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## Top 100 C Interview Questions & Answers

### 1) How do you construct an increment statement or decrement statement in C?

There are actually two ways you can do this. One is to use the increment operator ++ and decrement operator --. For example, the statement "x++" means to increment the value of x by 1. Likewise, the statement "x--" means to decrement the value of x by 1. Another way of writing increment statements is to use the conventional + plus sign or - minus sign. In the case of "x++", another way to write it is "x = x + 1".

### 2) What is the difference between Call by Value and Call by Reference?

When using Call by Value, you are sending the value of a variable as parameter to a function, whereas Call by Reference sends the address of the variable. Also, under Call by Value, the value in the parameter is not affected by whatever operation that takes place, while in the case of Call by Reference, values can be affected by the process within the function.

### 3) Some coders debug their programs by placing comment symbols on some codes instead of deleting it. How does this aid in debugging?

Placing comment symbols /\* \*/ around a code, also referred to as "commenting out", is a way of isolating some codes that you think maybe causing errors in the program, without deleting the code. The idea is that if the code is in fact correct, you simply remove the comment symbols and continue on. It also saves you time and effort on having to retype the codes if you have deleted it in the first place.

### 4) What is the equivalent code of the following statement in WHILE LOOP format?

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Answer:

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### 5) What is a stack?

A stack is one form of a data structure. Data is stored in stacks using the FILO (First In Last

Out) approach. At any particular instance, only the top of the stack is accessible, which means that in order to retrieve data that is stored inside the stack, those on the upper part should be extracted first. Storing data in a stack is also referred to as a PUSH, while data retrieval is referred to as a POP.

#### **6) What is a sequential access file?**

When writing programs that will store and retrieve data in a file, it is possible to designate that file into different forms. A sequential access file is such that data are saved in sequential order: one data is placed into the file after another. To access a particular data within the sequential access file, data has to be read one data at a time, until the right one is reached.

#### **7) 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.

#### **8 What is spaghetti programming?**



Spaghetti programming refers to codes that tend to get tangled and overlapped throughout the program. This unstructured approach to coding is usually attributed to lack of experience on the part of the programmer. Spaghetti programming makes a program complex and analyzing the codes difficult, and so must be avoided as much as possible.

#### **9) Differentiate Source Codes from Object Codes**

Source codes are codes that were written by the programmer. It is made up of the commands and other English-like keywords that are supposed to instruct the computer what to do. However, computers would not be able to understand source codes. Therefore, source codes are compiled using a compiler. The resulting outputs are object codes, which are in a format

that can be understood by the computer processor. In C programming, source codes are saved with the file extension .C, while object codes are saved with the file extension .OBJ

**10) In C programming, how do you insert quote characters (' and ") into the output screen?**

This is a common problem for beginners because quotes are normally part of a printf statement. To insert the quote character as part of the output, use the format specifiers \' (for single quote), and \" (for double quote).

**11) What is the use of a '\0' character?**

It is referred to as a terminating null character, and is used primarily to show the end of a string value.

**12) What is the difference between the = symbol and == symbol?**

The = symbol is often used in mathematical operations. It is used to assign a value to a given variable. On the other hand, the == symbol, also known as "equal to" or "equivalent to", is a relational operator that is used to compare two values.

**13) What is the modulus operator?**

The modulus operator outputs the remainder of a division. It makes use of the percentage (%) symbol. For example:  $10 \% 3 = 1$ , meaning when you divide 10 by 3, the remainder is 1.

**14) What is a nested loop?**

A nested loop is a loop that runs within another loop. Put it in another sense, you have an inner loop that is inside an outer loop. In this scenario, the inner loop is performed a number of times as specified by the outer loop. For each turn on the outer loop, the inner loop is first performed.

**15) Which of the following operators is incorrect and why? (>=,**

**51) What are reserved words?**

Reserved words are words that are part of the standard C language library. This means that reserved words have special meaning and therefore cannot be used for purposes other than what it is originally intended for. Examples of reserved words are int, void, and return.

