

O An Quan

TEAM 26

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Board, Cell, Player, GUI

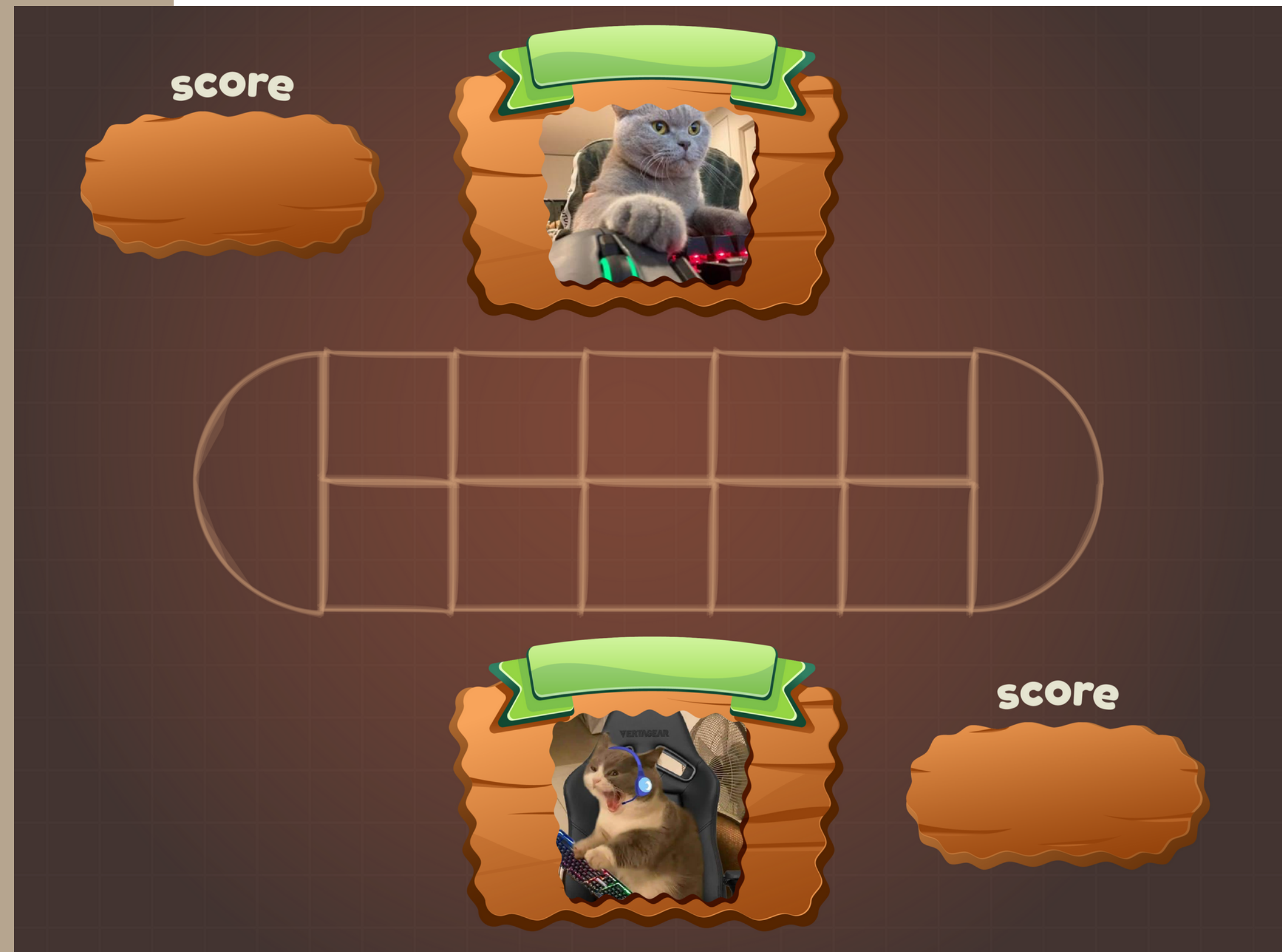
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GamePlay, Gem, Player, GUI

