

CMPE 135

Object-Oriented Analysis and Design

Spring 2021

Instructor: Ron Mak

Assignment #6

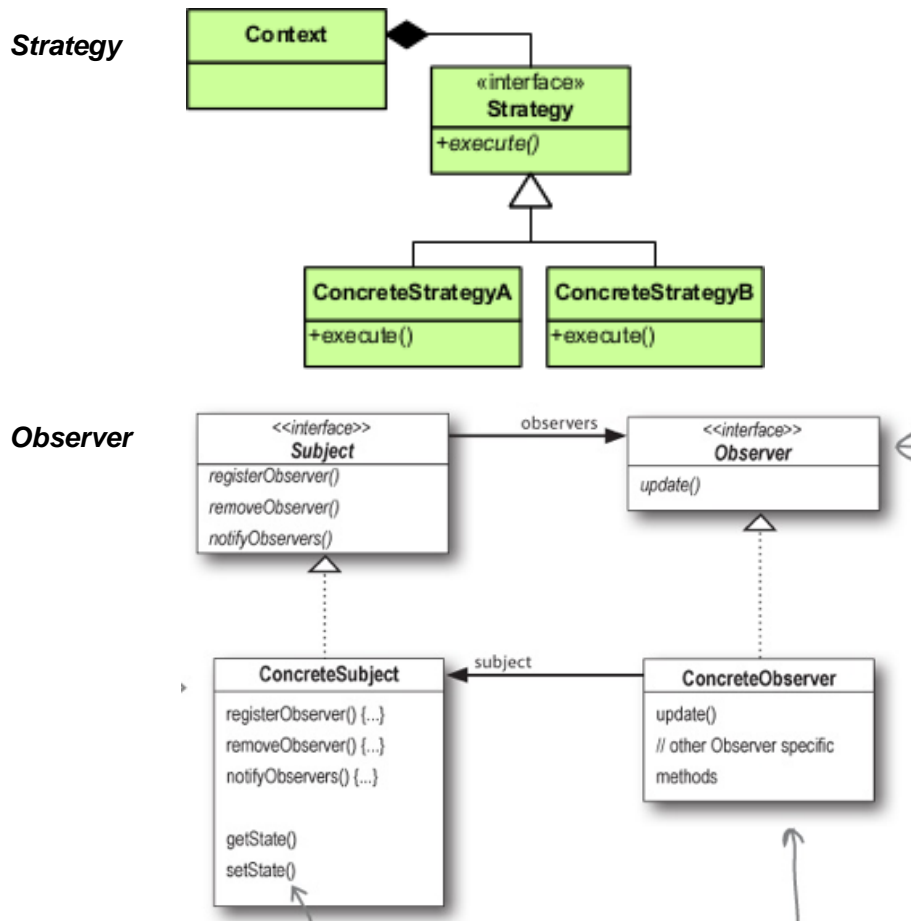
Assigned: Tuesday, April 20
Due: Friday, April 30 at 11:59 PM
Team assignment, 105 points max

