**Variables and Constants**

In programming, a variable is a container (storage area) to hold data.

**Rules for naming a variable**

- A variable name can only have alphabets, numbers, and the underscore _.
- A variable name cannot begin with a number.
- It is a preferred practice to begin variable names with a lowercase character. For example, name is preferable to Name.
- A variable name cannot be a keyword. For example, int is a keyword that is used to denote integers.
- A variable name can start with an underscore. However, it's not considered a good practice.

**Declaration of a Variable:**

A variable is introduced into a program by a declaration which states its **type** (i.e. int, float , bool or char) and its name, which you are free to choose. A **declaration** must take the form:

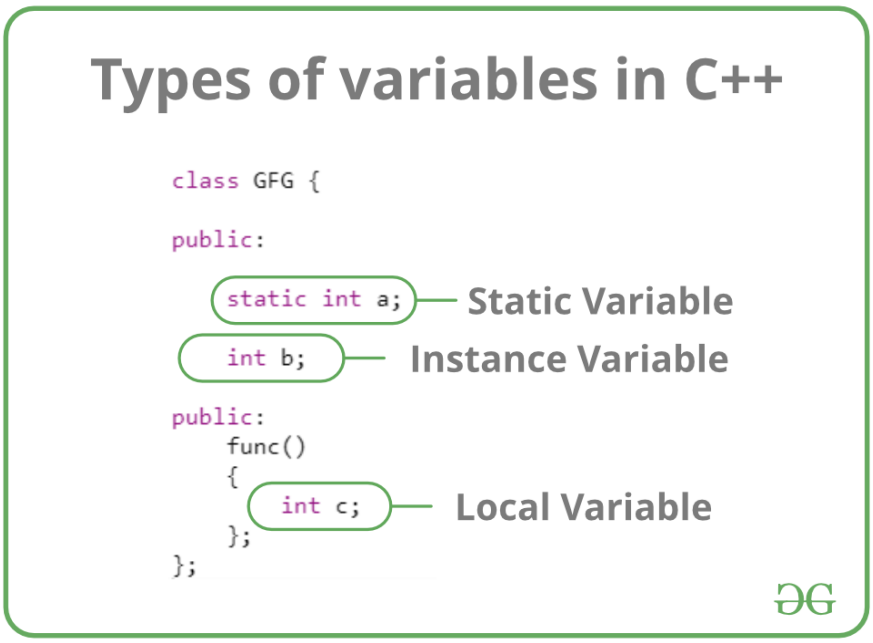
**type variable-name;**

```
int      count;
float    length;
char     firstInitial;
bool     switched_on;
```

or:

```
type     variable1, variable2, ... variableN;

float    base, height, areaCircle;
int      myAge, number_throws;
```



## C++ Constants:

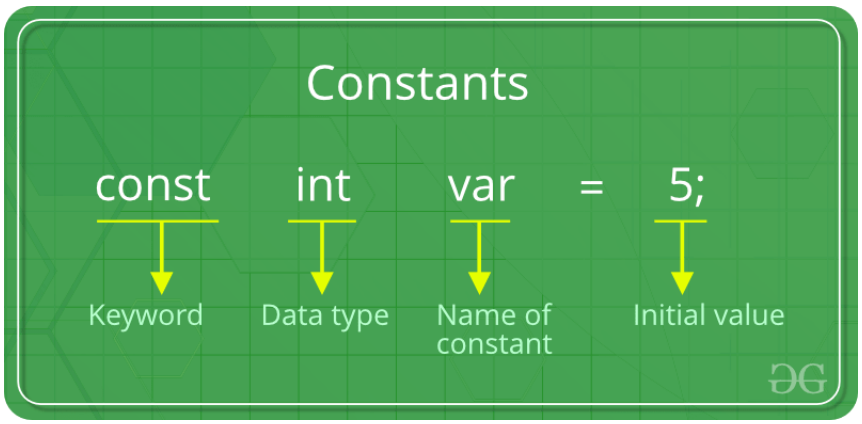
constants are given to such variables or values in C/C++ programming language which cannot be modified once they are defined. They are fixed values in a program. There can be any types of constants like integer, float, octal, hexadecimal, character constants, etc.

In C++, we can create variables whose value cannot be changed. For that, we use the const keyword. Here's an example:

```
const int LIGHT_SPEED = 299792458;
LIGHT_SPEED = 2500 // Error! LIGHT_SPEED is a constant.
```

Here, we have used the keyword const to declare a constant named LIGHT_SPEED. If we try to change the value of LIGHT_SPEED, we will get an error.

A constant can also be created using the #define pre-processor directive. We will learn about it in detail in the C++ Macros tutorial.




EXAMPLE PROGRAM:

```
#include <stdio.h>

int main()
{
   // int constant
   const int intVal = 10;

   // Real constant
   const float floatVal = 4.14;

   // char constant
   const char charVal = 'A';

   // string constant
   const char stringVal[10] = "ABC";

   printf("Integer constant:%d \n", intVal );
```

```
 printf("Floating point constant: %.2f\n", floatVal );
    printf("Character constant: %c\n", charVal );
    printf("String constant: %s\n", stringVal);

    return 0;
}
```

**Output:**

```
Integer constant: 10
Floating point constant: 4.14
Character constant: A
String constant: ABC
```