Initialization of Variables

You can give the initial values to the variables during the declaration in C++. The following program demonstrates how to declare different type of variables. Notice that string objects can be initialized in two ways. You may use either of them in your programs.

```
/*
PROG: c1_09init.cpp
Initializtion of variables.
*/
#include <iostream>
#include <string>
using namespace std;
int main()
{
  string st1("I am learning ");   //st1 is been initialized to
                                  //"I am learging "
  string st2 = "C++";      //st2 is been initialized to "C++"
  int int1 = 8, int2 = 5; //int1 is been initialized to 8, and
                          //int2 to 5
  float flt1 = 7.5, flt2 = 3.9;  //flt1 is been initialized to
                                 //7.5, and flt2 to 3.9
  char ch1 = 'A';                //ch1 is been initialized to 'A'
  bool bl1 = true, bl2 = false;  //bl1 is been initialized to
                                 //true, and bl2 to false

  cout<<"st1 + st2 is "<<st1 + st2<<endl;
  cout<<"int1 + int2 is "<<int1 + int2<<endl;
  cout<<"flt1 + flt2 is "<<flt1 + flt2<<endl;
  cout<<"ch1 is "<<ch1<<endl;
  cout<<"bl1 is "<<bl1<<endl;
  cout<<"bl2 is "<<bl2<<endl;
  system("pause");  return 0;
}
```

```
st1 + st2 is I am learning C++
int1 + int2 is 13
flt1 + flt2 is 11.4
ch1 is A
bl1 is 1
bl2 is 0
Press any key to continue . . .
```

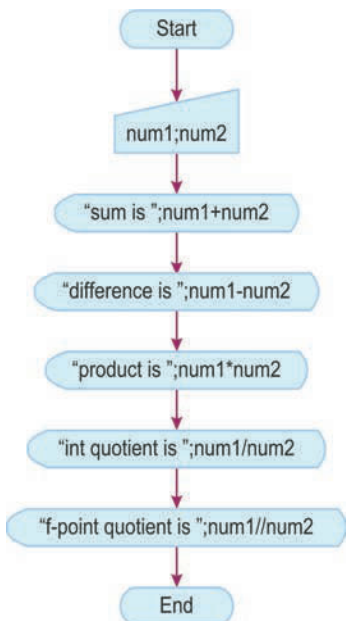
Using Text Files as Input and Output

C++ provides two functions to read from a text file and to write into a text file. Those functions are **ifstream()** and **ofstream()**. Both functions are declared in the <fstream> header. **ifstream** opens an existing input file whereas, **ofstream** creates or recreates and opens the output file.

Data input and output operations on text files are performed in the same way we operated with “cin” and “cout”. ifstream() function defines an identifier to read from a file, and the name and location (path) of that file. In the same way, ofstream() function defines an identifier to write into a file, and the name and location (path) of the file. I prefer to use "fin" and "fout" identifiers in my programs fin takes the role of cin and fout takes the role of cout. After you have finished with the input and output files you should close them so that their resources become available again for the system. close() function is used to close the open files.

The following program read two integers (num1 and num2) from the file numbers.in. Computes sum, difference, product and quotient of those two numbers and then writes the result into the file numbers.out.

```
/*
PROG: c1_10file.cpp
Using input and output files.
*/
#include <fstream>
using namespace std;

int main()
{
     ifstream fin("numbers.in");  //open input file
     ofstream fout("numbers.out");//create and open output file

     int num1, num2;
     fin >>num1 >>num2;     //read two integers from the input file

     //Make arithmetical calculations and write the result into
     //the output file
     fout <<"sum is "<<num1+num2<<endl;
     fout <<"difference is "<<num1-num2<<endl;
     fout <<"product is "<<num1*num2<<endl;
     fout <<"integer quotient is "<<num1/num2<<endl;
     fout <<"floating-point quotient is "<<(float)num1/num2<<endl;

     fin.close();           //close the input file
     fout.close();          //close the output file

     system("PAUSE");
     return 0;
}
```



Flowchart of the Program “10file”

numbers.in

```
5 3
```

numbers.out

```
sum is 8
difference is 2
product is 15
integer quotient is 1
floating-point quotient is 1.66667
```