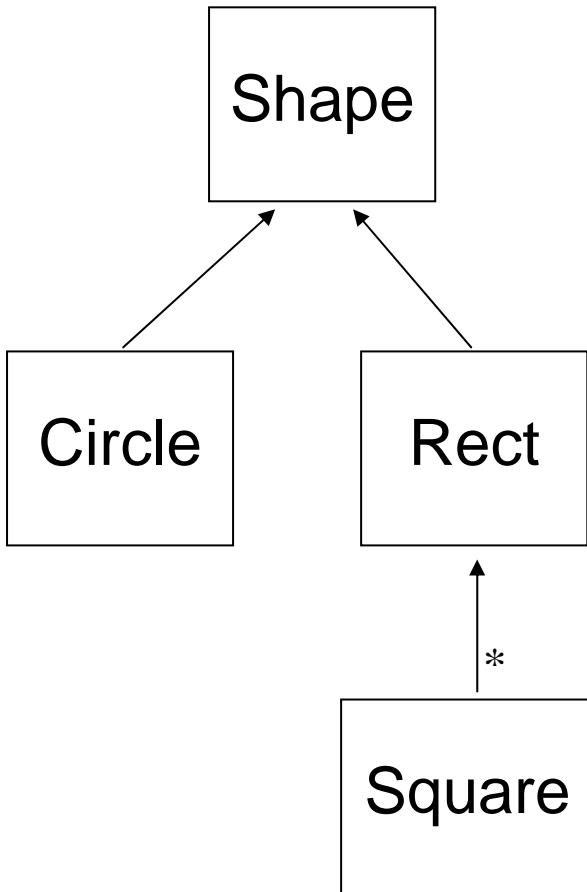


## The Shape example



\* This inheritance is wrong. A square is-NOT-a rectangle and therefore should not publicly inherit from it. Come to my class for the details ☺

```

class Shape {
protected:
    int center_x, center_y;

public:
    Shape(int x, int y);

    virtual void draw();
    virtual double area();
    virtual void whoami();
};
  
```

```

class Circle : public Shape {
    int radius;
public:
    Circle(int x, int y, int r);

    void draw();
    double area();
    void whoami();
};
  
```

```

class Rect : public Shape {
    int height, width;
public:
    Rect(int x,int y,int h,int w);

    void draw();
    double area();
    void whoami();
};
  
```

```

class Square : public Rect {
public:
    Square(int x, int y, int h);

    void whoami();
};
  
```

```

Shape::Shape(int x, int y) :
    center_x(x), center_y(y)
{}

void Shape::draw()
{
    // meaningless
}

double Shape::area()
{
    // meaningless
    return 0;
}

void Shape::whoami()
{
    cout << "Shape" << endl;
}

-----

Circle::Circle(int x,int y,int r) :
    Shape(x,y), radius(r)
{}

void Circle::draw()
{
    // somehow print a circle with a
    // center at center_x, center_y
    // and radius
}

double Circle::area()
{
    return 3.14*radius*radius;
}

void Circle::whoami()
{
    cout<<"Circle, inherited from ";
    Shape::whoami();
}

-----

Rect::Rect(int x,int y,int h,int w)
: Shape(x,y), height(h), width(w)
{}

```

```

void Rect::draw()
{
    // somehow print a rectangle with
    // a center at center_x, center_y
    // and with edges of lengths
    // width and height
}

double Rect::area()
{
    return width*height;
}

void Rect::whoami()
{
    cout << "Rect, inherited from ";
    Shape::whoami();
}

-----

Square::Square(int x, int y, int h)
: Rect(x, y, h, h)
{}

void Square::whoami()
{
    cout << "Square, inherited from ";
    Rect::whoami();
}

-----

int main()
{
    Shape *arr[3];

    arr[0] = new Square(10, 10, 50);
    arr[1] = new Rect(10, 10, 50, 20);
    arr[2] = new Circle(10, 10, 50);

    for(int i=0; i<3; i++) {
        cout << "My area is: ";
        cout << arr[i]->area();
        cout << " and I am ";
        arr[i]->whoami();
        delete arr[i];
    }
    return 0;
}

```

**Output:**

```

My area is: 2500 and I am Square, inherited from Rect, inherited from Shape
My area is: 1000 and I am Rect, inherited from Shape
My area is: 7850 and I am Circle, inherited from Shape

```