Design Patterns - UML Refresher

We will use UML to visualize two aspects to help with our learning:

1. **Structural Relationships** between Objects in our designs.
    a. This is where you see how all the objects fit together.
    b. What are the relationships between them?
    c. How are they built?
2. **Behavioral Relationships** between Objects in our designs.
    a. This is where you see how the objects behave.
    b. How do they communicate with each other?

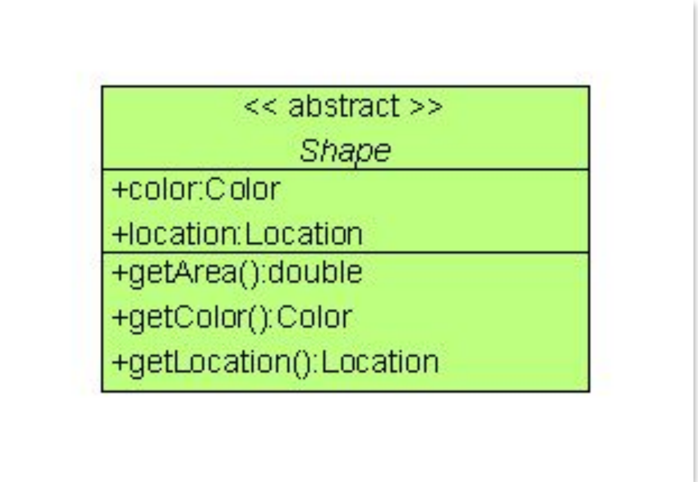
The end-goal is to understand in a pattern is: WHAT is being done, and HOW it is accomplished.

Design Patterns - UML Refresher

To illustrate the **structure** of our design patterns we will use a **Class Diagram**.

A Class Diagram is used to construct and visualize object-oriented relationships.
We use the diagram to capture the following information:

1. Class information such as
   a. Attributes
   b. Operations (i.e. methods)



<< abstract >>
Shape

+color:Color
+location:Location

+getArea():double
+getColor():Color
+getLocation():Location

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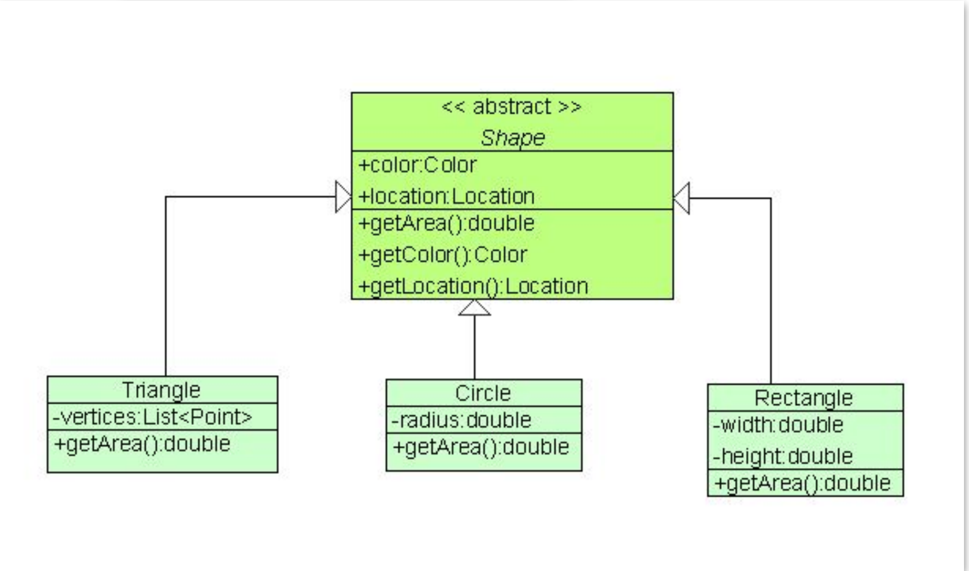
   a. Generalizations



