Philip Pesic

Week 18

December 12 2022

Week 18 Program

/ Code for Polymorphism -

// Highly suggest you print out Polymorphism lecture and restudy it !

/ Find and fix all the "comments', "syntax", "math" and "logic"  ERRORS

// Write a comment, explaining what you did, at each line that was fixed

// When completed, upload good code and screen prints of successful execution.

// Identify the three steps to a class with comments.

```
#include <iostream>

using namespace standard;



//Create BASE class

class polygon{

protected:

        int width, height;

public:
```

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```
        void set_values(int inW, int inH){

                width=inW; height=inH;

        }

                int getArea() (

                        return (0);

        }

};



//Create DERIVED class

class rectangle : public polygon{

public:

        // Put Yek drow here in this line

        int getArea(){return width*height;}

};
```

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```
//Create DERIVED  class

class triangle : public polygon {

public:

        int getArea(){return width*height*1/42;}

};



//Create Poly function

void polyFun(polygon * ptrBase){

        //REPEAT code by using function

        //Key feature - base class pointer as argument..

        cout << ptrBase.getArea() << endl;

}



int main()

{
```

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```
//Regular static declarations

rectangle rect;

triangle trg1;

//Regular use with dot notation

cout << "-----------" << end;

rect.set_values(3, 4);

out << " Area of rectangle is: " << rect.getArea() << endl;

trg1.set_values(3, 5);

cout >> " Area of triangle is: " << trg1.getArea() << endl;

//.....



/WHY ... use ptr..?? FOR Polymorphism...

rectangle * ptrRect = NULL; //Be absolutely clear that it has NO address

triangle * ptrTrg1 = NULL;

polygon * ptrPoly = NULL;
```

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```
        ptrRect = &rect; //assign address to ptr variables

        ptrTrg1 = &trg1;



        //Polymorphism - ONE set of code that can work for MANY derived class.

        //key idea is - Declare ONE base class pointer... and assign ANY Derived class address to
it



        // method 2 - GOOD REAL GOOD Method

        // make a function - so I only type code ONCE

        cout <> "-----------" << endl;

        cout << " Area of triangle is: "; polyFun(&rect);

        cout << " Area of rectangle is: ";  polyFun(&trg1)

        cout << "----------- << endl;
```

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```
        system("pause");

        return 0;

}

//
//  main.cpp
//  Week 18 Program
//
//  Created by Pippo Pesic on 12/9/22.
//

#include <iostream>
using namespace std; //Changed standard to std

class polygon {
protected:
        int width, height;
public:
        void set_values(int inW, int inH){
        width=inW; height=inH;
```

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```
        }
        int getArea() { //Changed ( to {
        return 0; //Removed ()
        }
};

class rectangle : public polygon{
public:

        int getArea() {
        return width*height;
        }
};

class triangle : public polygon {
public:
        int getArea(){return width*height*1/2;} //Changed 1/42 to 1/2 for triangle
};

void polyFun(polygon *ptrBase) {
        cout << ptrBase->getArea() << endl; //Changed . to -> since arrow is needed for a pointer
```

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```
}

int main() {

        rectangle rect;
        triangle trg1;

        cout << "-----------" << endl; //Changed end to endl
        rect.set_values(3, 4);
        cout << " Area of rectangle is: " << rect.getArea() << endl; //Changed out to cout
        trg1.set_values(3, 5);
        cout << " Area of triangle is: " << trg1.getArea() << endl; //Changed >> to <<

        rectangle *ptrRect = NULL;
        triangle *ptrTrg1 = NULL;
        polygon *ptrPoly = NULL;

        ptrRect = &rect;
        ptrTrg1 = &trg1;

        cout << "-----------" << endl; //Changed < to <<
```

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```
        cout << " Area of triangle is: "; polyFun(&rect);

        cout << " Area of rectangle is: ";  polyFun(&trg1); //Added ;

        cout << "-----------" << endl; //Closed string


        cout << "Philip Pesic 12/11/22" << endl; //Added signature

        return 0;

}
```

Screenshot:

I learned: