

CS 542 HW Assignment 5 (Due by 12pm on March 15st)

1. [20 points] Use **Composite Design Pattern** to simplify the code in the *composite.cpp* file.

Leaf:

We have a ***LegoBrick1X1*** class to create a Lego 1x1 brick object.

We have a ***LegoBrick1X2*** class to create a Lego 1x2 brick object.

We have a ***LegoBrick2X2*** class to create a Lego 2x2 brick object.

We have a ***LegoFigure*** class to create a Lego figure object.

Composite:

We have a ***LegoProduct*** class to create a Lego product, which is made up by multiple different Lego bricks, figures, and other Lego products.

Task:

Now you are asked to use **Composite** design pattern to simplify the ***LegoProduct*** class implementation by treating individual leaf objects (*LegoBrick1X1*, *LegoBrick1X2*, *LegoBrick2X2*, *LegoFigure*) and the composite object (*LegoProduct*) uniformly.

Hint:

Create a Component class as a common interface.

Let ***LegoBrick1X1***, ***LegoBrick1X2***, ***LegoBrick2X2***, ***LegoFigure***, and ***LegoProduct*** implement this common interface.

Submission

SUBMIT ALL THE FILES IN A ZIP FILE TO COUGAR COURSES:

Always make sure the files you submit can be compiled on empress.csusm.edu.

- Program1: Submit **composite.cpp** in a zip file to cougar course.

Note: Compress all the above files in a zip file, name it with your name, and submit the zip file on Cougar Course. For example, my first name is Xin and my last name is Ye, then I will name the zip file as XinYe.zip.

Grading

1. On Cougar Course, submit all the files in a zip file with your name. Otherwise, we will not grade it.
2. Your code should be compiled on Cougar Course. If there is a compilation error, you will get 0 points.
3. If your code fails in 1 test case, we will deduct 10% of the total points.
4. If your code fails in 2 test cases, we will deduct 20% of the total points.
5. If your code fails in 3 test cases, we will deduct 40% of the total points.
6. If your code fails in more than 3 test cases, we will deduct 90% of the total points.
7. The comments in your code count for 10% of the total points.
8. Additionally, we will deduct 10% points for each day after the due date.