COE – 351: OBJECT-ORIENTED PROGRAMMING

LAB ACTIVITY 8

POLYMORPHISM

INTRODUCTION

For this lab activity, you'll need to understand how polymorphism works. You'll also need foreknowledge of pointers as well as inheritance. Please try this out before coming to the lab.

PRACTICE

Consider the base class from the previous lab activity, *CPolygon*.

```
class CPolygon {
protected:
    int width, height;
public:
    void set_values(int a , int b){
    width = a, height = b
    }
};
```

1. Add a public integer function *area* to the class which simply returns 0. Note that it should be defined in such a way that it can be altered by other derived classes.
2. From this parent class, create two derived classes; *CRectangle* and *CTriangle*. Each should have its own integer function *area*, which will be used to calculate the area of a rectangle and a triangle respectively.
3. Initialize the following:
    a. An object *rect* of the *CRectangle* class.
    b. An object *trgl* of the *CTriangle* class.

c. An object *poly* of the *CPolygon* class.

d. A pointer *ppoly1* for the object *rect*.

e. A pointer *ppoly2* for the object *trgl*.

f. A pointer *ppoly3* for the object *poly*.

4. Using only the pointers *ppoly1*, *ppoly2* and *ppoly3*;

   a. Set the width and height of the objects *rect*, *trgl* and *poly* to 10 and 5 respectively.

   b. Print out the areas of the three objects.