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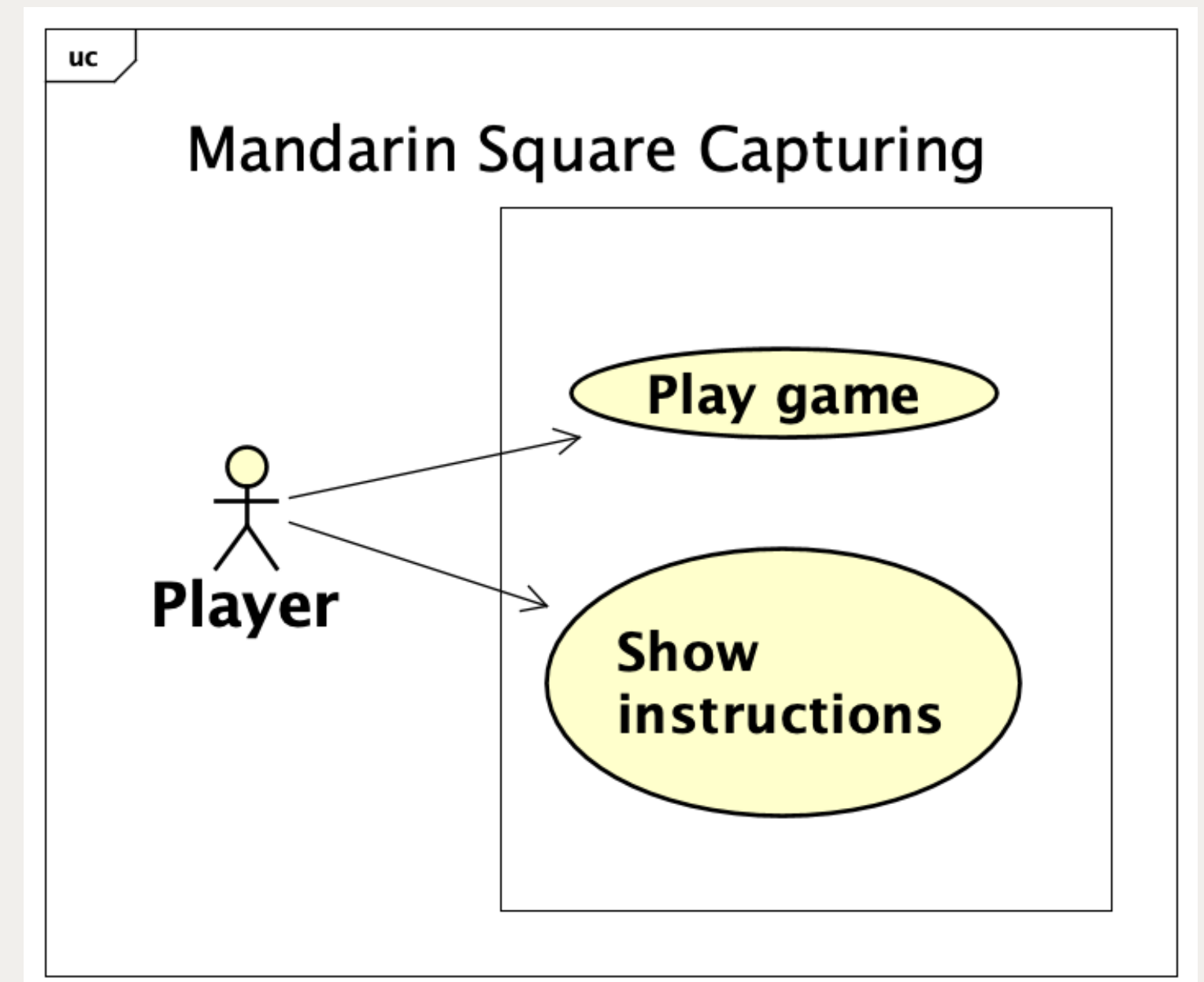
PROBLEM STATEMENT

- One board: 10 squares (5 gems each), 2 half circles (1 big gem each)
- Player chooses one cell on their side to start the game.
- Spread the gems until finished.
- The number of gems earned will be calculated as score.
- Game stops when all half circles are empty or the player has no gems on their side to pick up when in turn.
- Player with higher score wins.
- No time constraints.

