Answer on Question#39188 - Programming – C++

```
#include <iostream>
#include <string>
#include <math.h>
#include <stdlib.h>
using namespace std;

#define pi 3.14159265358979323846264338327795

class Shape
{
protected:
	string name;
public:
	Shape(string n): name(n) {}
	virtual float SurfaceArea() = 0;
};

class Shape2D:public Shape
{
	float par;
public:
	Shape2D(string n, float a):par(a),Shape(n){};
	float SurfaceArea()
	{
		if(name == "Square")
			return par*par;
		if(name == "Circle")
			return pi*par*par;
		if(name == "Triangle")
			return sqrt(3)*par*par/4;
	}
};

class Shape3D:public Shape
{
	float par1,par2;
public:
	Shape3D(string n, float a,float b):par1(a),par2(b),Shape(n){};
	float SurfaceArea()
	{
		if(name == "Cylinder")
			return (2*pi*par1*par1) + (2*pi*par1*par2); //par1 - radius, par2 -
height
		if(name == "Pyramid") //4-angle pyramid
			return (2*par1*sqrt(par2*par2+par1*par1/4) + par1*par1); //par1 - side,
par2 - height
		};
};

int main()
{
	Shape2D Square1("Square",1);
	cout << "Square,s area: " << Square1.SurfaceArea() << endl;
	Shape2D Circle1("Circle", 1);
	cout << "Circle,s area: " << Circle1.SurfaceArea() << endl;
	Shape2D Triangle1("Triangle",1);
	cout << "Triangle,s area: " << Triangle1.SurfaceArea() << endl;
	Shape3D Pyramid1("Pyramid", 1,1);
```

```
        cout << "Pyramid,s surface area: " << Pyramid1.SurfaceArea() << endl;
        Shape3D Cylinder1("Cylinder",1,1);
        cout << "Cylinder,s surface area: " << Cylinder1.SurfaceArea() << endl;
        system("PAUSE");
}
```