

Design Document

Unit 1 Project

Bowling Alley Simulation Refactoring Project

TEAM 26

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TEAM INFORMATION:-

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OVERVIEW:-

The original code is a simulation of a bowling game where the user is the person who is going to bowl. There is an admin of the bowling game called ControlDesk who can monitor and make changes to the functionalities of any other major classes. Here each ball throw of the user is simulated and the score for each party and lane is calculated and sent back to the user after he decides to stop playing.

The original code was fully functioning but it had some problems like redundant code, code repetitions and other code smells. These problems, if not solved, may become a problem for any future developers who want to add any new functionalities or make some changes in the code design. Hence we have refactored the code and analysed the metrics of the original code and refactored code. Our refactored code attempts to reduce the load of major classes or functions by dividing them into multiple classes or modules. For example:- The functions performed by Pinsetter class were divided into two further new classes called SimulateThrow and ScoreCalculate which simulated a ball throw and calculated the score of a throw respectively.

UML Class Diagrams:-

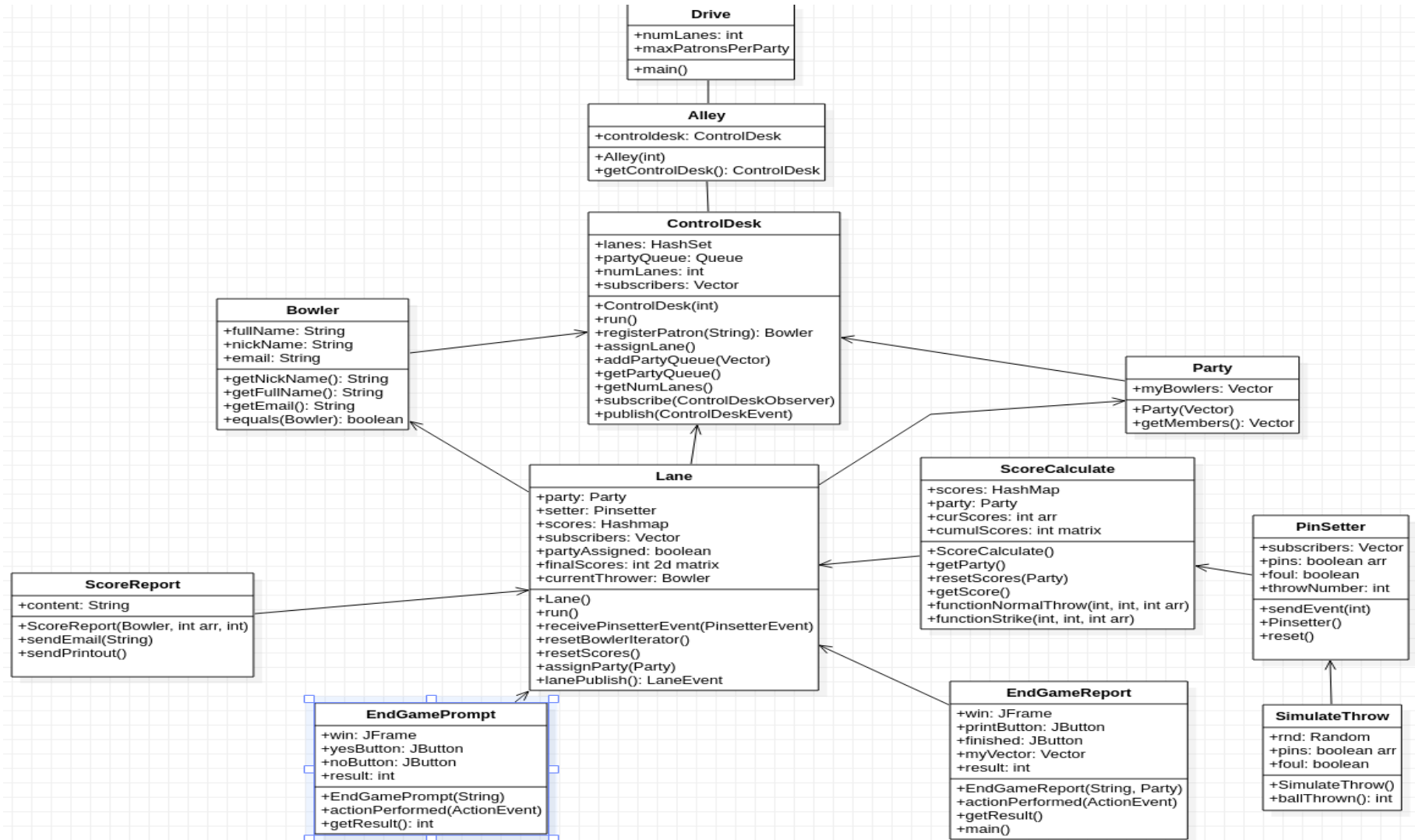


Diagram 1:-UML class diagram of major classes