Design patterns

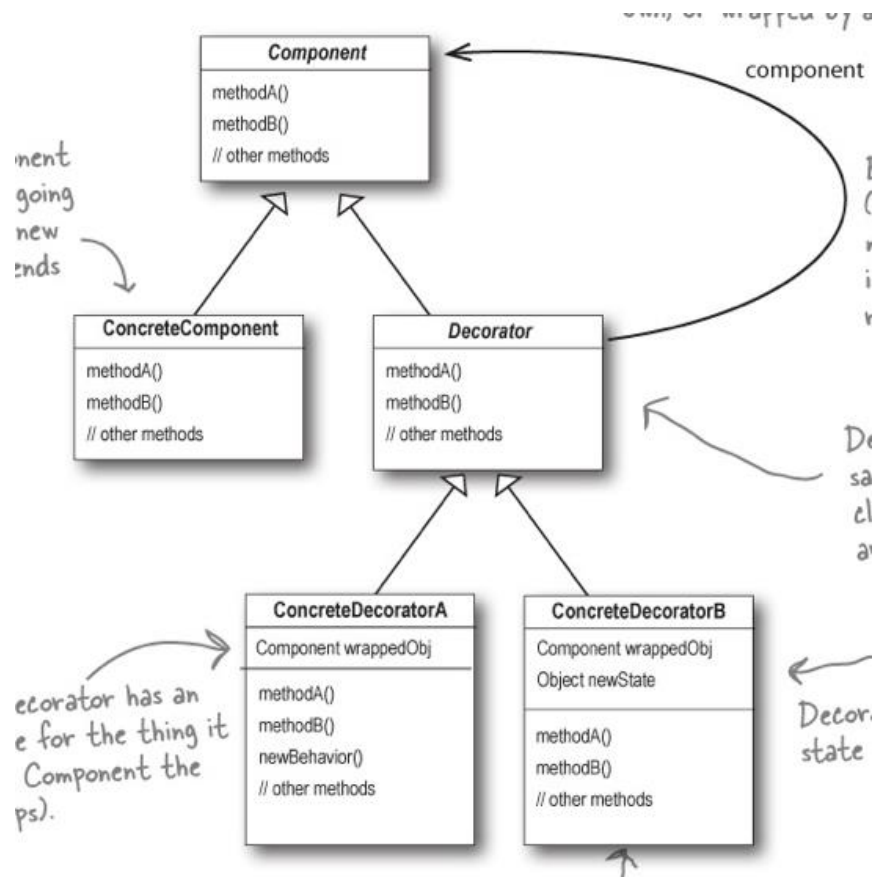
Identify the use of **three different design patterns** in your project. Describe the context and use of each pattern and draw UML diagrams of how you implemented each pattern.

Design pattern UML diagrams

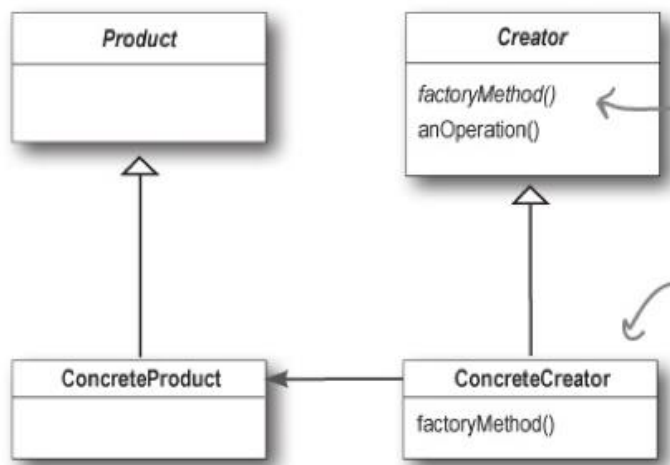
Here are UML diagrams of the patterns taken from the lecture slides:



