# Java Programming II
# Lab7

514770-1
Fall 2020
11/3/2020
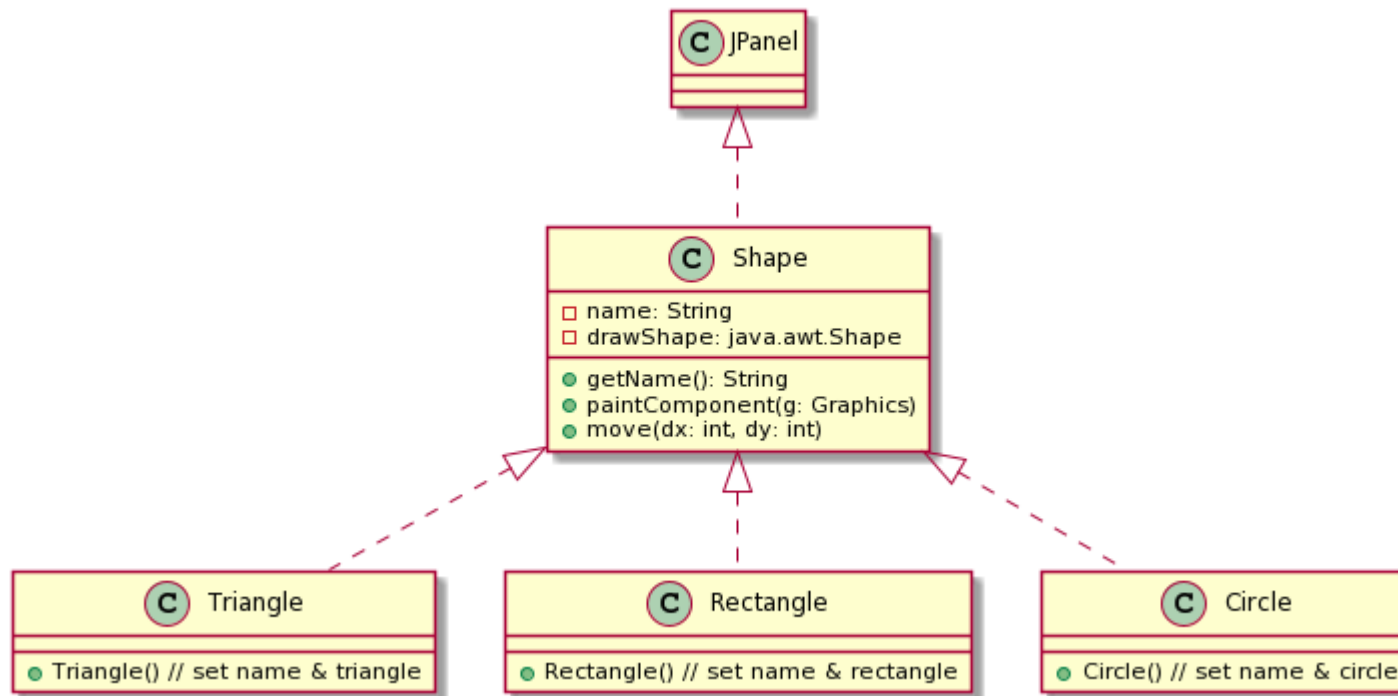Kyoung Shin Park
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# Lab7

- Practice to write a program that operates move left/right/up/down the shape using **Command pattern.**
  - Shape extends JPanel and has void move(int x, int y).
  - Triangle, Rectangle, Circle extends Shape.
  - Command interface has void execute(Shape shape) and void undo(Shape shape).
  - MoveLeftCommand, MoveRightCommand, MoveUpCommand, MoveDownCommand implements execute and undo.
  - ShapeMoveControl is the invoker class.
    - HashMap<String, Command> map (for execute operation)
    - Stack<Command> stack (for undo operation).
    - void setCommand(String key, Command command)
    - void execute(Shape shape, String key)
    - void undo(Shape shape)

# Lab7

- **Triangle, Rectangle, Circle** set their name and draw their own shape.



