

SE 3313 Software Design and Architecture

Command Pattern

Lab 8

1 Context

The command pattern is a data-driven design pattern and falls under the behavioral pattern category. A request is wrapped under an object as a command and passed to the invoker object. The invoker object looks for the appropriate object which can handle this command and passes the command to the corresponding object which executes the command.

2 Problem Description

Consider a simple gaming system where a player controls a game character. The player can perform various actions by entering commands. The program uses the Command Pattern to encapsulate these actions.

The GameCharacter class represents the game character, and different commands (MoveUpCommand, MoveLeftCommand, MoveDownCommand, MoveRightCommand, JumpCommand, and AttackCommand) are created to execute specific actions.

The GameController class serves as the invoker, and a menu system allows the player to choose actions by entering specific commands. Your Task:

- Implement the GameCharacter, GameController, and command classes in Java.
- Create a menu system that allows the player to control the game character using the following commands:
 - 'w': Move Up
 - 'a': Move Left
 - 's': Move Down
 - 'd': Move Right
 - 'j': Jump
 - 'k': Attack
 - 'q': Quit
- Display appropriate messages when the player selects each command.

3 Measure of Success

You are expected to implement the necessary classes for this example using Command Pattern. You should implement a menu. In this menu, users can choose different commands to control game character. The menu will continue to display until the user enters 'q' to exit.

4 Example output

```
Select an action:
w - Move Up
a - Move Left
s - Move Down
d - Move Right
j - Jump
k - Attack
q - Quit

Enter your choice: w
Player1 is moving up

Select an action:
w - Move Up
a - Move Left
s - Move Down
d - Move Right
j - Jump
k - Attack
q - Quit

Enter your choice: j
Player1 is jumping

Select an action:
w - Move Up
a - Move Left
s - Move Down
d - Move Right
j - Jump
k - Attack
q - Quit

Enter your choice: q
Exiting the game.
```

Figure 1: