the variable name & and it gives the address of that variable. An address of the operator is used within C that is returned to the memory address of a variable. These addresses returned by the address of the operator are known as pointers because they "point" to the variable in memory.

39. Write a simple example of a structure in C Language

`struct struct_name { DataType member1_name; DataType member2_name; DataType member3_name; ... };` Here struct\_name can be anything of your choice. Members data type can be same or different. Once we have declared the structure we can use the struct name as a data type like int, float etc

40. Differentiate between getch() and getche()

getche() method reads a single character from the keyboard and displays immediately on output screen without waiting for enter key. getch is the the function that waits for an input from the user. There is nothing like "getche" may be you have seen some functions names or variable names

41. Which statement is efficient and why? `x=x+1;` or `x++;`

Why is `x++` more efficient than `x += 1`? It isn't. The reason for preferring `x += 1` to `x = x+1` comes about when x is replaced with a much longer identifier, or perhaps a field in a class or struct. In that situation, the `x += 1` version is more readable and even more importantly avoids the pitfalls of repeating yourself.



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42. Can I declare the same variable name to the variables which have different scopes ?

The local variable declaration space of a block includes any nested blocks. Thus, within a nested block it is not possible to declare a local variable with the same name as a local variable in an enclosing block. ... So, the thing is that while the scopes are different, the variable space is the same

43. Mention File operations in C Language.

There are 4 basic operations that can be performed on any files in C programming language. They are,

Opening/Creating a file

Closing a file

Reading a file

Writing in a file

File operation	Declaration & Description
<b>fopen()</b> – To open a file	Declaration: FILE <b>*fopen</b> (const char *filename, const char *mode) fopen() function is used to open a file to perform operations such as reading, writing etc. In a C program, we declare a file pointer and use fopen() as below. fopen() function creates a new file if the mentioned file name does not exist.  FILE <span style="float: right;">*fp;</span> fp= <b>fopen</b> ("filename", "mode"); Where, fp – file pointer to the data type "FILE". filename – the actual file name with full path of the file. mode – refers to the operation that will be performed on the file. Example: r, w, a, r+, w+ and a+. Please refer below the description for these mode of operations.
<b>fclose()</b> – To close a file	Declaration: int <b>fclose</b> (FILE *fp); fclose() function closes the file that is being pointed by file pointer fp. In a C program, we close a file as below. <b>fclose</b> (fp);
<b>fgets()</b> – To read a file	Declaration: char <b>*fgets</b> (char *string, int n, FILE *fp) fgets function is used to read a file line by line. In a C program, we use fgets function as below. <b>fgets</b> (buffer, size, fp);



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	where, buffer – buffer to put the data in. size – size of the buffer fp – file pointer
<b>fprintf()</b> – To write into a file	Declaration: int <b>fprintf</b> (FILE *fp, const char *format, ...); fprintf() function writes string into a file pointed by fp. In a C program, we write string into a file as below. fprintf (fp, "some data"); or fprintf (fp, "text %d", variable_name);

### MODE OF OPERATIONS PERFORMED ON A FILE IN C LANGUAGE:

There are many modes in opening a file. Based on the mode of file, it can be opened for reading or writing or appending the texts. They are listed below.

r – Opens a file in read mode and sets pointer to the first character in the file. It returns null if file does not exist.

w – Opens a file in write mode. It returns null if file could not be opened. If file exists, data are overwritten.

a – Opens a file in append mode. It returns null if file couldn't be opened.

r+ – Opens a file for read and write mode and sets pointer to the first character in the file.

w+ – opens a file for read and write mode and sets pointer to the first character in the file.

a+ – Opens a file for read and write mode and sets pointer to the first character in the file. But, it can't modify existing contents.

### 44. What is typecasting ?

In computer science, type conversion, type casting, type coercion, and type juggling are different ways of changing an expression from one data type to another. An example would be the conversion of an integer value into a floating point value or its textual representation as a string, and vice versa.

### 45. What are the limitations of scanf() and how can it be avoided ?

The problems with scanf are (at a minimum): using %s to get a string from the user, which leads to the possibility that the string may be longer than your buffer, causing overflow. the possibility of a failed scan leaving your file pointer in an indeterminate location





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46. Differentiate between the macros and the functions.

Macros are pre-processed which means that all the macros would be processed before your program compiles. However, functions are not preprocessed but compiled. This shows that the macros are preprocessed while functions are not. Macros are usually one liner.

