First C++ Program

1) What is Programming Language?

Programming Language is a way to communicate with a computer. It is a formal language which consists of set of strings that produce various kind of machine input.

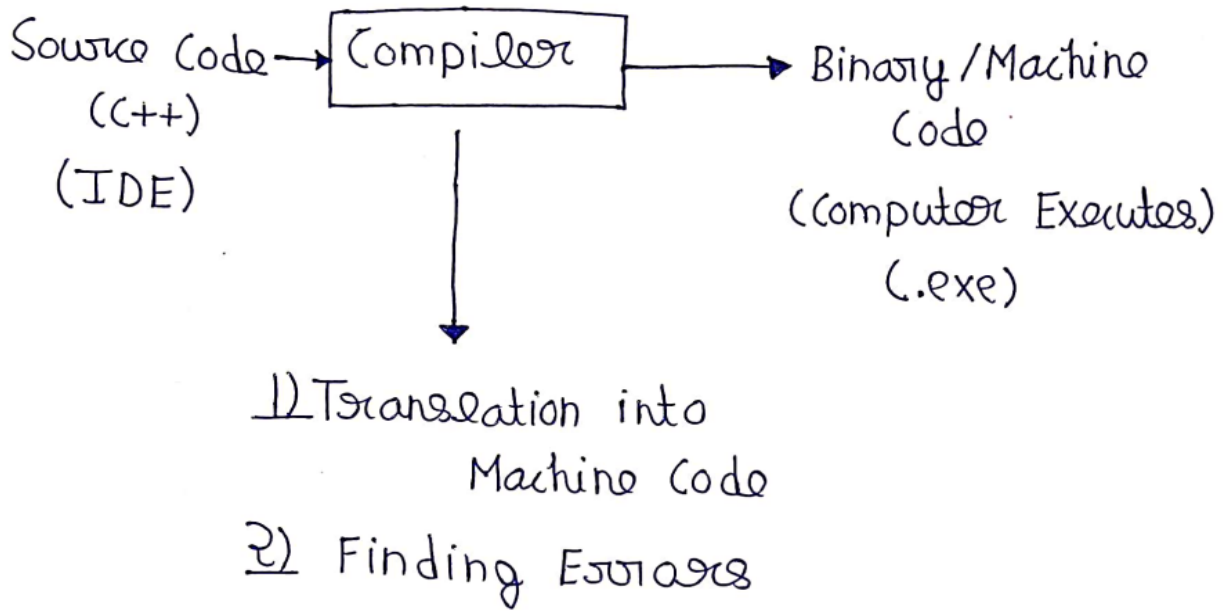
Every programming language must be written following some rules called **Syntax** of that language.

A computer essentially understands only binary code of 0s and 1s. A compiler processes the statements of a programming language into the Machine Code (Binary Number System).

Ex: C, C++, Java, Python, R, Go etc.

2) How does C++ compiler work?

C++ compiler work as follows.



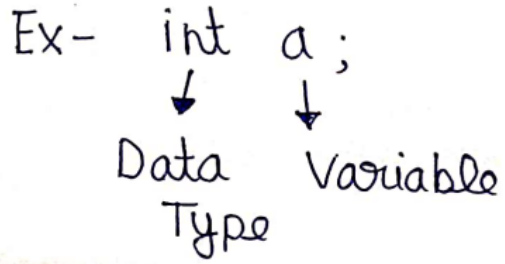
3) First C++ Program:

```
#include<iostream>
using namespace std;

int main(){
    cout<<"Namaste Duniya!"<<endl;
    return 0;
}
```

4) What are Data Types & Variables?

Variables are the memory locations which is used to store data in C++ and data types decide what kind of data variable can hold.



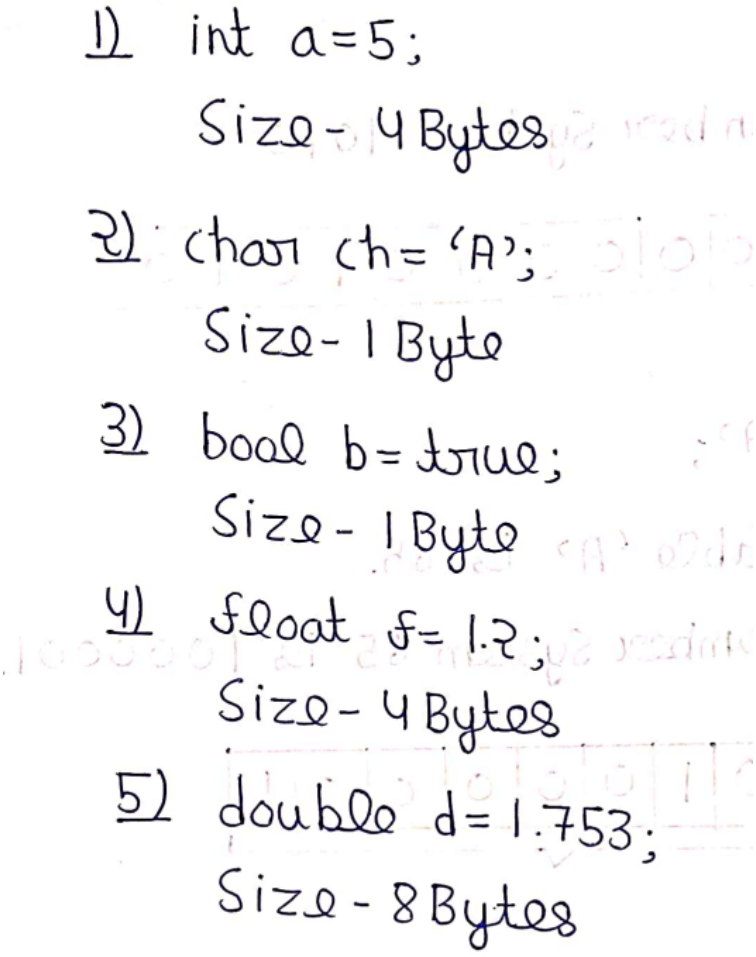
5) Unsigned Data Types:

By default, the data types are signed means we can store both positive and negative data in the variable but we can change it as it as an unsigned as follows.

```
Ex- unsigned int a=5;
    cout<<a<<endl;
```

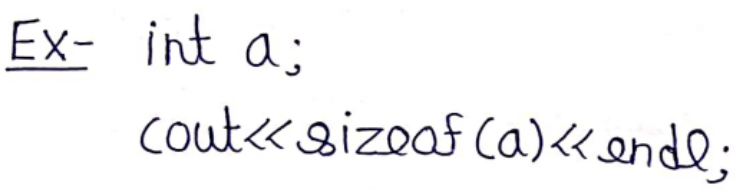
6) Data Types and their Sizes:

There are mainly five primitive data types in C++.



7) Size of Operator in C++:

Size of Operator is used to find the size of a variable in bytes in C++.

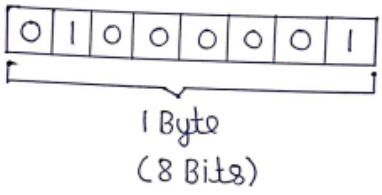


8) How data stored in memory?

Ex 1) char ch = 'A';

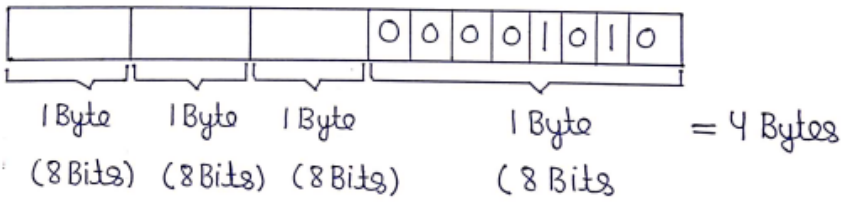
In ASCII Table 'A' is 65.

In Binary Number System 1000001



2) int a = 10;

In Binary Number System 1010



9) How negative number is stored in memory?

First Bit → 0
→ 1

1) Ignore the -ve Sign.
2) Convert it into Binary Representation
3) Take 2's compliment.

1's Complement

```
00000000000000101
11111111111111010
                +1
11111111111111011
```

10) Operators in C++:

Operators are special symbols or characters that perform specific operations on one or more values or variables. In C++, there are mainly five types of operators.

Arithmetic Operators: +, -, *, /, %

Relational Operators: ==, !=, >, <, >=, <=

Assignment Operators: =, +=, -=, *=, /=, %=

Logical Operators: &&, ||, !

Bitwise Operators: Here we skip Bitwise Operators, we will study Bitwise Operators while learning BIT Manipulation.