 Bilkent University

CS 319 - Object-Oriented Software Engineering

Final Report

Project Group 11 - LUDO

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**Final Report**

In this project, we aimed to develop a traditional Ludo board game. The game was developed such that as many features of object oriented programming as possible were used. There were multiple variants of Ludo in mobile environment so we wanted to make desktop variant of the game.

First of all we clarified the game rules we wanted to implement in our version. We develeoped scenarios for use cases for the sake of clarity on how we can implement the game and identify the boundary conditions. We set up the requirements like in our game it is necessary for player to take colors in the following order: Red, Yellow, Green and Blue. Also there must be atleast two players for the game to start. We used state and activity diagrams to formulate the flow of the program.

Once we had the clear picture of how the game would work we came up with class diagrams breaking all the components to basic parts making our code easier to modify and for identifying bugs. We have used Facade, Adapter, Observer and MVC (Model View Controller) patterns. Our program consisted of three subsystems GameManagement, Panels and GameEntitites. We used JAVA to implement our project.

During the implemantation, we made some changes such as:

* We applied observer pattern for GamePanel and GameManager

o GameManager: (Observable) which notifies observers on every cycle end

o GamePanel: (Observer) after update called from observable it updates its map

* Instead of applying threads manually, we used TimeLine to eliminate JAVAFX concurrency problems.
* We used Facade design for GameManagement and GameEntitites

o GameManager is Facade class for GameManagement subsystem to control game loop.

o Board is Facade class for GameEnties subsystem.

We implemented most of our predetermined features except the following:

* Bonus: Generating bonus was left out because of insufficient time.
* Players can’t select their own color. They must choose from predefined colors.
* Color blind mode is not implemented because our GUI design makes it difficult to implement it in limited time.