OOP TUTORIAL 5

Name:Varad Tanawade

CODE:

```
/*Define the base class Shape with two data members of any numeric
type that are employed to
compute the area of respective shape. Add member functions to input
the data members
values and display the area in base class only. Derive two classes
from base class namely,
Triangle & Rectangle. Take the display function as virtual in base
class and redefine it in the
derived classes. Using above classes , write a program to accept
parameters for triangle or
rectangle and display the area Using Virtual Functions.*/
#include <iostream>
#include <string>
using namespace std;

class shape {
protected:
    string name;
    float height;
    float width;
    float length;
    float Area;
public:
    virtual void display();
    void input();
    virtual float area() { return 0; };
};
void shape::display() {
    cout << "Display of Base Class" << endl;
    cout << "The area of " << name << " is:" << Area << endl;
};
void shape::input() {
    cout << "Enter Dimensions of Shape (Enter 1 if not applicable):"
<< endl;
```

```
    cout << "Enter width of " << name << ":";
    cin >> width;
    cout << "Enter height of " << name << ":";
    cin >> height;
    cout << "Enter length of " << name << ":";
    cin >> length;
};
class triangle : public shape {
public:
    float area();
    void display();
    triangle() { name = "Triangle"; };
};
void triangle::display() {
    cout << "Display of Derived Class" << endl;
    cout << "The area of " << name << " is:" << Area << endl;
};
float triangle::area() {
    Area = (0.5) * width * height;
    return Area;
};
class rectangle : public shape {
public:
    float area();
    void display();
    rectangle() { name = "Rectangle"; };
};
void rectangle::display() {
    cout << "Display of Derived Class" << endl;
    cout << "The area of " << name << " is:" << Area << endl;
};
float rectangle::area() {
    Area = length * width;
    return Area;
};
int main() {
    shape *base;
```

```
    triangle t1;
    base = &t1;
    base->input();
    base->area();
    base->display();
    rectangle r1;
    base = &r1;
    base->input();
    base->area();
    base->display();
 return 0;
};
```

OUTPUT:

```
Enter Dimensions of Shape (Enter 1 if not applicable):
Enter width of Triangle:5
Enter height of Triangle:2
Enter length of Triangle:1
Display of Derived Class
The area of Triangle is:5
Enter Dimensions of Shape (Enter 1 if not applicable):
Enter width of Rectangle:8
Enter height of Rectangle:1
Enter length of Rectangle:3
Display of Derived Class
The area of Rectangle is:24
```