47. Suppose a global variable and local variable have the same name. Is it possible to access a global variable from a block where local variables are defined ?

A program can have the same name for local and global variables but the value of a local variable inside a function will take preference. For accessing the global variable with same name, you'll have to use the scope resolution operator.

48. What is the difference between declaration and definition of a variable/function

you can define a variable only one time but you can declare it as many time you want. For a variable, declaration means just stating its data type along with giving it name for memory allocation; while definition means giving the value of that variable. declaration is giving a prototype like simply a name .

49. When should we use pointers in a C program ?

Pointers are used (in the C language) in three different ways:

To create dynamic data structures.

To pass and handle variable parameters passed to functions.

To access information stored in arrays. (Especially if you work with links).

50. What is NULL pointer ?

A Null Pointer is a pointer that does not point to any memory location. It stores the base address of the segment. The null pointer basically stores the Null value while void is the type of the pointer.

A null pointer is a special reserved value which is defined in a stddef header file. Here, Null means that the pointer is referring to the 0th memory location.



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If we do not have any address which is to be assigned to the pointer, then it is known as a null pointer. When a NULL value is assigned to the pointer, then it is considered as a Null pointer.

51. What is Dangling pointer ?

Dangling pointers and wild pointers in computer programming are pointers that do not point to a valid object of the appropriate type. These are special cases of memory safety violation.

52. What is variable initialization and why is it important ?

This refers to the process wherein a variable is assigned an initial value before it is used in the program. Without initialization, a variable would have an unknown value, which can lead to unpredictable outputs when used in computations or other operations.

53. Differentiate Source Codes from Object Codes

Source code is generally understood to mean programming statements that are created by a programmer with a text editor or a visual programming tool and then saved in a file. Object code generally refers to the output, a compiled file, which is produced when the Source Code is compiled with a C compiler.

54. What is the modulus operator ?

The modulo operation returns the remainder or signed remainder of a division, after one number is divided by another. Given two positive numbers  $a$  and  $n$ , a modulo  $n$  is the remainder of the Euclidean division of  $a$  by  $n$ , where  $a$  is the dividend and  $n$  is the divisor.

55. What is a nested loop ?

Nesting of loops is the feature in C that allows the looping of statements inside another loop. ... The nesting level can be defined at  $n$  times. You can define any type of loop inside another loop; for example, you can define 'while' loop inside a 'for' loop.





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56. Which of the following operators is incorrect and why? ( $\geq$ ,  $\leq$ ,  $\lt$ ,  $\lt\lt$ )

- $\geq$  Indicates the operation "greater than or equal to".
- $\leq$  Indicates the operation "less than or equal to".
- $\lt\lt$  - It doesn't have any operational meaning. Therefore it is incorrect in the programming languages.
- $\lt\lt$  This symbol is used to check whether two expressions/numbers are equal or not. Ex:  $(a\lt\lt 2)$  this expression implies that it checks whether a is equal to 2 or not and proceeds for further operation.

57. How do you declare a variable that will hold string values ?

The char keyword can only hold 1 character value at a time. By creating an array of characters, you can store string values in it. Example: `char MyName[50];` declares a string variable named MyName that can hold a maximum of 50 characters.

58. Can the curly brackets { } be used to enclose a single line of code ?

Can the curly brackets { } be used to enclose a single line of code? While curly brackets are mainly used to group several lines of codes, it will still work without error if you used it for a single line.

59. What are header files and what are its uses in C programming ?

Header file is a file that contains function declaration and macro definition for C in-built library functions.

- All C standard library functions are declared in many header files which are saved as `file_name.h`.
- We are including these header files in our C program using `#include <file_name.h>` command to make use of the functions those are declared in the header files.
- When we include header files in our C program using `#include <filename.h>` command, all C code of the header files are included in C program. Then, this C program is compiled by compiler and executed.



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60. What is syntax error ?

A syntax error is an error in the source code of a program. Since computer programs must follow strict syntax to compile correctly, any aspects of the code that do not conform to the syntax of the programming language will produce a syntax error.

Unlike logic errors, which are errors in the flow or logic of a program, syntax errors are small grammatical mistakes, sometimes limited to a single character. For example, a missing semicolon at the end of a line or an extra bracket at the end of a function may produce a syntax error. In the PHP code below, the second closed bracket would result in a syntax error since there is only one open bracket in the function.

