

Exercise # 4 - Solution

(17-10-2001)

```
/*
    File sphere.h
*/
#include "pidef.h"
double sphereSurface(double);
double sphereVolume(double);

/*
    File cylinder.h
*/
#include "pidef.h"
double cylinderSurface(double,double);
double cylinderVolume(double,double);

/*
    File pidef.h
*/
#ifndef PI
#define PI 3.1415
#endif

/*
    File sphere.cc
*/
#include "pidef.h"
double sphereSurface(double radius)
{
    return 4*PI * radius*radius;
}
double sphereVolume(double radius)
{
    return (4*PI*radius*radius*radius)/3.0;
}
/*
    File cylinder.cc
*/
#include "pidef.h"
double cylinderSurface(double radius, double height)
{
    return 2*PI*radius*(radius+height);
}
double cylinderVolume(double radius, double hight)
```

```

    {
        return PI*radius*radius*height;
    }
    /*
    Driver program main.cc
    */

#include "sphere.h"
#include "cylinder.h"
#include <iostream.h>

int main()
{
    double sphereRadius=0;
    double cylinderRadius=0, cylinderHeight=0;

    cout << "\nEnter radius of Sphere: ";
    cin >> sphereRadius;
    cout << "Sphere surface is " << sphereSurface(sphereRadius)
        << " and volume is " << sphereVolume(sphereRadius) << endl;
    cout << "\nEnter cylinder radius and height: ";
    cin >> cylinderRadius >> cylinderHeight;
    cout << "Cylinder surface is "
        << cylinderSurface(cylinderRadius, cylinderHeight)
        << " and volume is "
        << cylinderVolume(cylinderRadius, cylinderHeight)
        << endl;
}

```

Compiled with:
g++ main.cc sphere.cc cylinder.cc -o main