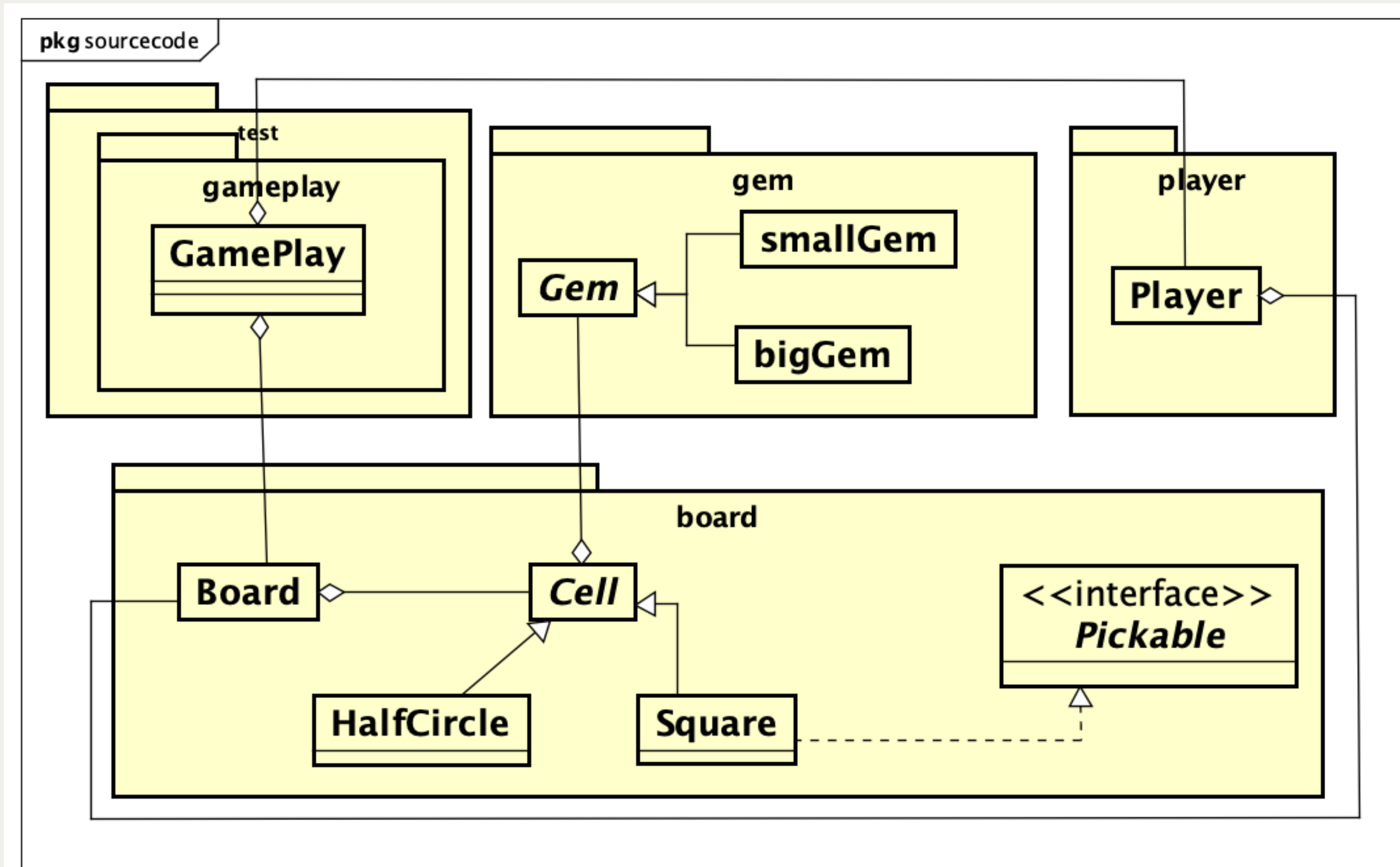


USE CASE DIAGRAM

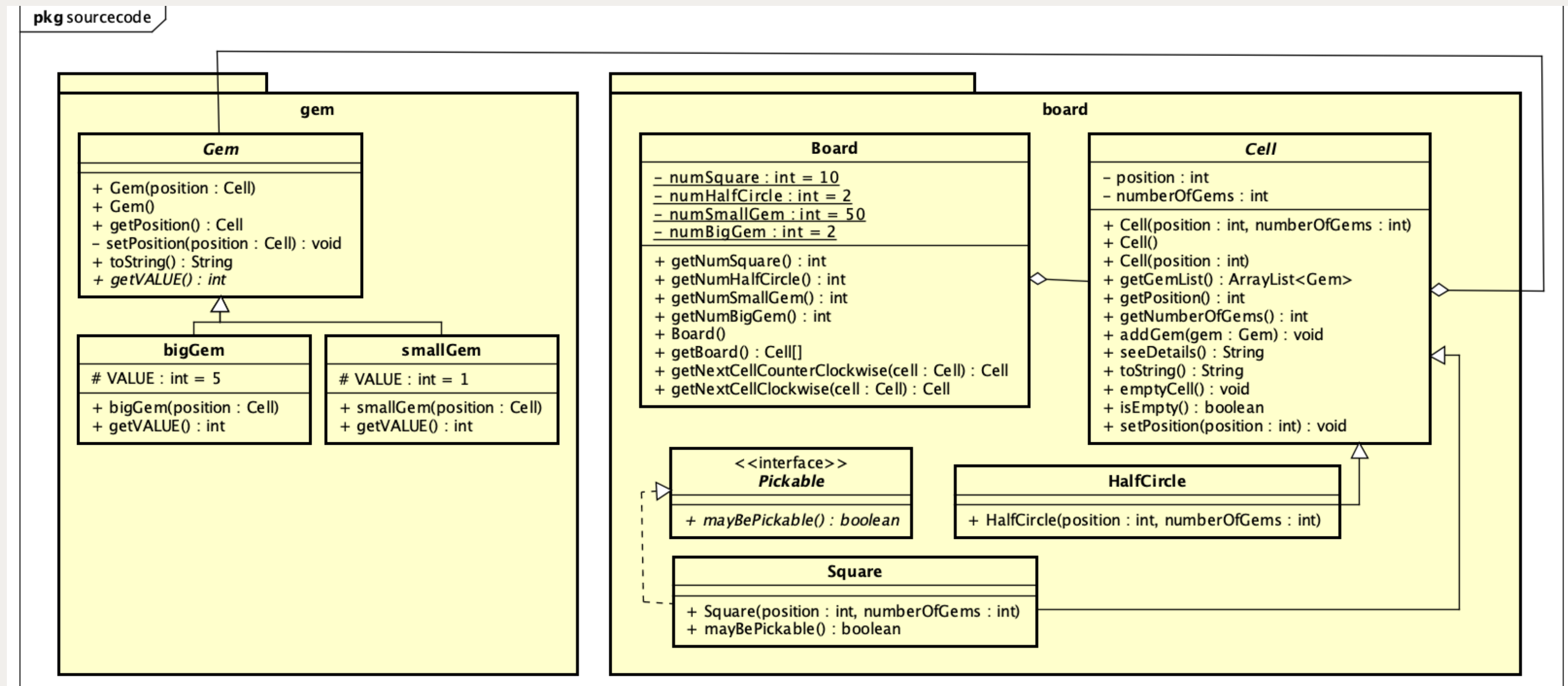
- *Play game*: When play choose to start the game (by clicking the Start button in the Intro Screen), the program displays a playing board, the player then plays the game following the rules stated in until the game is finished
- *Show instructions*: Player can press Help to access the Help Menu from the Intro Screen to read about the instructions, the program should display a board showing rules of the game.