61. How do you access the values within an array ?

You can use array subscript (or index) to access any element stored in array. Subscript starts with 0, which means `arr[0]` represents the first element in the array `arr`. In general `arr[n-1]` can be used to access `n`th element of an array. where `n` is any integer number.

62. Can two or more operators such as `\n` and `\t` be combined in a single line of program Code ?

Yes, it's perfectly valid to combine operators, especially if the need arises.

Q64. What are compound statements?

Ans - A compound statement (also called a "block") typically appears as the body of another statement, such as the if statement. Declaration and types describes the form and meaning of the declarations that can appear at the head of a compound statement.

Q65. What is the significance of an algorithm to C programming?

Ans- Before a program can be written, an algorithm has to be created first. An algorithm provides a step-by-step procedure on how a solution can be derived. It also acts as a blueprint on how a program will start and end, including what process and computations are involved.

Q66. What is the advantage of an array over individual variables?

Ans-When storing multiple related data, it is a good idea to use arrays. This is because arrays are named using only 1 word followed by an element number. For example: to store the 10 test results of 1 student, one can use 10 different variable names (`grade1`, `grade2`, `grade3`... `grade10`). With arrays, only 1 name is used, the rest are accessible through the index name (`grade[0]`, `grade[1]`, `grade[2]`... `grade[9]`).



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Q67. What is wrong in this statement? scanf("%d", whatnumber) ?

Ans-An ampersand & symbol must be placed before the variable name whatnumber. Placing & means whatever integer value is entered by the user is stored at the "address" of the variable name. This is a common mistake for programmers, often leading to logical errors.

Q68. How do you generate random numbers in C?

Ans- The rand () function is the simplest of C's random-number functions. It requires the stdlib.h header file, and it coughs up an int value that's supposedly random. Now, That's Random demonstrates sample code.

```
1. #include <stdio.h>
2. #include <stdlib.h>
3. int main()
4. {
5.     int r, a, b;
6.     puts("100 Random Numbers");
7.     for(a=0; a<20; a++)
8.     {
9.         for(b=0; b<5; b++)
10.        {
11.            r=rand();
12.            printf("%dt", r);
13.        }
14.        putchar('\n');
15.    }
16.    return(0);
17. }
```

Q69. What does the && operator do in a program code ?

Ans- The && is also referred to as AND operator. When using this operator, all conditions specified must be TRUE before the next action can be performed. If you have 10 conditions and all but 1 fails to evaluate as TRUE, the entire condition statement is already evaluated as FALSE.



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Q70. In C programming, what command or code can be used to determine if a number of odd or even ?

Ans- An even number is an integer that is exactly divisible by 2. For example: 0, 8, -24

An odd number is an integer that is not exactly divisible by 2. For example: 1, 7, -1

```
1. #include <stdio.h>
2. int main() {
3.     int num;
4.     printf("Enter an integer: ");
5.     scanf("%d", &num); // True if num is perfectly divisible by 2
6.     if (num % 2 == 0)
7.         printf("%d is even.", num);
8.     else
9.         printf("%d is odd.", num);
10.    return 0;
11. }
```

Q71. What are the different types of control structures in programming ?

Ans-Flow of control through any given function is implemented with three basic types of control structures:

- Sequential: default mode. Sequential execution of code statements (one line after another) -- like following a recipe
- Selection: used for decisions, branching -- choosing between 2 or more alternative paths. In C++, these are the types of selection statements:

- o if
- o if/else
- o switch

- Repetition: used for looping, i.e., repeating a piece of code multiple times in a row.

In C++, there are three types of loops:

- o while
- o do/while
- o for

The function construct, itself, forms another way to affect flow of control through a whole program.



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Q72. What is || operator and how does it function in a program ?

Ans- The || is also known as the OR operator in C programming. When using || to evaluate logical conditions, any condition that evaluates to TRUE will render the entire condition statement as TRUE. If any of the two operands is non-zero, then the condition becomes true.

Q 73. What will be the outcome of the following conditional statement if the value of variable s is 10 ? `s >= 10 && s < 25 && s != 12`.

Ans-The outcome will be TRUE. Since the value of s is 10, `s >= 10` evaluates to TRUE because s is not greater than 10 but is still equal to 10. `s < 25` is also TRUE since 10 is less than 25. Just the same, `s != 12`, which means s is not equal to 12, evaluates to TRUE. The && is the AND operator, and follows the rule that if all individual conditions are TRUE, the entire statement is TRUE.