UML class diagram:

**JPanel** (C)

△ (inheritance)

**Shape** (C)
- □ name: String
- □ drawShape: java.awt.Shape
- ● getName(): String
- ● paintComponent(g: Graphics)
- ● move(dx: int, dy: int)

**Triangle** (C)
- ● Triangle() // set name & triangle

**Rectangle** (C)
- ● Rectangle() // set name & rectangle

**Circle** (C)
- ● Circle() // set name & circle

# Lab7

- **MoveLeftCommand**, **MoveRightCommand**, **MoveUpCommand, MoveDownCommand** moves the shape left/right/up/down.
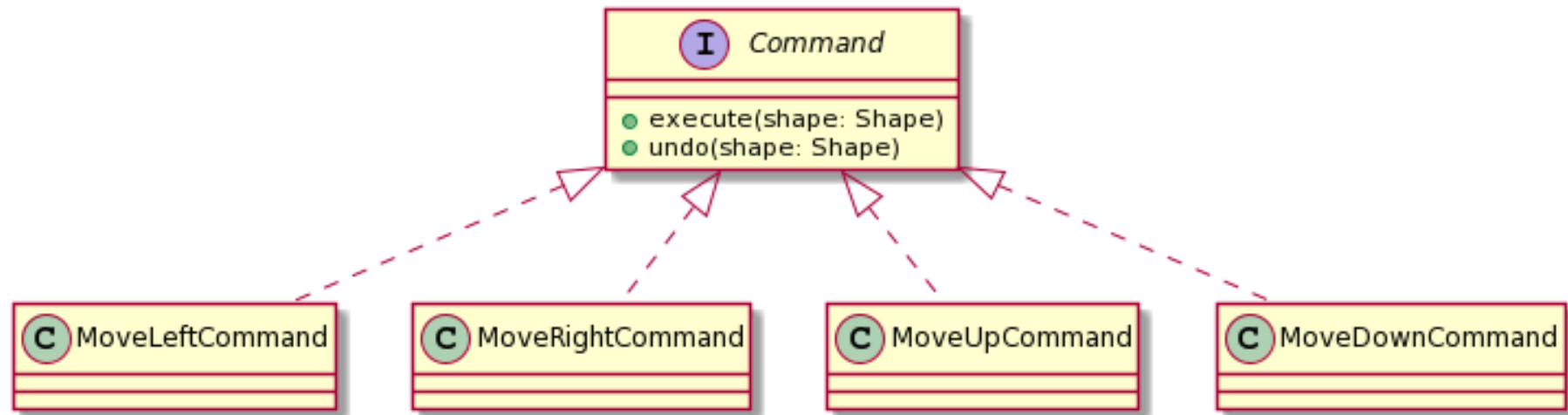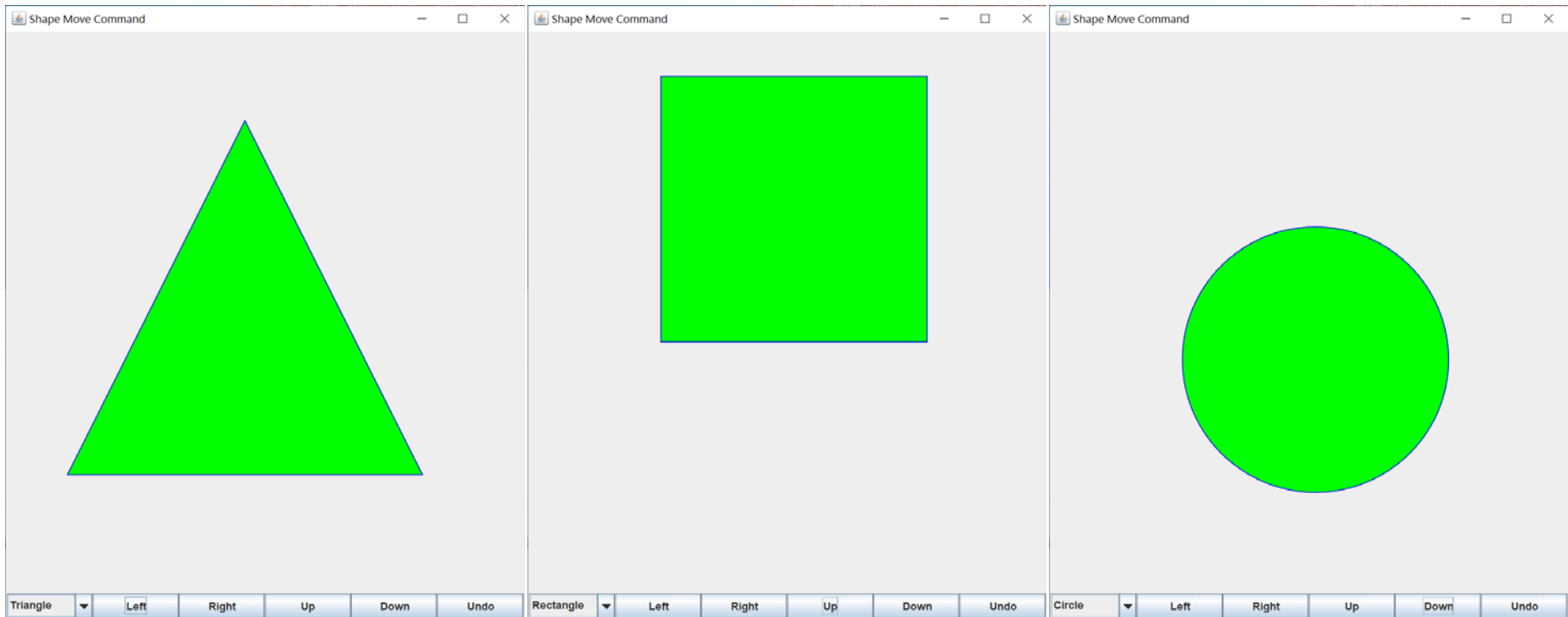