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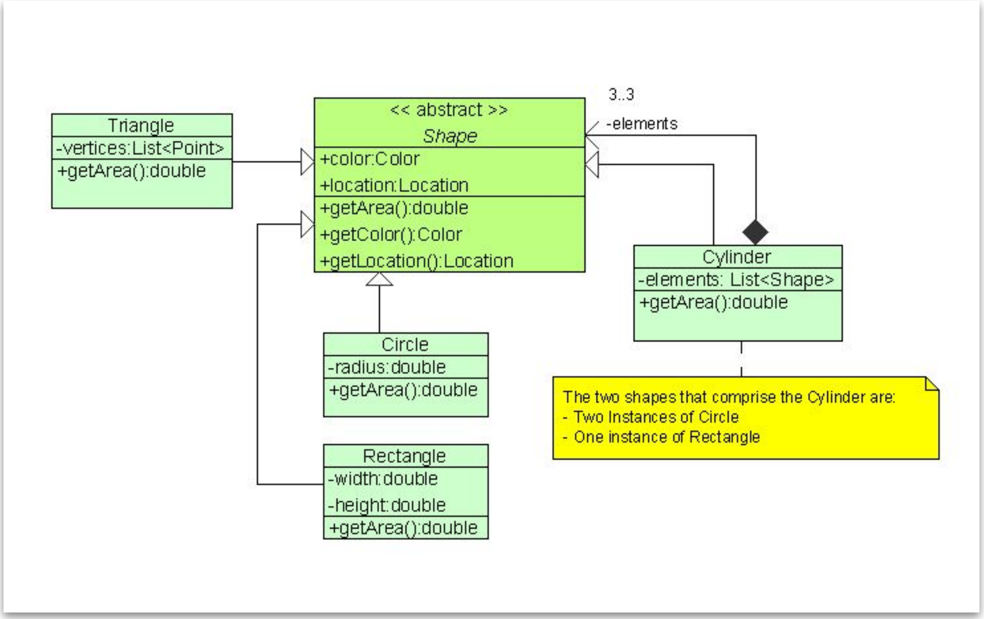

The two shapes that comprise the Cylinder are:
- Two Instances of Circle
- One instance of Rectangle

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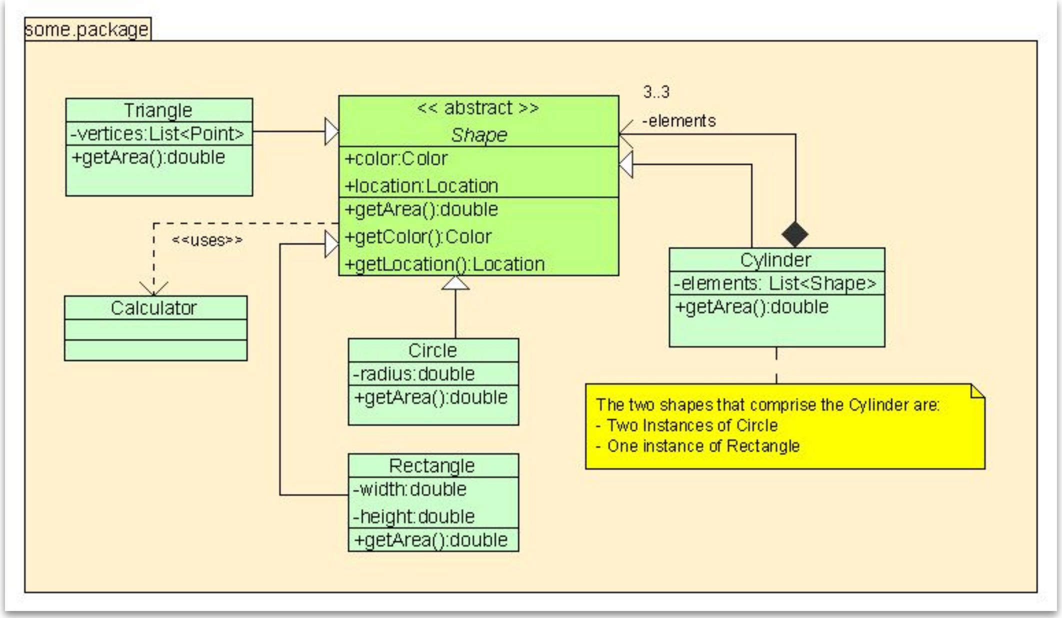