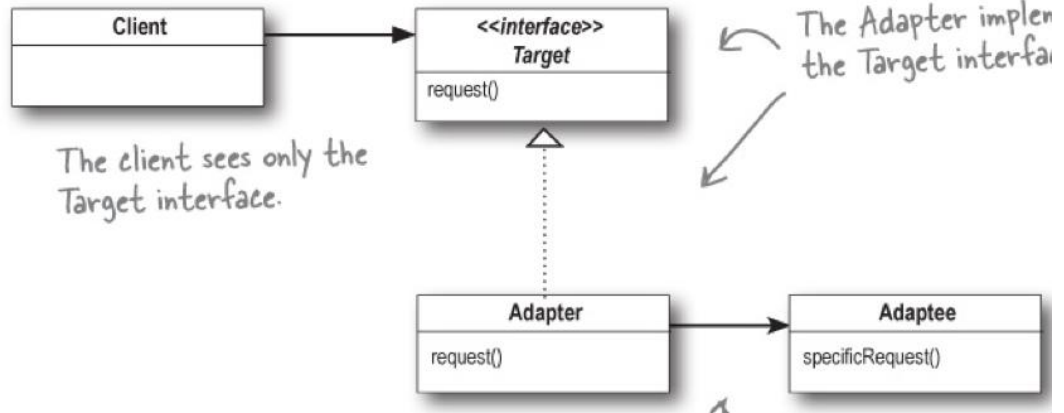
Decorator



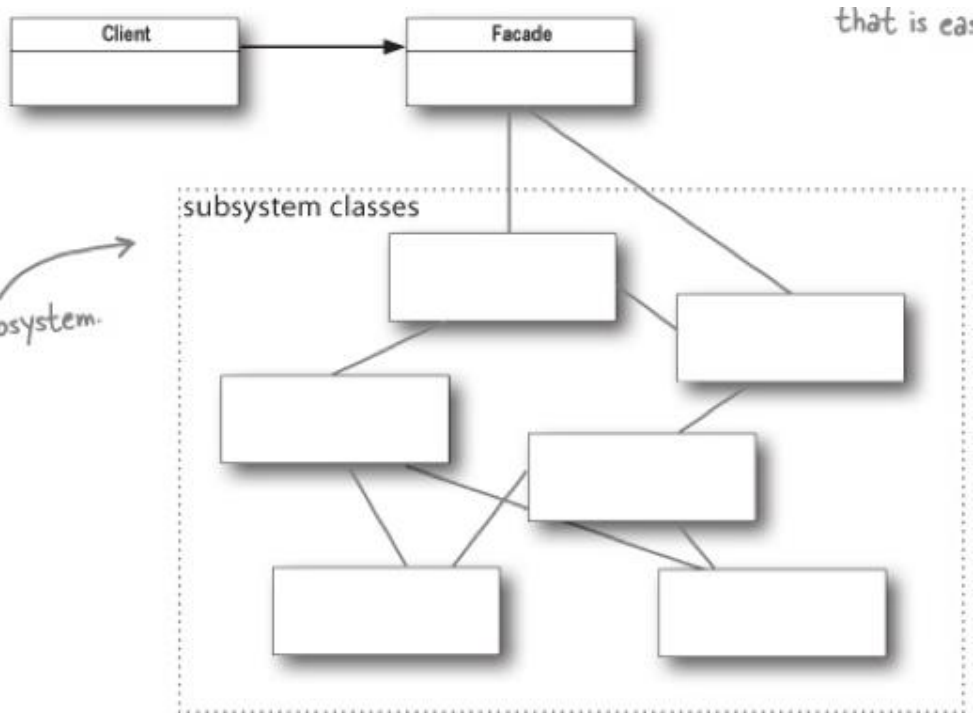
Factory Method



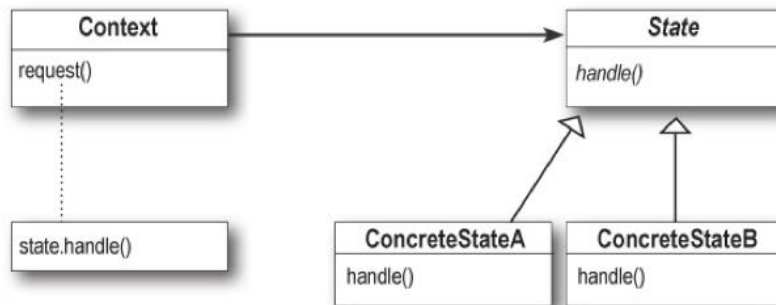
Adapter



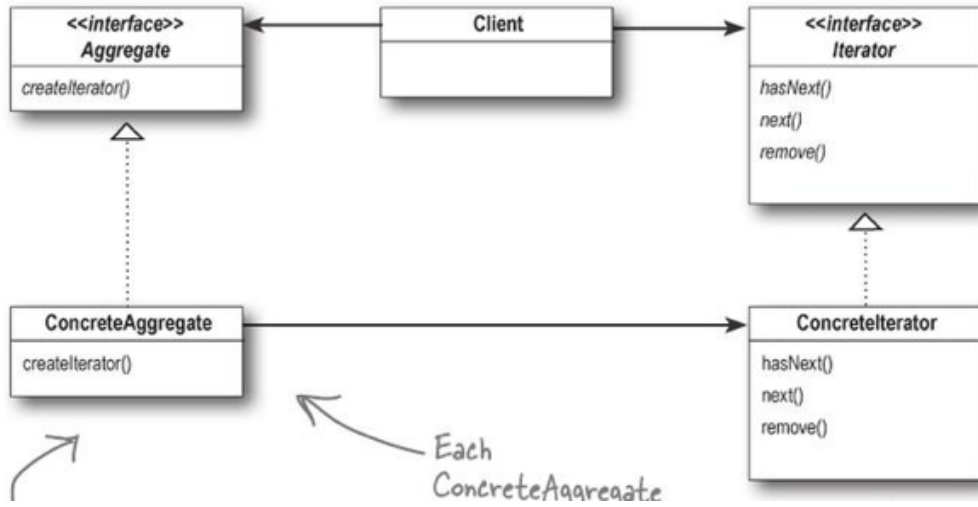
Façade



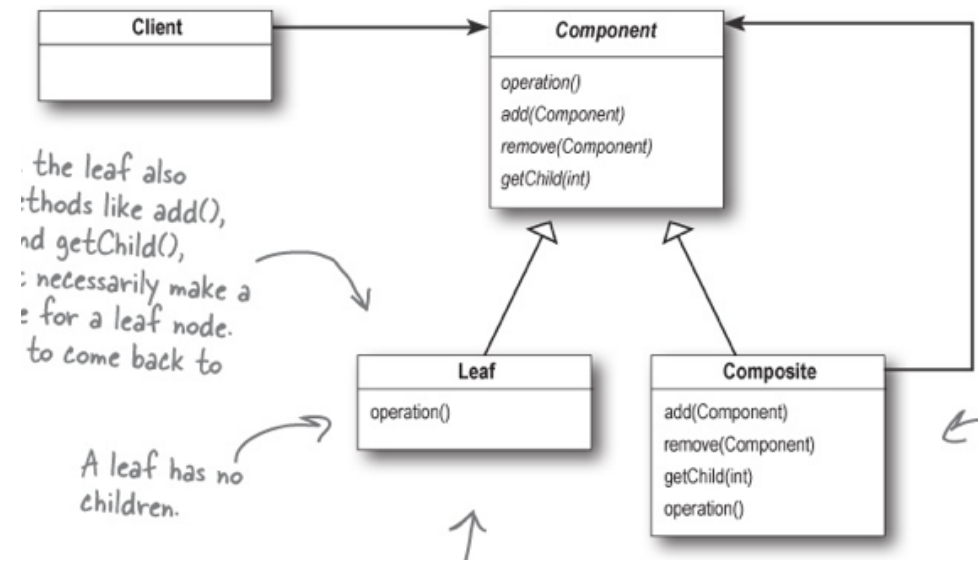
State



Iterator



Composite



Your implementation of three design patterns

For each of your three chosen design patterns, include in a written report:

- Describe the **context** in which you used the pattern. What functionality is provided by the code that implements the pattern?
- Draw a **UML diagram of your implementation** of the pattern. Identify how each class corresponds to the generic class of the pattern. In other words, how does your diagram mirror the diagram of the pattern as shown above? For example, if you chose the Observer Design Pattern, which of your classes correspond to the **Subject** interface, the **ConcreteSubject** class, the **Observer** interface, and the **ConcreteObserver** class?
- Include your **C++ source** files that contain your implementation of the design pattern.

If you are not sufficiently far along in coding your project, then think about what design patterns would be appropriate for you to use, and then write some prototype C++ code for your project that implements the patterns.

What to turn in

Each team should submit into Canvas a zip file containing your report and source files:
Assignment #6: Design Patterns

Rubric

Your assignment will be graded according to these criteria:

Criteria	Max points
First design pattern <ul style="list-style-type: none">• Description of the context of the use of the pattern.• UML diagram of the pattern's implementation.• C++ source code containing the implementation.	35 <ul style="list-style-type: none">• 15• 15• 5
Second design pattern <ul style="list-style-type: none">• Description of the context of the use of the pattern.• UML diagram of the pattern's implementation.• C++ source code containing the implementation.	35 <ul style="list-style-type: none">• 15• 15• 5
Third design pattern <ul style="list-style-type: none">• Description of the context of the use of the pattern.• UML diagram of the pattern's implementation.• C++ source code containing the implementation.	35 <ul style="list-style-type: none">• 15• 15• 5