Q74. Describe the order of precedence with regards to operators in C.

Ans- Order of precedence determines which operation must first take place in an operation statement or conditional statement. On the top most level of precedence are the unary operators !, +, - and &. It is followed by the regular mathematical operators (\*, / and modulus % first, followed by + and -). Next in line are the relational operators <, <=, >= and >. This is then followed by the two equality operators == and !=. The logical operators && and || are next evaluated. On the last level is the assignment operator =.

Q75. How do you determine the length of a string value that was stored in a variable ?

Ans- To get the length of a string value, use the function `strlen()`. For example, if you have a variable named `FullName`, you can get the length of the stored string value by using this statement: `l = strlen(FullName)`; the variable l will now have the character length of the string value.

Q 76. Is it possible to initialize a variable at the time it was declared ?

Ans- Variables declared static are initialized to zero (or for pointers, NULL) by default. They can be initialized explicitly on declaration to any constant value. The initialization is made just once, at compile time. Variables can be initialized (assigned an initial value) in their declaration. The initializer consists of an equal sign followed by a constant expression as follows –

`type variable_name = value;`



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Q77. Why is C language being considered a middle level language ?

Ans- C is a middle level language because it binds the gap between machine level language and high level language. It can be used for both, system programming (like as operating system) as well as application programming (like as spreadsheet). Middle level language are more related to machine as well as human language. So that's why it is called "Middle level language".

Q78. What are the different file extensions involved when programming in C ?

Ans- Source codes in C are saved with .C file extension. Header files or library files have the .H file extension. Every time a program source code is successfully compiled, it creates an .OBJ of object file, and an executable .EXE file.

Q79. What are reserved words ?

Ans- In a computer language, a reserved word (also known as a reserved identifier) is a word that cannot be used as an identifier, such as the name of a variable, function, or label – it is "reserved from use". There are a total of 95 reserved words in C++.

Q80. Not all reserved words are written in lowercase. TRUE or FALSE ?

Ans- FALSE. All reserved words must be written in lowercase otherwise, the C compiler would interpret this as unidentified and invalid.

Q81. What is the difference between the expression "++a" and "a++" ?

Ans- In the first expression, the increment would happen first on variable a, and the resulting value will be the one to be used. This is also known as a prefix increment. In the second expression, the current value of variable a would be the one to be used in an operation, before the value of a itself is incremented. This is also known as postfix increment.

Q82. What would happen to X in this expression:  $X += 15$ ; (assuming the value of X is 5) ?

Ans-  $X += 15$  is a short method of writing  $X = X + 15$ , so if the initial value of X is 5, then  $5 + 15 = 20$ .



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Q83. In C language, the variables NAME, name, and Name are all the same. TRUE or FALSE ?

Ans- FALSE. C language is a case sensitive language. Therefore, NAME, name and Name are three uniquely different variables.

Q84. What is an endless loop ?

Ans- An endless loop can mean two things. One is that it was designed to loop continuously until the condition within the loop is met, after which a break function would cause the program to step out of the loop. Another idea of an endless loop is when an incorrect loop condition was written, causing the loop to run erroneously forever. Endless loops are oftentimes referred to as infinite loops.

Q85. What is a program flowchart and how does it help in writing a program ?

Ans- A flowchart provides a visual representation of the step by step procedure towards solving a given problem. Flowcharts are made of symbols, with each symbol in the form of different shapes. Each shape may represent a particular entity within the entire program structure, such as a process, a condition, or even an input/output phase.

Q86. What is wrong with this program statement ? `void = 10;`

Ans- The word void is a reserved word in C language. You cannot use reserved words as a user-defined variable.

Q87. Is this program statement valid ? `INT = 10.50;`

Ans- Assuming that INT is a variable of type float, this statement is valid. One may think that INT is a reserved word and must not be used for other purposes. However, recall that reserved words are express in lowercase, so the C compiler will not interpret this as a reserved word.

Q88. When is a "switch" statement preferable over an "if" statement ?

Ans- The switch statement is best used when dealing with selections based on a single variable or expression. However, switch statements can only evaluate integer and character data types.





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Q89. Is it possible to have a function as a parameter in another function ?

Ans- Yes, that is allowed in C programming. You just need to include the entire function prototype into the parameter field of the other function where it is to be used.

