

INTERVIEW QUESTIONS

1. Who developed C Programming language?

A computer scientist named Dennis Ritchie from the USA developed the C programming language. He developed this with the help of his colleague Ken Thompson.

2. When was C language invented?

It was invented in 1972.

3. Why is C known as the mother language?

It is the mother of most of the JVMs and compilers. Most of the languages use functions from this language. It has concepts like arrays, functions, file handling, etc.

4. What do you understand by local and global variables in C?

Global variables are declared outside the function, and the scope of a variable is available till the end of the program. Local variables are declared inside the function, and the scope is available in these variables.

The life of the local variable is created when the block is entered and ends on exit, but the life of a global variable exists until the execution of the program.

Local variables are stored in a stack unless specified, and the compiler decides the storage location of a variable in global ones. So, these are the differences between a local and global variable in C.

5. Why are functions used in C?

Functions in C language are used to avoid rewriting the code. They can be called multiple times from a program.

With the help of functions, any program can be tracked easily. It also provides the concept of reusability. Furthermore, a user can also break the big task into smaller tasks with the assistance of C functions.

6. What are arrays in C programming?

It is a group of elements of similar sizes. The size of the array can also be changed after declaration. The array has a contiguous memory location, and it makes code optimized and easier.

Arrays in C are of two types:

One-dimensional array

Multidimensional array

7. What do you understand by dynamic memory allocation in C?

When memory is allocated at the run time in any program and can be increased at the time of execution, it is called dynamic memory allocation in C programming.

It is used in the linked list. At runtime, malloc() and calloc() are used. It is implemented with the help of data segments, and less memory is required for storage

8. What is ANSI in C?

ANSI, or American National Standard Institute, is an organization that maintains computer languages, data safety, data encoding, etc.

9. What is token in C?

A token is an identifier that can be a keyword, constant, operator, a string literal, etc. It is also the smallest unit in a program in C.

10. Tell me about some top features of C language.

- C language follows a structured approach
- It is fast and extensible
- Memory management
- Efficiency

11. What is the role of printf and scanf in C programming?

printf() function in C is used to print the values of character, float, integers, and string values. Some specifiers are %d, %s, %c, %f used for printing the values.

scanf() function in C is used for getting input from the user for a program.

12.What is the use of static variables in C?

When a variable is declared as static, it is known as a static variable. It keeps the value between various function calls. These are used because the static variable in C is available throughout the program.

It initialized to zero and later updated to the needed value. It is used only one time so that the memory space can be utilized.

13.What is recursion in C programming?

When a function calls itself, the process is known as recursion, and the function is known as a recursive function. It has two functions, the winding phase, and the unwinding phase.

14.What is a pointer in C programming?

A variable that refers to the memory address of any value is called a pointer. It is used to optimize the program to run faster. Some memory is allocated to a variable and it holds the address number that is called the pointer variable.

15.What is a NULL pointer in C?

When a pointer is not used to refer to any address, it is called a NULL pointer. When we assign 0 to any pointer, it is called a NULL pointer.

16.What is the difference between formal and actual parameters in C?

The parameters sent from the main function to subdivided functions are called actual parameters. The parameters declared at subdivided functions are called formal parameters.

17.What is nested structure in C programming?

It is a structure that contains an element of another structure as its member. Basically, A nested structure is a structure within a structure. It is done the same way structure members are declared in a function.

18.How to declare a function in C?

A function in C can be declared as

```
return_type function_name(formal parameter list)  
{
```

```
function_body;  
}
```

19.What is the difference between call by value and call by reference in C?

Actual arguments remain safe and can not be changed in the call by value in C. The operators are not safe as they are performed on actual parameters.

In the call by value, actual segments are not passed, and a copy of the segment is sent, but in the call by reference, actual arguments are passed.

For call by value, separate memory locations are created, and for the call by reference, they share the same memory space.

20.Can you write a program to generate random numbers in C?

Yes, I can generate random numbers in C with the help of the rand() function. Here is how:

```
#include<stdio.h>  
#include<conio.h>  
#include<stdlib.h>  
void main()  
{  
printf("The number is: %d", rand());  
printf("\n The number is: %d", rand());  
printf("\n The number is: %d", rand());  
getch();  
}
```

The output will be:

The number is: 455

The number is: 15648

The number is: 23212

21.What is an arrow operator in C programming?