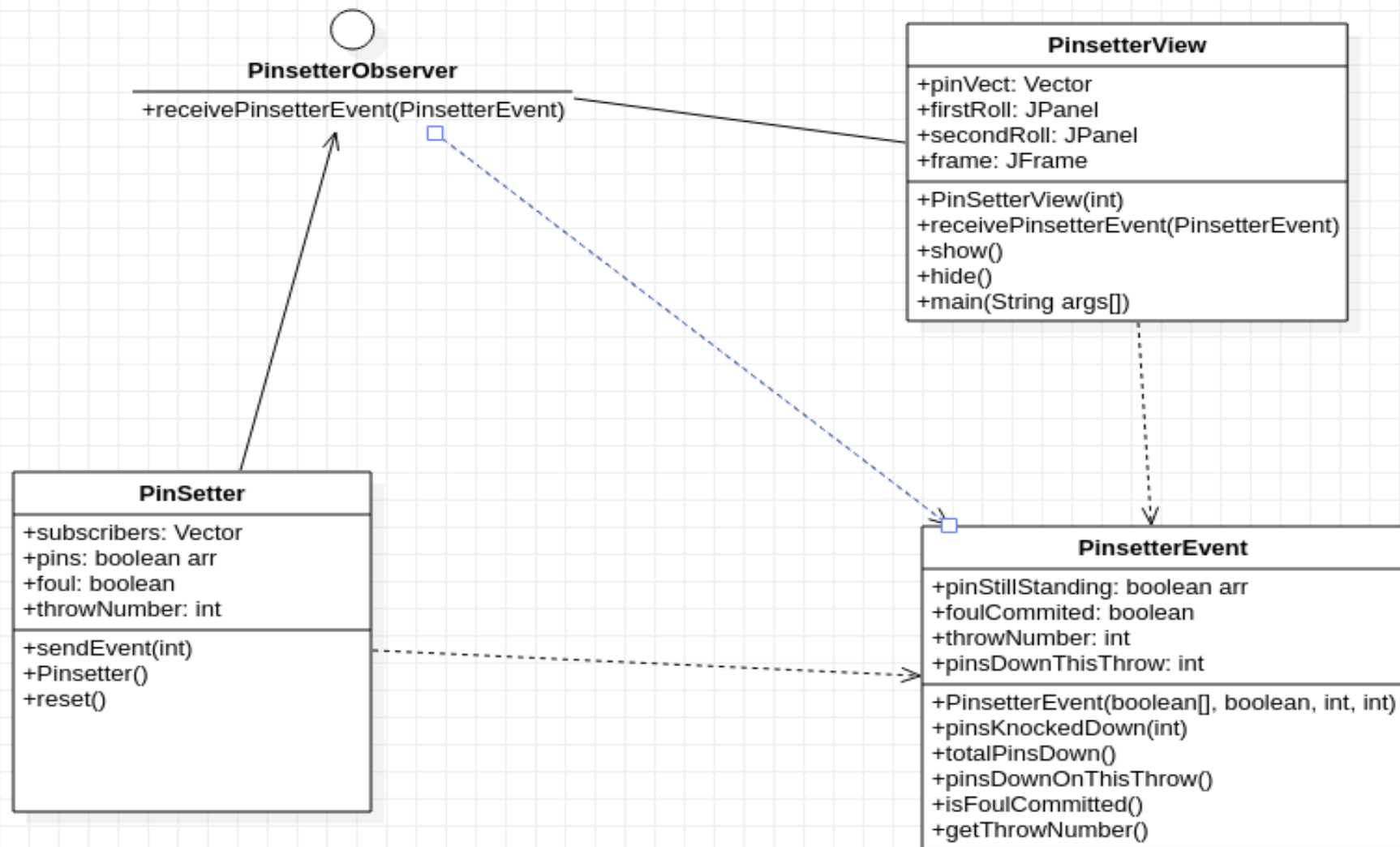


Diagram 2: Pinsetter Class and its design

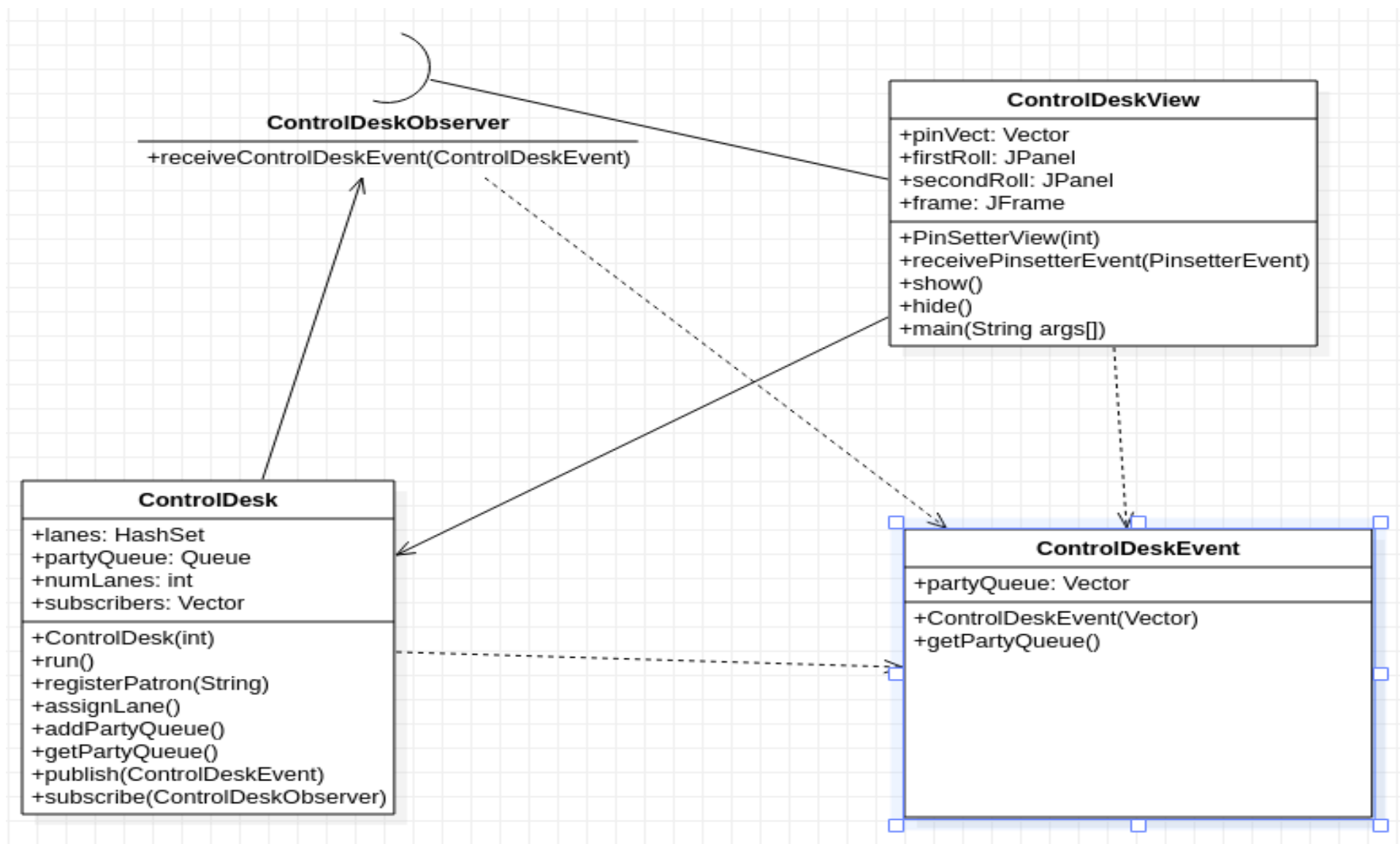


Diagram 3: Control Desk and its design

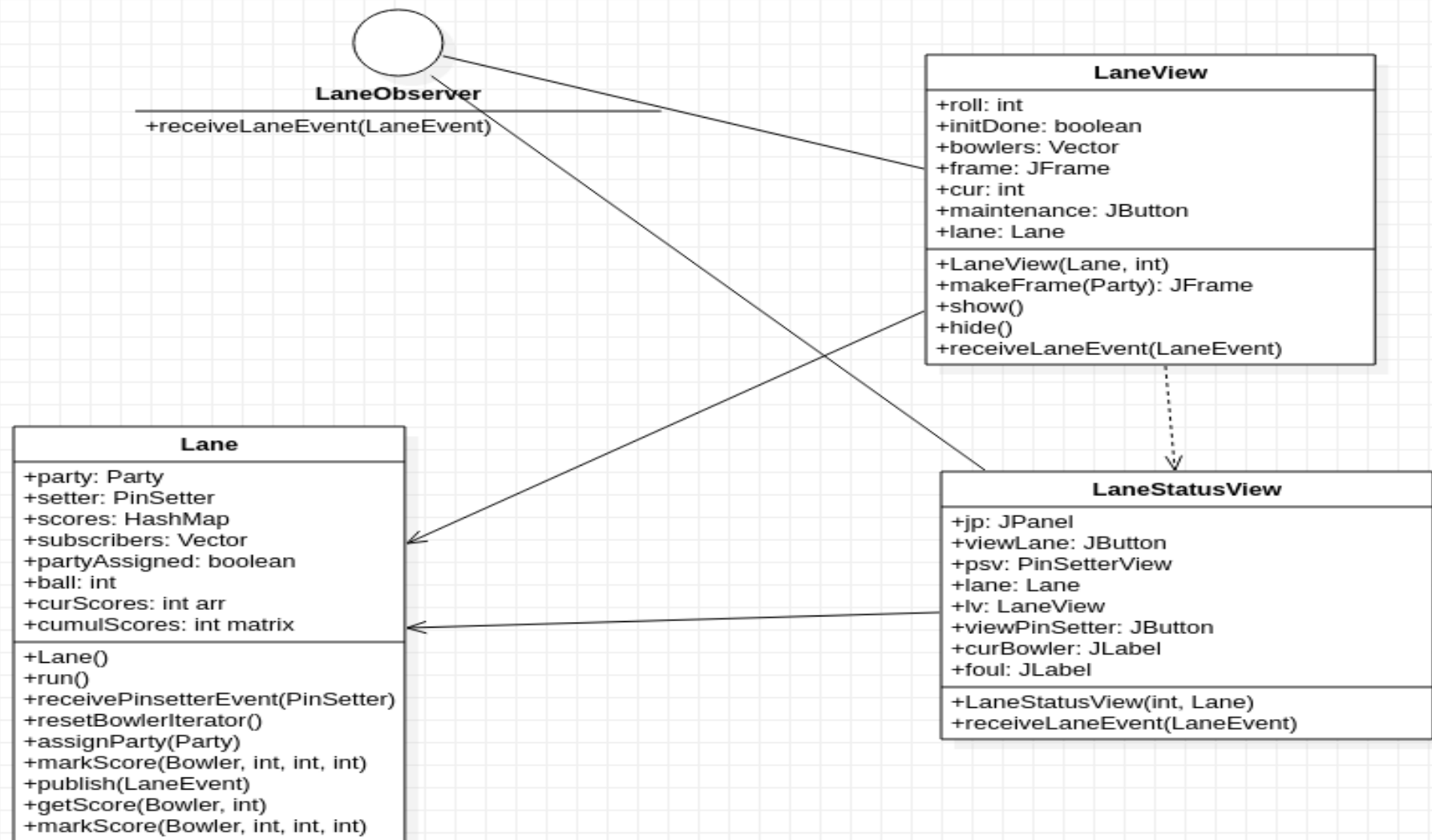


Diagram 4: Lane class and its design

Sequence Diagrams after Refactoring:-

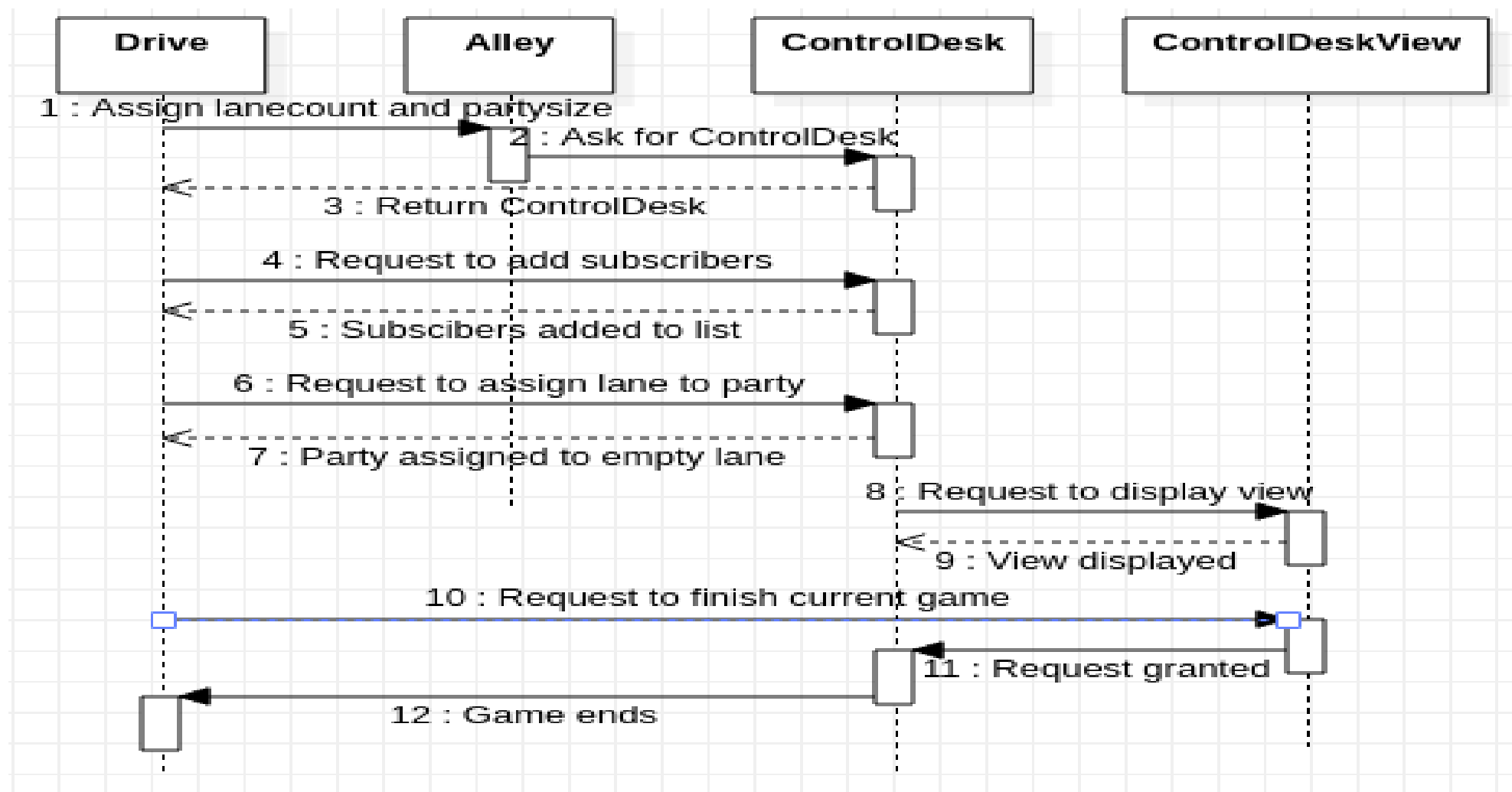


