Programming Language (630203)
Fall 2010/2011 – Lecture Notes # 16

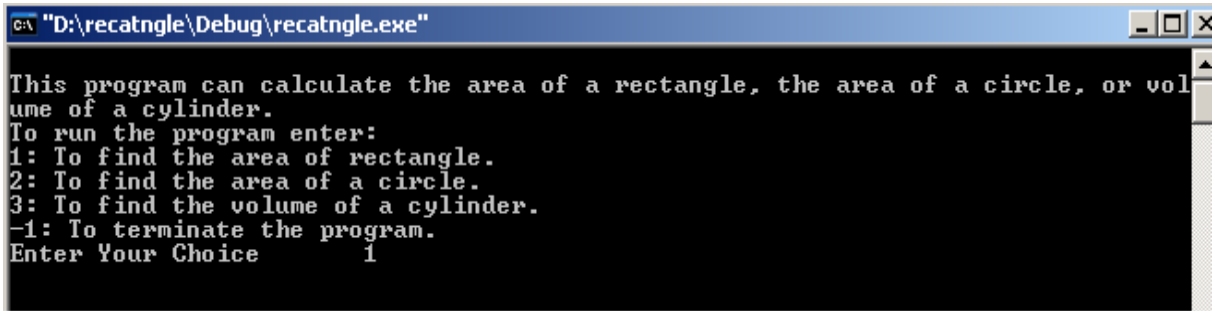
User-Defined Functions III

Menus Design (Programming Example)

```
#include <iostream>
using namespace std;
const double PI = 3.1419;
double rectangle(double l, double w);
double circle(double r);
double cylinder(double bR, double h);
#include <iomanip>
int main()
{
    double radius;
    double height;
    double length;
    double width;
    int choice;
    cout << fixed << showpoint << setprecision(2) << endl;
    cout << "This program can calculate the area of a rectangle, "
    << "the area of a circle, or volume of a cylinder." << endl;
    cout << "To run the program enter: " << endl;
    cout << "1: To find the area of rectangle." << endl;
    cout << "2: To find the area of a circle." << endl;
    cout << "3: To find the volume of a cylinder." << endl;
    cout << "-1: To terminate the program." << endl;
    cout << "Enter Your Choice\t";
    cin >> choice;
    cout << endl;
    while (choice != -1)
    {
        switch (choice)
        {
        case 1:
             cout << "Enter the length and the width "
                  << "of the rectangle: ";
            cin  >> length >> width;
            cout << endl;
            cout << "Area of Rectangle = "
                 << rectangle(length,width) << endl;
            break;
        case 2:
             cout << "Enter the radius of the circle: ";
            cin >> radius;
            cout << endl;
            cout << "Area = " << circle(radius)
```

```
                << endl;
            break;
        case 3:
            cout << "Enter the radius of the base and the "
                << "height of the cylinder: ";
            cin >> radius >> height;
            cout << endl;
            cout << "Volume = " << cylinder(radius, height)
                << endl;
            break;
        default:
            cout << "Invalid choice!" << endl;
        }
    cout << "To run the program enter: " << endl;
    cout << "2: To find the area of a circle." << endl;
    cout << "1: To find the area of rectangle." << endl;
    cout << "3: To find the colume of a cylinder." << endl;
    cout << "-1: To terminate the program." << endl;
    cout << "Enter Your Choice\t";
    cin >> choice;
    cout << endl;
    }
    return 0;
 }
double rectangle(double l, double w)
{
    return l * w;
}
double circle(double r)
{
    return PI *r* r ;
}
double cylinder(double bR, double h)
{
    return PI * bR * bR * h;
}
```

Program testing: (run the program and enter the required data for each case)



The output if we enter 1