

## Q: What is a variable in C programming language?

A: A variable in C programming language is a named location in memory that is used to store a value. The value stored in the variable can be changed during the program execution.

## Q: How do you declare a variable in C?

A: A variable in C can be declared using the syntax:

```
data_type variable_name;
```

For example:

```
int age;  
float salary;  
char letter;
```

## Q: What is a data type in C?

A: A data type in C specifies the type of data that a variable can hold. Examples of data types in C include int (for integers), float (for floating point numbers), char (for characters), and double (for double-precision floating point numbers).

## Q: What is the scope of a variable in C?

A: The scope of a variable in C is the portion of the program where the variable can be accessed. There are three types of scope in C: global scope, local scope, and block scope. A

variable declared outside of any function has global scope and can be accessed from any part of the program. A variable declared inside a function has local scope and can only be accessed within that function. A variable declared inside a block has block scope and can only be accessed within that block.

### Q: What is the lifetime of a variable in C?

A: The lifetime of a variable in C is the period of time during which the variable exists in memory. The lifetime of a global variable is the entire execution of the program. The lifetime of a local variable is the period of time during which the function in which it is declared is executing. The lifetime of a variable declared inside a block is the period of time during which the block is executing.

### Q: What is the difference between automatic and static variables in C?

A: Automatic variables are local variables that are created when a function is called and destroyed when the function returns. Static variables are variables that retain their values even after the function in which they are declared has returned. Static variables are initialized only once at the beginning of the program, whereas automatic variables are initialized every time the function is called.

### Q: What is the purpose of the const keyword in C?

A: The const keyword in C is used to declare a variable as a constant, which means that its value cannot be changed during the program execution. Once a variable is declared as const, any attempt to modify its value will result in a compiler error. The const keyword is often used to declare constants such as mathematical constants, configuration parameters, or

string literals.

**Q: What is the difference between an integer and a floating point variable in C?**

**A:** An integer variable in C can only hold whole numbers, whereas a floating point variable can hold decimal numbers. Integer variables are represented using the int data type, whereas floating point variables are represented using the float or double data type. Integer variables use less memory than floating point variables and are faster to manipulate, but they cannot represent fractional values.

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