실습 103 - Shape Hierarchy 2

제출 마감일: 2023-06-09 23:59
업로드 가능한 파일 수: 6
제출 방식: 개인

Problem

For this task, you'll continue building on your Shape hierarchy by adding a new Polygon class. The purpose is to ensure that your design complies with the Open-Closed Principle (OCP), meaning you should be able to add this new functionality without altering any existing code.

- The Polygon class should inherit from IShape and should accept a variable number of points. Implement the getArea(), getPerimeter(), and toString() functions specific to a polygon.
- Reflect on your solution and write a brief discussion on whether your code adheres to the Open-Closed Principle (OCP) and why on the description.txt.

<참고자료>

```
// ShapeTest.cpp

// 생략

int main() {
std::vector<std::unique_ptr<IShape>> shapes;

shapes.emplace_back(std::make_unique<Rectangle>(std::vector<Point>{{0, 0}, {0, 2}, {2, 2}, {2, 0}}));
shapes.emplace_back(std::make_unique<Triangle>(std::vector<Point>{{0, 0}, {0, 2}, {2, 2}}));
shapes.emplace_back(std::make_unique<Circle>(Point{0, 0}, 3));
shapes.emplace_back(std::make_unique<Polygon>(std::vector<Point>{{0, 0}, {0, 2}, {2, 2}, {2, 0}, {1, 1}}));

doingSomething(shapes);

return 0;
}
```

입력

없음

출력

Rectangle Area: 4.00, Perimeter: 8.00

Triangle Area: 2.00, Perimeter: 6.83

Circle Area: 28.27, Perimeter: 18.85

Polygon Area: 3.00, Perimeter: 8.83

totalArea: 37.27, totalPerimeter: 42.51

Rectangle destructor called

IShape destructor called

Triangle destructor called

IShape destructor called

Circle destructor called

IShape destructor called

Polygon destructor called

IShape destructor called

제출파일

Circle.h (실습 102)
Rectangle.h (실습 102)
Triangle.h (실습 102)

Polygon.h
description.txt
103.csv

(IShape.h, Helper.h, ShapeTest.cpp 파일은 PLATO 서버에 등록되어 있습니다)