Basic program skeleton:

```cpp
#include <iostream>  // header (for libraries)
using namespace std;  // to use ‘cout’, ‘cin’ easier

int main() {       // main function
    return 0;       // function returns a value
}
```

Comments are for your eyes only!

// this is a single line comment

/*
   this is a
   multi-line
   comment
*/
Writing output in C++:

`cout` – reserved word for ostream object in C++ syntax (output)

`endl` – reserved word for a new line object in C++ syntax (or you can add ‘\n’ in the quotes depends where you want to place new line)

The following statements have the same effect (they both print Hello to the console):

```cpp
cout << "Hello world!" << endl;
cout << "Hello world!\n";
```
**Data types and Variables**

**Data types** are what we use to represent data. Keywords are words reserved by the programming language. The keywords below are only data types we will use in this course.

- **int**  
  Integers, whole numbers (e.g. 0, -2, 8, 9002, etc.)

- **double**  
  Numbers with decimal points (e.g. 0.05, -2.21, 100.9, etc.)

- **bool**  
  True/False value (C++ keywords: true and false)

- **char**  
  Single character (e.g. 'n', '5', '[', '<', etc)

- **string**  
  Sequence of zero or more characters (e.g. “”, “a”, “hi”, “what”, “how are you today?”)

**Variables** store data so that we can process it. Three things are necessary for a variable:

1) must have a data type;
2) must have a name;
3) must be declared (created) **before** we can use them.
Variable names:
Must begin with a letter, can end with a number
Can only be declared once within the same {scope}
Cannot contain spaces
Cannot contain special characters, except underscore (i.e. “_”)
Cannot be a keyword
Should generally make sense and not to be offensive

Examples:

```cpp
int var1;       // declaration
var1 = 5;       // initialization
int var2 = 7;   // declaration & initialization
int var3, var4; // declaration & initialization
double pi = 3.14;
char c = 'c';   // note that it is a single quote
bool t = 1;     // same as to say: bool t = true;
string str = "Hello";  // note that it is a double quote
string anotherStr = "Bye";
```
**Arithmetics in C++:**

**Precedence (from highest to lowest):**

* (multiply), / (divide), % (modulus/mod)

Example:

```cpp
int x = 2, y = 4;  
int z = x + 3 * y + 5;  // z = 20  
z = (x + 2) * (y + 3);   // z = 28
```

**% Operator (modulus/mod):**

*(x % y)* yields the remainder of x divided by y

12 % 3 = ?
5 % 3 = ?
1 % 2 = ?
Getting input in C++ (read in):
cin – reserved word for istream object in C++

Example
code snippet:
{
    string name;
    cout << “What is your name?” << endl;
    cin >> name;
    cout << “Hi “ << name << “. How are you today?” << endl;
}

output:
What is your name?
Bobby // user’s input
Hi Bobby. How are you today?