**52) What are linked list?**

A linked list is composed of nodes that are connected with another. In C programming, linked lists are created using pointers. Using linked lists is one efficient way of utilizing memory for storage.

**53) What is FIFO?**

In C programming, there is a data structure known as queue. In this structure, data is stored and accessed using FIFO format, or First-In-First-Out. A queue represents a line wherein the first data that was stored will be the first one that is accessible as well.

**54) What are binary trees?**

Binary trees are actually an extension of the concept of linked lists. A binary tree has two pointers, a left one and a right one. Each side can further branch to form additional nodes, which each node having two pointers as well.

**55) Not all reserved words are written in lowercase. TRUE or FALSE?**

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

**56) What is the difference between the expression "++a" and "a++"?**

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.

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

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

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

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

**59) What is an endless loop?**

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.

**60) What is a program flowchart and how does it help in writing a program?**

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.

**61) What is wrong with this program statement? `void = 10;`**

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

**62) Is this program statement valid? `INT = 10.50;`**

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.

**63) What are actual arguments?**

When you create and use functions that need to perform an action on some given values, you need to pass these given values to that function. The values that are being passed into the called function are referred to as actual arguments.

**64) What is a newline escape sequence?**

A newline escape sequence is represented by the `\n` character. This is used to insert a new line when displaying data in the output screen. More spaces can be added by inserting more `\n` characters. For example, `\n\n` would insert two spaces. A newline escape sequence can be placed before the actual output expression or after.

**65) What is output redirection?**

It is the process of transferring data to an alternative output source other than the display screen. Output redirection allows a program to have its output saved to a file. For example, if you have a program named `COMPUTE`, typing this on the command line as `COMPUTE >DATA` can accept input from the user, perform certain computations, then have the output redirected to a file named `DATA`, instead of showing it on the screen.

**66) What are run-time errors?**

These are errors that occur while the program is being executed. One common instance wherein run-time errors can happen is when you are trying to divide a number by zero. When run-time errors occur, program execution will pause, showing which program line caused the error.

**67) What is the difference between functions `abs()` and `fabs()`?**

These 2 functions basically perform the same action, which is to get the absolute value of the given value. `Abs()` is used for integer values, while `fabs()` is used for floating type numbers. Also, the prototype for `abs()` is under `<math.h>`, while `fabs()` is under `<math.h>`.

**68) What are formal parameters?**

In using functions in a C program, formal parameters contain the values that were passed by the calling function. The values are substituted in these formal parameters and used in whatever operations as indicated within the main body of the called function.

### **69) What are control structures?**

Control structures take charge at which instructions are to be performed in a program. This means that program flow may not necessarily move from one statement to the next one, but rather some alternative portions may need to be pass into or bypassed from, depending on the outcome of the conditional statements.

### **70) Write a simple code fragment that will check if a number is positive or negative.**

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### **71) When is a "switch" statement preferable over an "if" statement?**

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.

### **72) What are global variables and how do you declare them?**

Global variables are variables that can be accessed and manipulated anywhere in the program. To make a variable global, place the variable declaration on the upper portion of the program, just after the preprocessor directives section.

### **73) What are enumerated types?**

Enumerated types allow the programmer to use more meaningful words as values to a variable. Each item in the enumerated type variable is actually associated with a numeric code. For example, one can create an enumerated type variable named DAYS whose values are Monday, Tuesday... Sunday.

### **74) What does the function toupper() do?**

It is used to convert any letter to its upper case mode. Toupper() function prototype is declared in . Note that this function will only convert a single character, and not an entire string.

### **75) Is it possible to have a function as a parameter in another function?**

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.

### **76) What are multidimensional arrays?**

Multidimensional arrays are capable of storing data in a two or more dimensional structure. For

example, you can use a 2 dimensional array to store the current position of pieces in a chess game, or position of players in a tic-tac-toe program.