The arrow operator in C is used to access the data member of a union and declared as a pointer variable. It is expressed as -> in C language.

22.What are storage class specifiers in C?

Storage class specifiers in C are extern, static, register, and auto.

23.What is typecasting in C?

When one data type is converted into another data type, the process is known as typecasting.

24.The local and global variables in C have the same name. Is it possible to access a global variable from a block with local variables?

Local variables are preferred, and it is not possible to access them in global variables.

25.What do you understand by enumerations in C?

An enumeration in C is a user-defined data type widely known as an enum. It has constant integers and integrals, which have names assigned by the user. It is used when a user needs a variable with a set of values.

26.What is union in C program?

Union in C programming is a data type that is user-defined that allows many types of data in a single unit. This data type holds the memory of the largest member, and it does not use the sum of the memory of all functions.

In this, we can access one variable at a time as it allocates one common space for all members of a union.

27.What is the use of the symbol ‘==’?

It is a relational operator that is used to compare two variables or values in a program. It is called equal to or equivalent to.

28. What is ternary operator in C?

The conditional operator is known as the conditional operator in the C language. It is denoted as (?:).

28.What is a preprocessor in C?

The C preprocessor is a software program that is used to process a source file before compilation. Header files, conditional compilation, line control, macro expansion, etc. can be included in a preprocessor.

29.Which operator is used in C to continue the program in the next line?

The backward slash(/) is used for this.

30.What is the difference between lvalue and rvalue in C?

The expression that is present on the right side of the assignment operator is known as the rvalue. It is assigned to lvalue which is on the left side of the assignment operator. The lvalue represents a variable and not a constant.

31.What do you understand by FIFO in C?

The data is stored in FIFO format in C language. The queue works on First-In-First-Out. The first data stored will be the first one to be accessed in a program.

32.How many spaces are there in a tab in C?

A tab in C programming has eight spaces.

33.Tell me about the if-else statement in C?

The if-else statement in C programming works as a control flow statement. it is followed by an optional else statement in C language.

34.Do you know about static memory allocation in C? Explain what it is.

The memory that is allocated during the time of compilation is called static memory allocation. It is implemented using heap or stacks.

This type of memory can not be executed with the program. The lifespan of a static memory is the lifetime of a program. It is used by the array in C.

35.Tell me about variables in C programming and how these are different from constants?

Variables are identifiers that are made of one or more characters and hold a particular value. The values that are held by variables can be changed in a program.

The values given to constants are not changeable and can only be assigned once, mostly at the start of the program.

36.What is the use of && operator in a C program?

This is the AND operator in the C program. There is a situation for using this operator where all the conditions are true. When only one statement is false, it will return false as a result.

37.Explain run-time errors in C language?

When there is a run-time error in a program, the execution of a program is paused, and it is called the run-time error. It will show which part of the program caused the error.

38.How to view the path in C?

The C compiler has a function called getenv() that is used to retrieve the environment variable. It returns the pointer to an environment string on success. When the function variable can not find environment variables, it returns NULL.

39.When a pointer points to a variable in C, what is it contained in?

The variable will contain the address of another value or memory.

40.What is the difference between a free-standing and hosted environment?

Embedded systems don't have any sort of file system or operating system and the ANSI standards call these environments a free-standing environment. When a program is running on a system, it is called a hosted environment.

41.How would you free a block of memory that has been allocated in a program?

Memory allocated in a program can be released by the free() function. The alternate method is when the pointer is holding a memory address which is realloc(ptr,0).

42.Can you declare static variables in header files in C language?

C programs can not declare a static variable without defining it. Static variables in a program can be defined in a header file, but it will result in causing every source file to have a different copy of a variable.

43.Can you write a C program to check even or odd numbers without using any arithmetic operator?

Yes, this can be done. Here is the program:

```
#include<stdio.h>
int main()
{
    int i;
    printf("Enter a number: ");
    scanf("%d", &i);
    if((number &1)==0)
        printf("%d is even", i);
    else
        printf("%d is odd", i)
    getch();
}
```

A bitwise AND operator can also be used to check if the number is even or odd.