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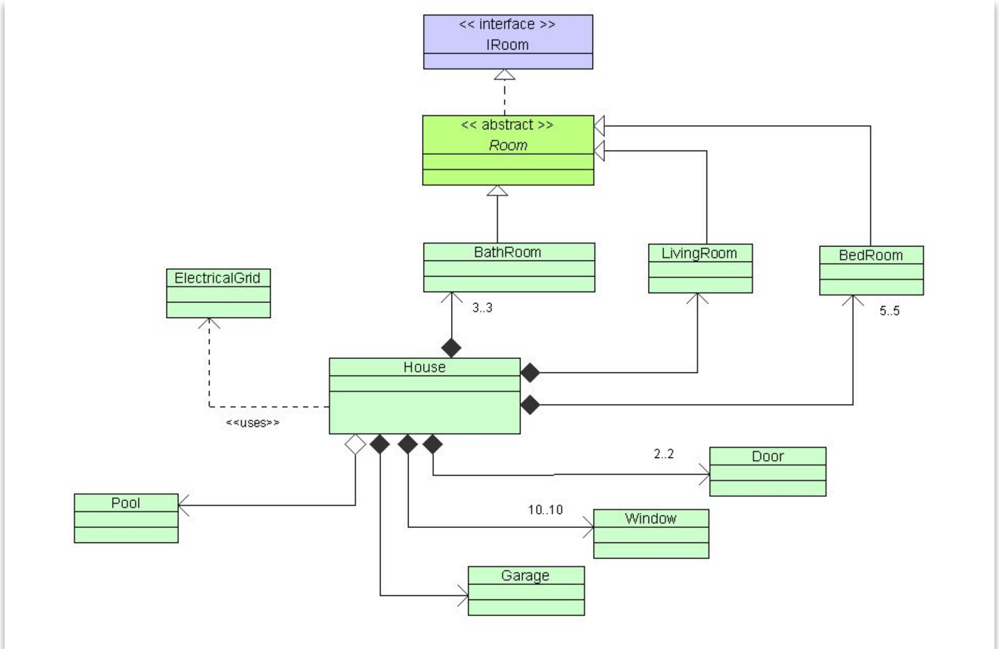

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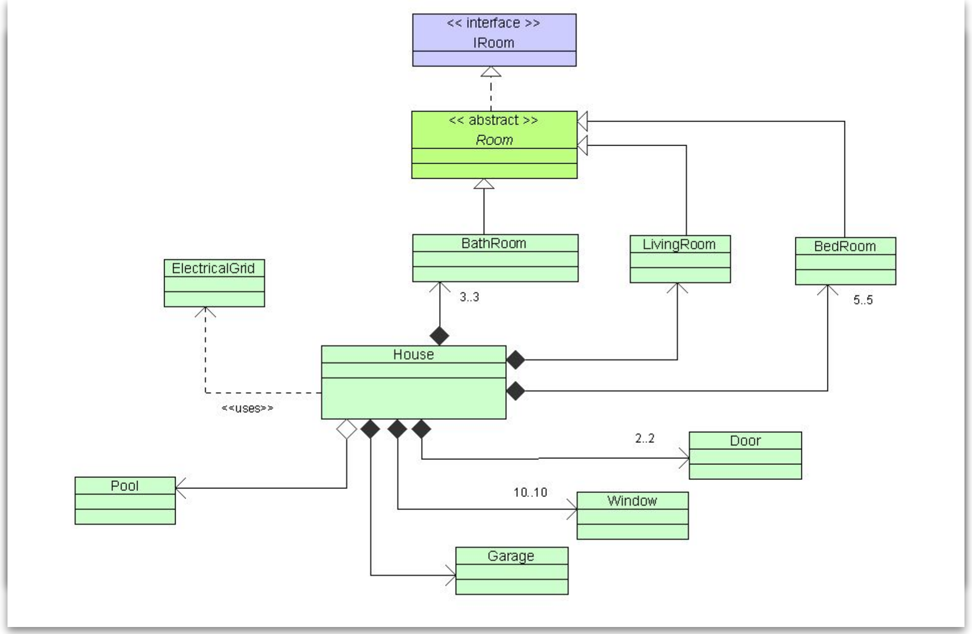
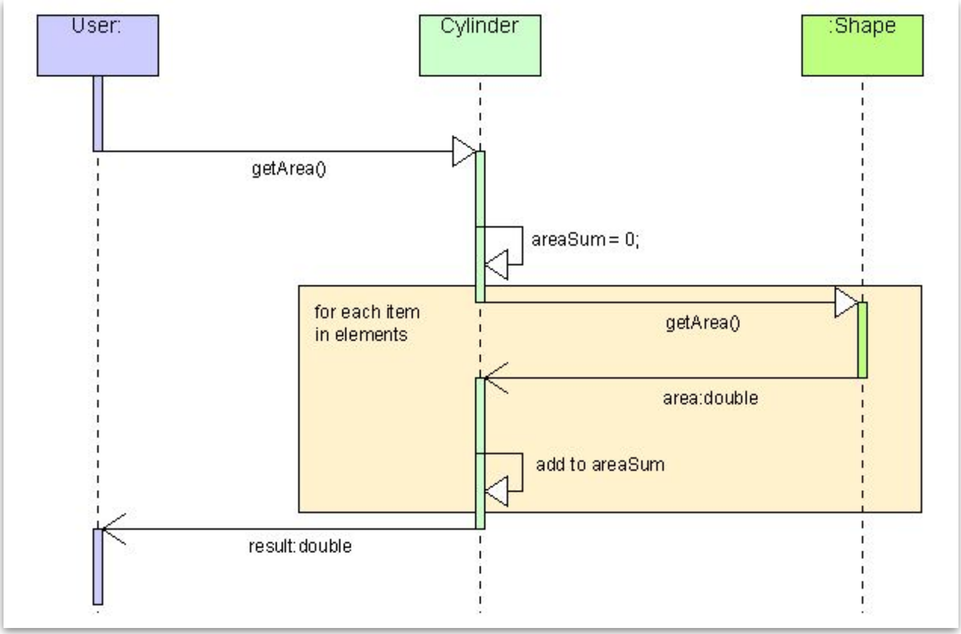