Q90. Which function in C can be used to append a string to another string ?

Ans- The strcat function. It takes two parameters, the source string and the string value to be appended to the source string.

Q91. What does the characters "r" and "w" mean when writing programs that will make use of files ?

Ans- "r" means "read" and will open a file as input wherein data is to be retrieved. "w" means "write", and will open a file for output. Previous data that was stored on that file will be erased.

Q92. is it possible to create your own header files ?

Ans- Yes, it is possible to create a customized header file. Just include in it the function prototypes that you want to use in your program, and use the #include directive followed by the name of your header file.

Q 93. In a switch statement, what will happen if a break statement is omitted ?

Ans- If a break statement was not placed at the end of a particular case portion? It will move on to the next case portion, possibly causing incorrect output.

Q94. Describe how arrays can be passed to a user defined function ?

Ans- One thing to note is that you cannot pass the entire array to a function. Instead, you pass to it a pointer that will point to the array first element in memory. To do this, you indicate the name of the array without the brackets.

Q95. What are pointers ?

Ans- Pointers point to specific areas in the memory. Pointers contain the address of a variable, which in turn may contain a value or even an address to another memory.





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Q96. What is gets() function ?

Ans- The gets() function allows a full line data entry from the user. When the user presses the enter key to end the input, the entire line of characters is stored to a string variable. Note that the enter key is not included in the variable, but instead a null terminator is placed after the last character.

Q97. What is the use of a semicolon (;) at the end of every program statement ?

Ans- It has to do with the parsing process and compilation of the code. A semicolon acts as a delimiter, so that the compiler knows where each statement ends, and can proceed to divide the statement into smaller elements for syntax checking.

Q98. What is the wild pointer ?

Ans- Uninitialized pointers are known as wild pointers because they point to some arbitrary memory location and may cause a program to crash or behave badly. ... If we want pointer to a value (or set of values) without having a variable for the value, we should explicitly allocate memory and put the value in allocated memory.

Q99. What is void or Generic pointers in C ?

Ans- A void pointer is a special pointer that can point to object of any type. A void pointer is typeless pointer also known as generic pointer. void pointer is an approach towards generic functions and generic programming in C. Writing programs without being constrained by data type is known as generic programming

Q100. What is the usage of the pointer in C ?

Ans- Accessing array elements: Pointers are used in traversing through an array of integers and strings. The string is an array of characters which is terminated by a null character '\0'. Dynamic memory allocation: Pointers are used in allocation and deallocation of memory during the execution of a program.

Call by Reference: The pointers are used to pass a reference of a variable to other function.

Data Structures like a tree, graph, linked list, etc.: The pointers are used to construct different data structures like tree, graph, linked list, etc.



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Q101. Is that possible to add pointers to each other ?

Ans- We cannot perform addition, multiplication and division operations on two pointer variables. However, we can subtract one pointer variable from another pointer variable. We can use increment and decrement operator along with pointer variable to increment or decrement the address contained in pointer variable.

Q102. What is a far pointer in C ?

Ans-In large data model (compact, large, huge) the address B0008000 is acceptable because in these model all pointers to data are 32bits long. If we use small data model (tiny, small, medium) the above address would not work since in these model each pointer is 16bits long. If we are working in a small data model and want to access the address B0008000 then we use far pointer. Far pointer is always treated as a 32bit pointer and contains a segment address and offset address both of 16bits each. Thus the address is represented using segment : offset format B000h:8000h. For any given memory address there are many possible far address segment : offset pair. The segment register contains the address where the segment begins and offset register contains the offset of data/code from where segment begins.

Q 103. What is a near pointer in C ?

Ans-Near pointer is a pointer which is used to bit address of up to 16 bits in a given section of the computer memory that is 16 bit enabled. It can only access data of a small size of about 64 kb in a given period, which is the main disadvantage of this.

Q104. What is the difference between near, far and huge pointers?

Ans- Near pointer

This is the pointer that is used to bit address of up to 16 bits in a given section of the computer memory that is 16 bit enabled. The main demerit of this bit is that it can only access data of a small size of about 64 kb in a given period.

far pointers

This is a 32-bit pointer, and it can access information that is outside the computer memory in a given section. For one to use this pointer, he or she must allocate his sector register to store data address in the sector and also another sector register must be stored within the most recent sector.