Advanced C Programming Interview Questions and Answers for Experienced

If you are working in the industry as a C Programmer and want a job upgrade that tests your skills as a developer, you should possess some advanced skills.

Here are some of the most asked common **C interview questions for experienced professionals** that will help you understand the concept and get a smooth switch to high-paying jobs.

1. What is the difference between calloc() and malloc() in C programming?

Both calloc() and malloc() are used for allocating memory functions. The only difference is that calloc() loads the memory location, but malloc() will not.

2. Can you execute a C program without using the main() function?

For the execution of a C program, the main() function is needed. Without this function, the program will be compiled but can not be executed.

3. What is a preprocessor in the C programming language?

It is considered a predefined function in a C program. It is used as a directive to the compiler and executed before the execution of a program.

4. Tell me the difference between interpreter and compiler in C.

A compiler translates the code into the machine code and it is used in C language. The interpreter is used in other high-level languages to compile code in line by line method.

5. What is auto keyword in C?

The local variable of a function is known as the auto variable or automatic variable. These are declared inside a block. It allocates memory with the entry and releases the used memory when the program is ended. When there is no value in the local variable, then it has a garbage value.

6. What do you understand by dangling pointers in C?

When a pointer is assigned to a memory location, but another program erases the memory used by the first pointer, and the first pointer is still using the same location, it is called a dangling pointer.

It is a pointer that stores the memory address of variables. It is used to point to the variable memory location that is released in a program.

7. What do you understand by the concatenation operator in C?

The concatenation operator is used to combine or concatenate two strings into one string. It is used in C macros.

8. Is the working of the exit() and return the same?

No, the working of the exit() function and return is not the same. The exit() is used to exit the program and return control to the OS. The return statements return from a function and return control to the calling function.

9. Can we use the continue statement without the help of loops?

No, we can not use a continue statement without loops in C. it can only be used when in a loop. Otherwise, it will show a compile-time error.

10. How to check whether a symbol is defined or not?

The #ifdef and #ifndef preprocessor directives are used to check if the symbol is defined or not.

11. I have a value of 42532. Can I use int datatype to store this value?

No, you can not store this value. The integer data type can only support values from -32768 to 32767. You can use float or long int for that.

12. What is spaghetti programming?

It refers to the codes that are overlapped as the program progresses. This is an unstructured approach that needs to be avoided as it makes the program more complex.

13. What is a huge pointer in C?

It is a 32-bit pointer accessed outside of a segment. Huge pointers can be modified, which is not possible in far pointers.

14. What is getch() and getche()?

These functions are used to read characters from the input.

- getch() reads characters from the input device without using a buffer, and data is not displayed on the output display.
- getche() reads the characters from the input device but uses a buffer, and data is displayed on the screen.

15. What is the toupper() function in C?

It is a function used to convert lowercase characters into upper case.

16. What is the difference between ‘a’ and “a” in C language?

A double-quoted variable is called a string in C, but a single-quoted variable is known as an identifier in C. A string variable ends with a null terminator, which makes a two-character array.

17. What do you understand by #pragma directives in C?

It is a preprocessor directive used to turn on or off features in a C program. It has two types #pragma startup, which is used to specify functions at the start of a program, and #pragma exit, which is used to specify functions called on the exit of the program.

18. What is a bubble sort in C algorithm?

It is an algorithm that steps through a list and compares elements, and swaps them to make them in order. This process is repeated frequently until the list is sorted.

19. What is the difference between while(1) and while(0)?

- while(0) is the condition of the while loop, which means the condition is false, and the code won't execute any further.
- while(1) executes the infinite code times in a program.

20. You need to use unconditional branching; what keyword will you use?

I will use the goto keyword to perform unconditional branching in a C program.

C Technical Interview Questions and Answers

The technical round is the main phase of any development job. You should know about the C coding round interview questions. It has some programming questions based on common functions in C, and you should know about them precisely before applying for a technical job.

Get yourself ready by reading more books with technical knowledge and practicing more programs. Working on more programs will deepen your knowledge about C. Good command of the C language can land you in a pool of jobs with advanced technologies like Machine Learning, Artificial Intelligence, Robotics, etc.

