Handout for Lab 2 for the Week 04/08/11 to 10/08/11   **August 4, 2011**

Objective:
This is the second lab you are attending for this course. In this lab, you will practise writing, modifying, compiling, and executing C++ programs. The programs deal with int and float type variables, and illustrate computations involving these. You required to read, compile and execute the programs mentioned in this lab handout.

Programming Examples

1. *Write a C++ program to find the area and perimeter of a rectangle given its length and breadth*

```
#include<iostream>
using namespace std;
int main()
{
  float l,b,a,p;
  cout<<"Enter length and breadth in m:";
  cin>>l>>b;
  a=l*b;
  p=2*(l+b);
  cout<<"\nArea :"<<a<<"sq.m";
  cout<<"\nPerimeter :"<<p<<"m";
  return 0;
}
```
File Name: area_perimeter.cpp

2. *Write a C++ Program to print the ASCII value of a given character*

```
#include <iostream>
using namespace std;
int main() {
  char c;
  int a;
  cout<<" Enter a character :";
  cin >> c;
  cout<<" Character is :"<< c <<endl;
  a = c;
  cout<<" ASCII is :"<<a<<endl;
  return 0;
}
```
File Name: ascii.cpp

3. *Write a C++ Program to print the fractional part of a floating point number*
```
#include <iostream>
using namespace std;
int main() {
  float f;
  int a;
  cout<<" Enter a float :";
  cin >> f;
  cout<<" Number is :"<< f <<endl;
  a = f;
  f = f - a;
  cout<<" Fractional part is :"<<f<<endl;
  return 0;
}
```
File Name: fractional.cpp

Programming Exercise

1.   *Predict the values*

The program int_float.cpp is supposed to compute "$^{100}C_6$". Before you compile it, predict which of the values - x, y, z, u, v, w – are likely to give the correct answer, nearly the correct answer or the wrong answer

　　　　Now compile and execute the program.
　　　　Note which of your predictions were correct.
　　　　Determine the cause of errors, if any.
　　　　Modify some of the types to float and repeat above steps.

```
#include <iostream>
using namespace std;
int main() {
int x = 100 * 99 * 98 * 97 * 96 * 95 / (1 * 2 * 3 * 4 * 5 * 6);
int y = 100/1 * 99/2 * 98/3 * 97/4 * 96/5 * 95/6;
int z = 100/6 * 99/5 * 98/4 * 97/3 * 96/2 * 95/1;

int u = 100.0 * 99 * 98 * 97 * 96 * 95 / (1 * 2 * 3 * 4 * 5 * 6);
int v = 100.0/1 * 99/2 * 98/3 * 97/4 * 96/5 * 95/6;
int w = 100.0/6 * 99/5 * 98/4 * 97/3 * 96/2 * 95/1;

cout<< " x is: " << x << " y is: " << y << " z is: " << z << endl;
cout<< " u is: " << u << " v is: " << v << " w is: " << w << endl;
return 0;
}
```
File Name: int_float.cpp

2.   **Write a C++ Program to print the expansion of (a+b)^2 using values of a and b step by step.**

```
#include <iostream>
using namespace std;
int main() {
 int a,b;
 cout<<" Enter a :";
 cin >> a;
 cout<<" Enter b :";
 cin >> b;

 cout<<"("<<a<<" + "<< b<<")^2 = "<<endl;
 cout <<a<<"^2 + "<<"2*"<<a<<"*"<<b<<" + "<<b<<"^2 ="<<endl;
 cout<<a*a<<" + "<<2*a*b<<" + "<<b*b<<" = "<<endl;
 cout<< a*a + 2*a*b + b*b<<endl;
 return 0;
}
```
File Name: absquare.cpp