Huge pointer

This pointer has the same size to that of a far pointer, and it can also access bits that are located outside the sector. Unlike to far pointer, this pointer which is fixed and hence that part of the sector in which they are located cannot be modified in any way; huge



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pointers can be. The pointer was seen to be somehow slow, but it allow its pointer to points out many segments with a clear and comparable way

Q105. What is the size of a void pointer in C?

Ans- The size of void pointer varies system to system. If the system is 16-bit, size of void pointer is 2 bytes. If the system is 32-bit, size of void pointer is 4 bytes. If the system is 64-bit, size of void pointer is 8 bytes.

Q106. What is the difference between an uninitialized pointer and a null pointer?

Ans- Null pointer is a pointer which is pointing to nothing. Null pointer points to empty location in memory. Value of null pointer is 0. We can make a pointer to point to null as below.

```
Int*p= NULL;
```

```
char *p = NULL;
```

Uninitialized pointers are called as wild pointers in C which points to arbitrary (random) memory location. This wild pointer may lead a program to behave wrongly or to crash.

Q107. What is the usage of the NULL pointer in C?

Ans- A null pointer is a pointer which points nothing.

Some uses of the null pointer are:

- a) To initialize a pointer variable when that pointer variable isn't assigned any valid memory address yet.
- b) To pass a null pointer to a function argument when we don't want to pass any valid memory address.
- c) To check for null pointer before accessing any pointer variable. So that, we can perform error handling in pointer related code e.g. dereference pointer variable only if it's not NULL.

Q108. What is the FILE pointer?

Ans- File pointer is a pointer which is used to handle and keep track on the files being accessed. A new data type called "FILE" is used to declare file pointer. fopen() function is used to open a file that returns a FILE pointer. Once file is opened, file pointer can be used to perform I/O operations on the file.

Q109. What is the advantage of pointers in C?

Ans- 1) Pointers provide direct access to memory.

2)Pointers provide a way to return more than one value to the functions

3)Reduces the storage space and complexity of the program



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- 4) Reduces the execution time of the program
- 5) Provides an alternate way to access array elements
- 6) Pointers can be used to pass information back and forth between the calling function and called function.
- 7) Pointers allow us to perform dynamic memory allocation and deallocation.
- 8) Pointers help us to build complex data structures like linked list, stack, queues, trees, graphs etc.
- 9) Pointers allow us to resize the dynamically allocated memory block.
- 10) Addresses of objects can be extracted using pointers.

Q 110. What is Indirection or Dereference Operator ( \* )?

Ans- The dereference operator or indirection operator, sometimes denoted by " \* " (i.e. an asterisk), is a unary operator (i.e. one with a single operand) found in C-like languages that include pointer variables. It operates on a pointer variable, and returns an l-value equivalent to the value at the pointer address.

Q 111. What is the address of operator ( & ) ?

Ans- An address-of operator is a mechanism within C++ that returns the memory address of a variable. These addresses returned by the address-of operator are known as pointers, because they "point" to the variable in memory. The address-of operator is a unary operator represented by an ampersand (&).

Q 112. How to declare a pointer to a function in C ?

Ans- A pointer is a variable whose value is the address of another variable or memory block, i.e., direct address of the memory location. Like any variable or constant, you must declare a pointer before using it to store any variable or block address.

This is a simple example in C to understand the concept a pointer to a function.

```
1. #include
2. void show(int x)
3. {
4.     printf("Value of x is %d\n", x);
5. }
6. int main()
7. {
8.     void (*p)(int); // declaring a pointer
9.     p = &show; // p is the pointer to the show()
10.    (*p)(7); //initializing values.
11.    return 0;
12. }
```



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Q 113. What is the difference between pointer and array in C ?

Ans- Array in C is used to store elements of same types whereas Pointers are address variables which stores the address of a variable. Now array variable is also having a address which can be pointed by a pointer and array can be navigated using pointer. Given some difference between array and pointer-

1) An array stores the variables of similar data types and the data types of the variables must match the type of array. Conversely, the pointer variable stores the address of a variable, of a type similar to a type of pointer variable type.

2) We can generate an array of pointers i.e. array whose variables are the pointer variables. On the other hand, we can create a pointer that points to an array.

Q 114. What is an array of pointers ?

