**C++ Data Types & Constants**

**C++ Data Types**

Data types define the type of data a variable can hold; for example, an integer variable can hold integer data, a character can hold character data, etc.

Data types in C++ are categorized into three groups:

**Built-in data types**

These data types are pre-defined for a language and could be used directly by the programmer.

Examples are: Int, Float, Char, Double, Boolean

**User-defined data types**

These data types are defined by the user itself.

Examples are: Class, Struct, Union, Enum

**Derived data types**

These data types are derived from the primitive built-in data types.

Examples are: Array, Pointer, Function

Some of the popular built-in data types and their applications are:

|  |  |  |
| --- | --- | --- |
| Data Type | Size | Description |
| int | 2 or 4 bytes | Stores whole numbers, without decimals |
| float | 4 bytes | Stores fractional numbers, containing one or more decimals. They require 4 bytes of memory space. |
| double | 8 bytes | Stores fractional numbers, containing one or more decimals. They require 4 bytes of memory space. |
| char | 1 byte | Stores a single character/letter/number, or ASCII values |
| boolean | 1 byte | Stores true or false values |

**C++ Constants**

Constants are unchangeable; when a constant variable is initialized in a program, its value cannot be changed afterwards.

#include <iostream>

using namespace std;

int main()

{

const float PI = 3.14;

cout << "The value of PI is " << PI << endl;

PI = 3.00; //error, since changing a const variable is not allowed.

}