Here are some of the tough C interview questions that will help you excel in your skills and get you the job you want.

1. Can you create a customized head file?

Yes, I can create a header file with function prototypes that are used in a program. These files are used after the `#include`.

2. What is a far pointer in C?

The type of pointer that can access all 16 segments of RAM is called a far pointer. It is a 32-bit pointer that uses information outside of memory.

3. Is it possible to create header files? If yes, then can you create them?

Yes, it is possible to create header files as per the requirement. It is done by including the function prototypes in the C program. `#include` directive is used by the name of a header file in C.

4. How to swap two numbers in a C program without the help of any other variable?

It can be basically done with two methods.

- With the help of arithmetic operators
- With the help of bitwise XOR

Here is how it is done with arithmetic operators:

```
#include<stdio.h>
int main()
{
int a=5, b=15;
print("values before swapping: a=%d b=%d", a,b);
a=a+b;
b=a-b;
a=a-b;
printf("\n Values after swapping a=%d b=%d, a,b);
return0;
}
```

Output:

Values before swapping: a=5 b=15

Values before swapping: a=15 b=5

5. How to print a string with the % symbol in a C program?

%% is used to print a string with a % symbol.

```
printf("The total marks obtained %%%d");
```

6. What is a memory leak in C?

It is a condition where dynamic memory is allocated to the program but the used memory is not deleted or released. It is harmful to a program.

7. What is the output of this program?

```
#include<stdio.h>
main()
{
char*x="xyz";
x[2]='a';
printf("%z", *x);
}
```

This program will not run and crash because the program is trying to change the values throughout the program. The pointer indicates a constant string which is the reason for the crash.

8. Which statement is more efficient between x=x+1 and x++?

x++ is more efficient in a program as it gives just a single instruction to the compiler.

9. Can you print “Hello World” in C without using a semicolon?

Yes, I can print Hello World without a semicolon. It can be done with three methods.

- if statement
- switch statement
- while loop

Here is how I will do it:

```
#include<stdio.h>
int main()
{
    if printf(“Hello World”)
    {}
    return 0;
}
```

10. Why can variable names not start with underscores?

Identifier names with two underscores are used by the compiler or standard library functions when they appear in a program. All identifier names started with an underscore are reserved in the file scope.

When a reserved identifier is used, the program will not compile. It is best to avoid using variable names with underscores at the start.

Basic C Programs for Interview Preparation

Here are some of the common and basic C programs asked in interview that you must know about. These programs are the foundation of the programming in C as it helps in building the basics of the language.

1. C program to print Hello World

```
#include<stdio.h>
int main()
{
printf("Hello World!")
}
```

Output:

Hello World

2. C program to add two integers

```
#include<stdio.h>
int main()
{
int a, b, sum;
print("Enter two integers: ");
scanf("%d %d", &a, &b");
sum=a+b;
printf("%d+%d=%d", a,b,sum);
return0;
}
```

Output:

Enter two integers: 5

12

5+12=17

3. C program to print ASCII value

```
#include<stdio.h>
int main()
{
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("ASCII value of %c=%d", c,c);
    return 0;
}
```

Output:

Enter a character: G
ASCII value of G: 71

4. C program to find even or odd numbers

```
#include<stdio.h>
int main()
{
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);
    if(num%2==0)
        printf("%d is even", num);
    else
        printf("%d is odd", num);
    return 0;
}
```

Output:

Enter a number: 5
5 is odd.

5. C program to get the length of a string

```
#include<stdio.h>
int main()
char s[] = "WsCube Tech";
int a;
for(a=0; s[a]!='\0'; ++a);
printf("Length of the string: %d", a);
return 0;
}
```

Output:

Length of the string: 11

6. C program to reverse an integer

```
#include<stdio.h>
int main()
{
int a, reverse=0, remainder;
printf("Enter an integer: ");
scanf("%d", &n);
while(n!=0)
{
remainder=n%10;
reverse=reverse*10+remainder;
n/=10;
}
printf("Reversed value: %d, reverse);
return 0;
}
```

Output:

Enter an integer: 2598

Reversed value: 8952