Ans- An array of pointers is an array that consists of variables of pointer type, which means that the variable is a pointer addressing to some other element. Suppose we create an array of pointer holding 5 integer pointers; then its declaration would look like:

```
int *ptr[5];    // array of 5 integer pointer.
```

In the above declaration, we declare an array of pointer named as ptr, and it allocates 5 integer pointers in memory. The element of an array of a pointer can also be initialized by assigning the address of some other element. Let's observe this case through an example.

```
int a; // variable declaration.  
ptr[2] = &a;
```

In the above code, we are assigning the address of 'a' variable to the third element of an array 'ptr'. We can also retrieve the value of 'a' by dereferencing the pointer.

```
*ptr[2];
```

Let's understand through an example.



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```
1. #include <iostream>
2. using namespace std;
3. int main()
4. {
5.     int ptr1[5]; // integer array declaration
6.     int *ptr2[5]; // integer array of pointer declaration
7.     std::cout << "Enter five numbers : " << std::endl;
8.     for(int i=0;i<5;i++)
9.     {
10.         std::cin >> ptr1[i];
11.     }
12.     for(int i=0;i<5;i++)
13.     {
14.         ptr2[i]=&ptr1[i];
15.     }
16.     // printing the values of ptr1 array
17.     std::cout << "The values are" << std::endl;
18.     for(int i=0;i<5;i++)
19.     {
20.         std::cout << *ptr2[i] << std::endl;
21.     }
22. }
```

In the above code, we declare an array of integer type and an array of integer pointers. We have defined the 'for' loop, which iterates through the elements of an array 'ptr1', and on each iteration, the address of element of ptr1 at index 'i' gets stored in the ptr2 at index 'i'.

Q115. What is the return value of malloc (0) ?

Ans-malloc(0) returns NULL on an implementation. Then your realloc() call is equivalent to realloc(NULL, 0) . That is equivalent to malloc(0) from above (and that is NULL in this case). malloc(0) returns non- NULL.

Q116. How to access pointer inside the structure in C ?

Ans-Here's how you can create pointers to structs.



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```
1. struct name {
2.     member1;
3.     member2;
4. };
5.
6. int main()
7. {
8.     struct name *ptr, Harry;
9. }
10. Here, ptr is a pointer to struct.
11. Example: Access members using Pointer
12. To access members of a structure using pointers, we use the -> operator.
13.
14. #include <stdio.h>
15. struct person
16. {
17.     int age;
18.     float weight;
19. };
20. int main()
21. {
22.     struct person *personPtr, person1;
23.     personPtr = &person1;
24.     printf("Enter age: ");
25.     scanf("%d", &personPtr->age);
26.     printf("Enter weight: ");
27.     scanf("%f", &personPtr->weight);
28.     printf("Displaying:\n");
29.     printf("Age: %d\n", personPtr->age);
30.     printf("weight: %f", personPtr->weight);
31.     return 0;
32. }
```

In this example, the address of person1 is stored in the personPtr pointer using personPtr = &person1;.

Now, you can access the members of person1 using the personPtr pointer.

Q 117. How to use a function pointer in structure in C ?

Ans- First, we need to declare a function pointer as per requirements. In the below example, I am creating two function pointers pfnMessage and pfnCalculator.

//function pointer use to display message

typedef void (\*pfnMessage)(const char\*,float fResult);

//function pointer use to perform arithmetic operation

typedef float (\*pfnCalculator)(float,float);





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Create a structure that contains the above function pointers and float variables.  
//structure of function pointer

```
1. typedef struct S_sArithMaticOperation
2. {
3.     float iResult;
4.     pfnMessage DisplayMessage;
5.     pfnCalculator ArithmeticOperation;
6. } sArithMaticOperation
```

;

Now we will define the functions which perform arithmetic operations like addition, subtraction, multiplication, and division.

//Perform Addition

```
1. float Addition(float a, float b)
2. {
3.     return a + b;
4. }
5. //Perform Subtraction
6. float Subtraction(float a, float b)
7. {
8.     return a - b;
9. }
10. //Perform Multiplication
11. float Multiplication(float a, float b)
12. {
13.     return a * b;
14. }
15. //Perform Division
16. float Division(float a, float b)
17. {
18.     return (a/b);
19. }
```

In the last, we will define a function which will call one of the above define function as per the user choice.

//perform Arithmetic operation

```
1. void PerformCalculation(float x, float y, sArithMaticOperation *funptr, const char
   *pcMessage )
2. {
3.     float result = funptr->ArithmeticOperation(x,y);
4.     funptr->DisplayMessage(pcMessage,result);
5. }
```