Design Patterns - UML Refresher

To illustrate the **behaviour** of our design patterns we will use a **Sequence Diagram**.

A Sequence Diagram is used to visualize object-oriented behaviour. We use it to show message exchange over time. We capture the following:

1. Interaction information such as
   a. Actors of operations
   b. Method calls with data



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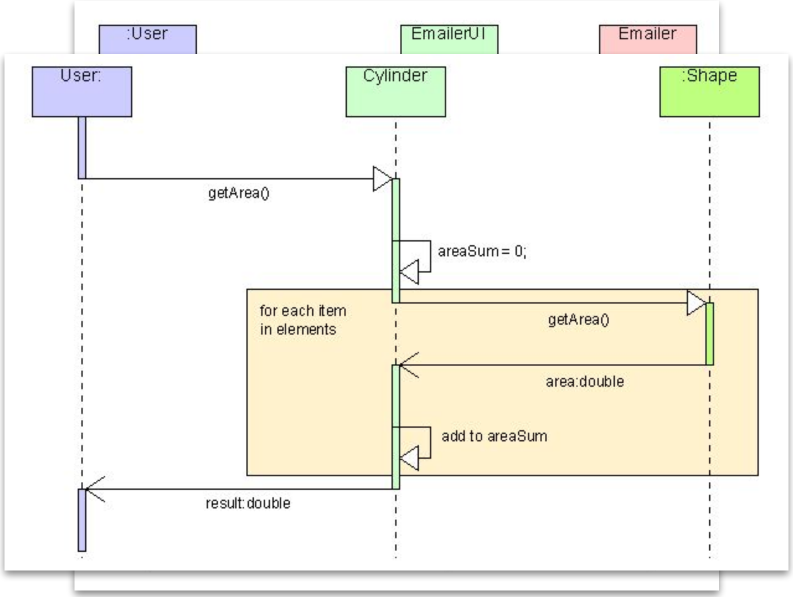
2. Timing of Interaction such as
   a. Synchronous
   b. Asynchronous



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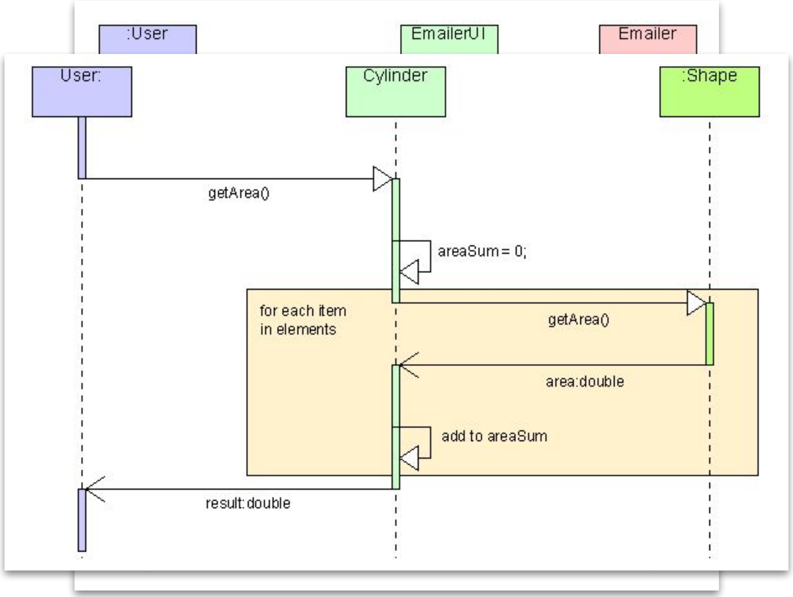

Design Patterns - UML refresher

Next Section

Design Patterns Introduction.

Design Patterns - UML refresher

Student NOTES