Diagram 5: Assigning lane count, party size and empty lanes to party

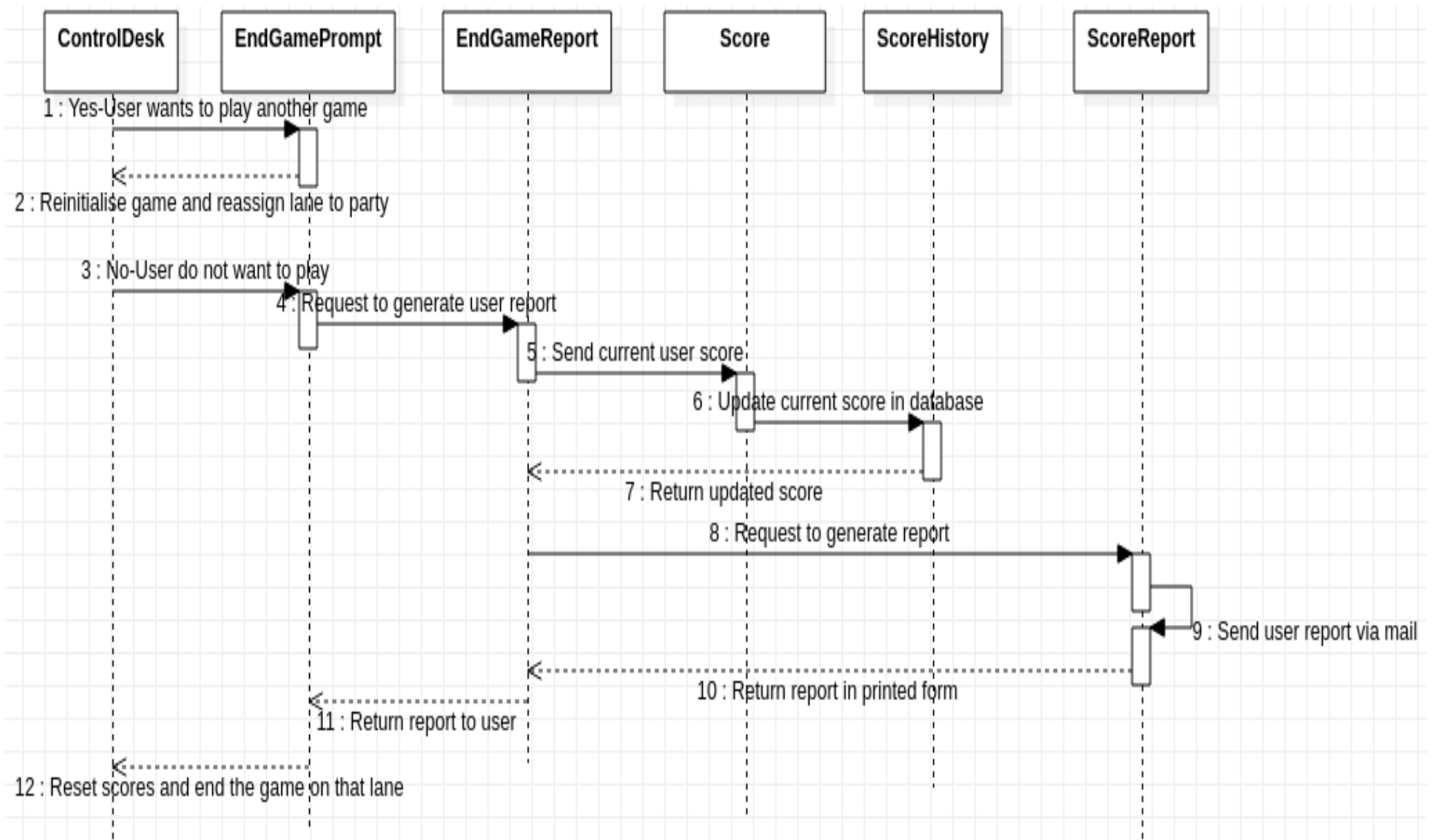


Diagram 6: Endgame prompt, score updation and report generation

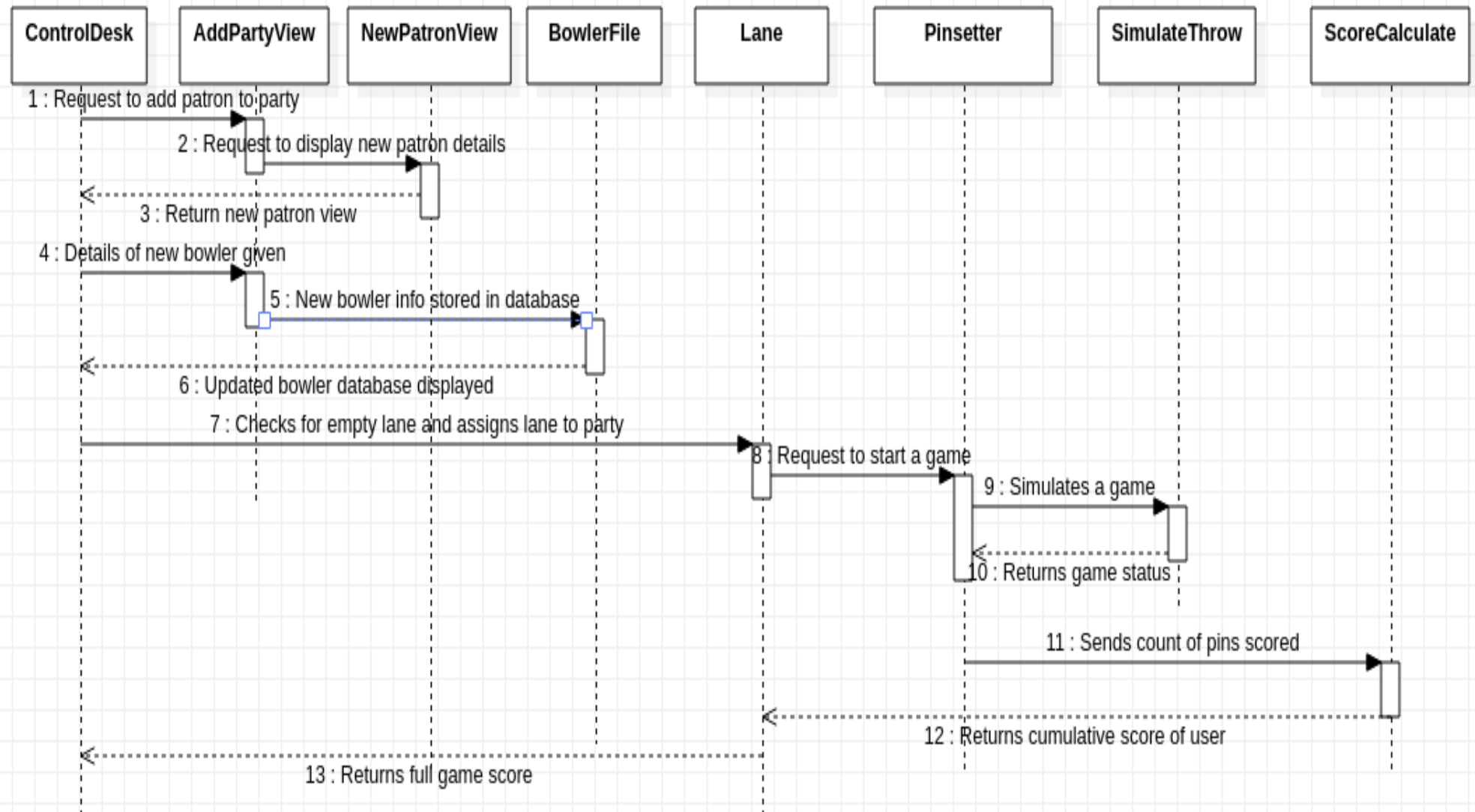


Diagram 7: Add new user, start game and calculate score