### **77) Which function in C can be used to append a string to another string?**

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

### **78) What is the difference between functions getch() and getche()?**

Both functions will accept a character input value from the user. When using getch(), the key that was pressed will not appear on the screen, and is automatically captured and assigned to a variable. When using getche(), the key that was pressed by the user will appear on the screen, while at the same time being assigned to a variable.

### **79) Do these two program statements perform the same output? 1) scanf("%c", &letter); 2) letter=getchar()**

Yes, they both do the exact same thing, which is to accept the next key pressed by the user and assign it to variable named letter.

### **80) What are structure types in C?**

Structure types are primarily used to store records. A record is made up of related fields. This makes it easier to organize a group of related data.

### **81) What does the characters "r" and "w" mean when writing programs that will make use of files?**

"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.

### **82) What is the difference between text files and binary files?**

Text files contain data that can easily be understood by humans. It includes letters, numbers and other characters. On the other hand, binary files contain 1s and 0s that only computers can interpret.

### **83) is it possible to create your own header files?**

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.

### **84) What is dynamic data structure?**

Dynamic data structure provides a means for storing data more efficiently into memory. Using dynamic memory allocation, your program will access memory spaces as needed. This is in contrast to static data structure, wherein the programmer has to indicate a fix number of memory space to be used in the program.

### **85) What are the different data types in C?**

The basic data types are int, char, and float. Int is used to declare variables that will be storing integer values. Float is used to store real numbers. Char can store individual character values.

### **86) What is the general form of a C program?**

A C program begins with the preprocessor directives, in which the programmer would specify which header file and what constants (if any) to be used. This is followed by the main function heading. Within the main function lies the variable declaration and program statement.

### **87) What is the advantage of a random access file?**

If the amount of data stored in a file is fairly large, the use of random access will allow you to search through it quicker. If it had been a sequential access file, you would have to go through one record at a time until you reach the target data. A random access file lets you jump directly to the target address where data is located.

### **88) In a switch statement, what will happen if a break statement is omitted?**

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.

### **89) Describe how arrays can be passed to a user defined function**

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.

### **90) What are pointers?**

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.

### **91) Can you pass an entire structure to functions?**

Yes, it is possible to pass an entire structure to a function in a call by method style. However, some programmers prefer declaring the structure globally, then pass a variable of that structure type to a function. This method helps maintain consistency and uniformity in terms of argument type.



**92) What is gets() function?**

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 \0 is placed after the last character.

**93) The % symbol has a special use in a printf statement. How would you place this character as part of the output on the screen?**

You can do this by using %% in the printf statement. For example, you can write printf("10%%") to have the output appear as 10% on the screen.

**94) How do you search data in a data file using random access method?**

Use the fseek() function to perform random access input/output on a file. After the file was opened by the fopen() function, the fseek would require three parameters to work: a file pointer to the file, the number of bytes to search, and the point of origin in the file.

**95) Are comments included during the compilation stage and placed in the EXE file as well?**

No, comments that were encountered by the compiler are disregarded. Comments are mostly for the guidance of the programmer only and do not have any other significant use in the program functionality.

**96) Is there a built-in function in C that can be used for sorting data?**

Yes, use the qsort() function. It is also possible to create user defined functions for sorting, such as those based on the balloon sort and bubble sort algorithm.

**97) What are the advantages and disadvantages of a heap?**

Storing data on the heap is slower than it would take when using the stack. However, the main advantage of using the heap is its flexibility. That's because memory in this structure can be allocated and removed in any particular order. Slowness in the heap can be compensated if an algorithm was well designed and implemented.

**98) How do you convert strings to numbers in C?**

You can write your own functions to do string to number conversions, or instead use C's built-in functions. You can use atof to convert to a floating point value, atoi to convert to an integer value, and atol to convert to a long integer value.

**99) Create a simple code fragment that will swap the values of two variables num1 and num2.**

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

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.

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