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- The MainFrame client use **ShapeMoveControl** invoker to set command using (String key, Command command).
- Then, when the left/right/up/down button is pressed, each command execute is called.
- When the undo button is pressed, command undo is called.
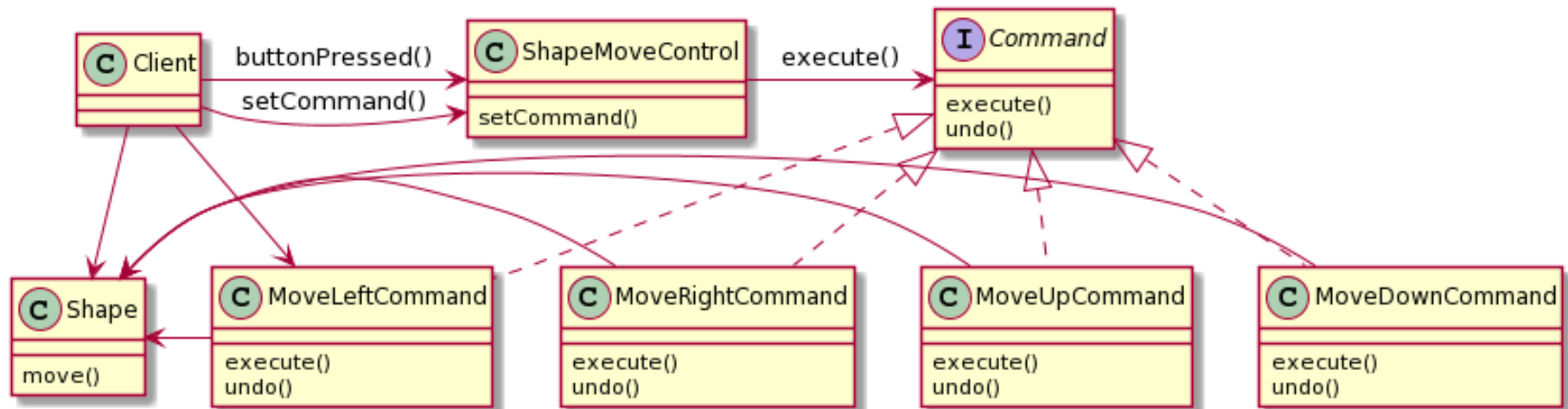
# Lab7

# Submit to e-learning

- Add your code (e.g., additional method, class, routine, etc) in the Lab7 assignment.
- Submit the Lab7 assignment (JAVA20-2-Lab7-ID-name.zip including the report) to e-learning.