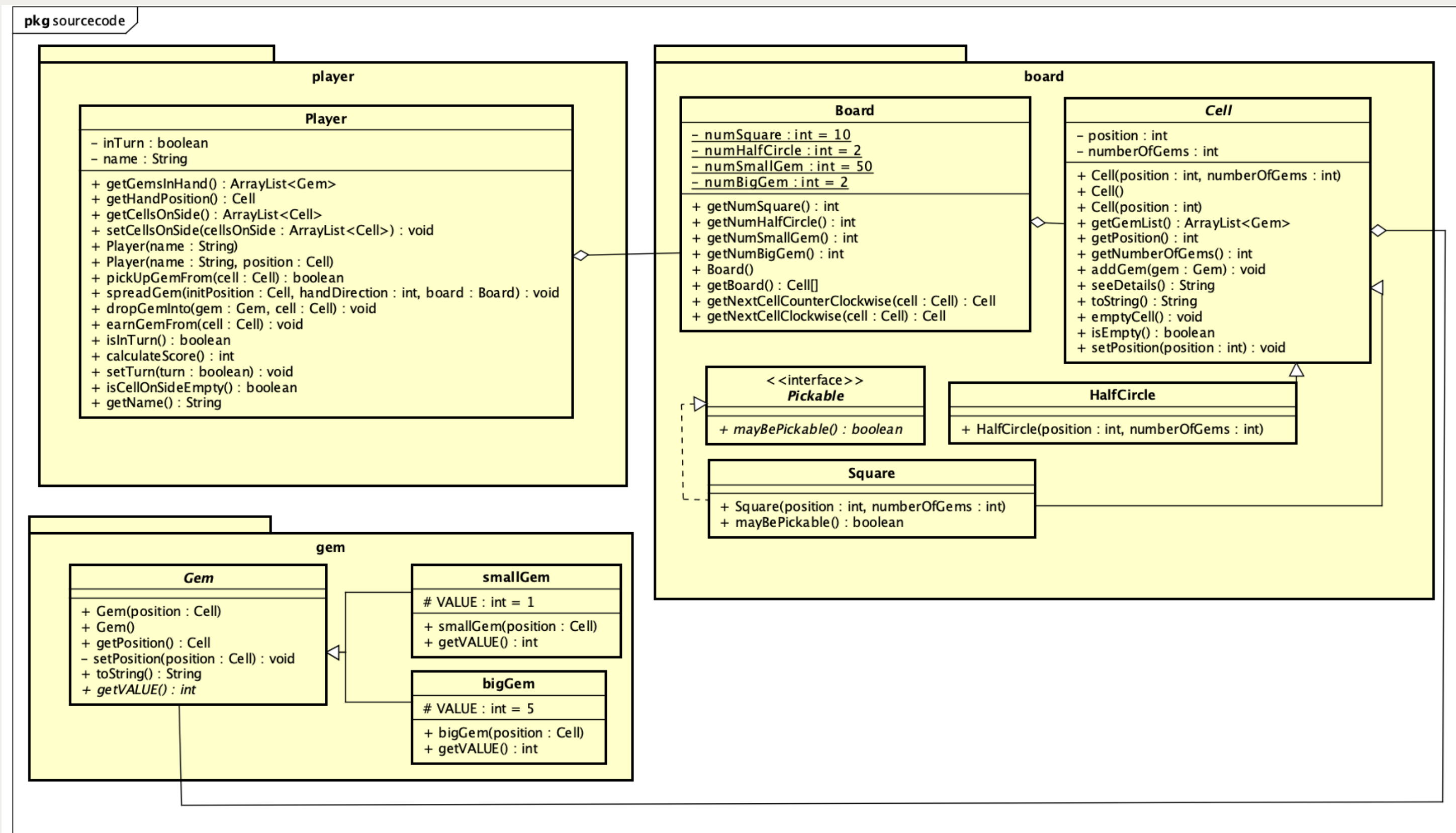
GENERAL CLASS DIAGRAM



DETAILED CLASS DIAGRAM - "PASSIVE"



DETAILED CLASS DIAGRAM - "ACTIVE"



OOP TECHNIQUES - AGGREGATION

We have designed our model using some OOP techniques

1. Aggregation

- Gem aggregates Cell
- Cell aggregates Board
- Board aggregates Player
- Player aggregates Gameplay
- Board aggregates Gameplay

OOP TECHNIQUES - INHERITANCE

2. Inheritance

- An *abstract* class Cell with two child classes Square and Half Circle.
- An *abstract* class Gem and two child classes smallGem and bigGem, each child class is specified by a value: smallGem (value = 1) and bigGem (value = 5)

OOP TECHNIQUES - POLYMORPHISM

3. Polymorphism

- The bigGem and smallGem can be both called as an object of the Gem class, but has different value of the **VALUE** attribute.
- Only the Square is "**pickable**". When looping through the cells (Cell objects) in a board, depending on the type (Square or HalfCircle), the program will decide if the player can pick up gems from that cell or not.

DEMO VIDEO

Link: <https://drive.google.com/file/d/1v8G6gZ2c93rFomoLYvm6NvUkUzqDJN7k/view?usp=sharing>

