

1FQ563

ASSIGNMENT 1

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1) CRC ANALYSIS

| gameEngine (abstract class) | |
|---|--|
| responsibilities | collaborators |
| Runs game Stores game Saves game Restarts game Undo/redo functionality AI strategy | gameState ticTacToe board players |

| gameInterface (abstract class) | |
|--|--|
| responsibilities | collaborators |
| Allows player to interact with game Provide graphics for humanPlayer Display results of game | gameState ticTacToe board players |

| ticTacToe | |
|---|--|
| responsibilities | collaborators |
| Establish game rules Establish potential moves | Board (inherited from ticTacToe) Players (including child classes) Piece |

| board | |
|---|--------------------------------|
| responsibilities | collaborators |
| Establish rows Establish columns Establish board boundaries Establish occupied cells and unoccupied cells Allows pieces to occupy cells | players pieces ticTacToe |

| gameState | |
|---|------------------------------|
| responsibilities | collaborators |
| Locate and track pieces Record scores Knows players turns Identity winner, loser or tie Identify game end | player Board ticTacToe |

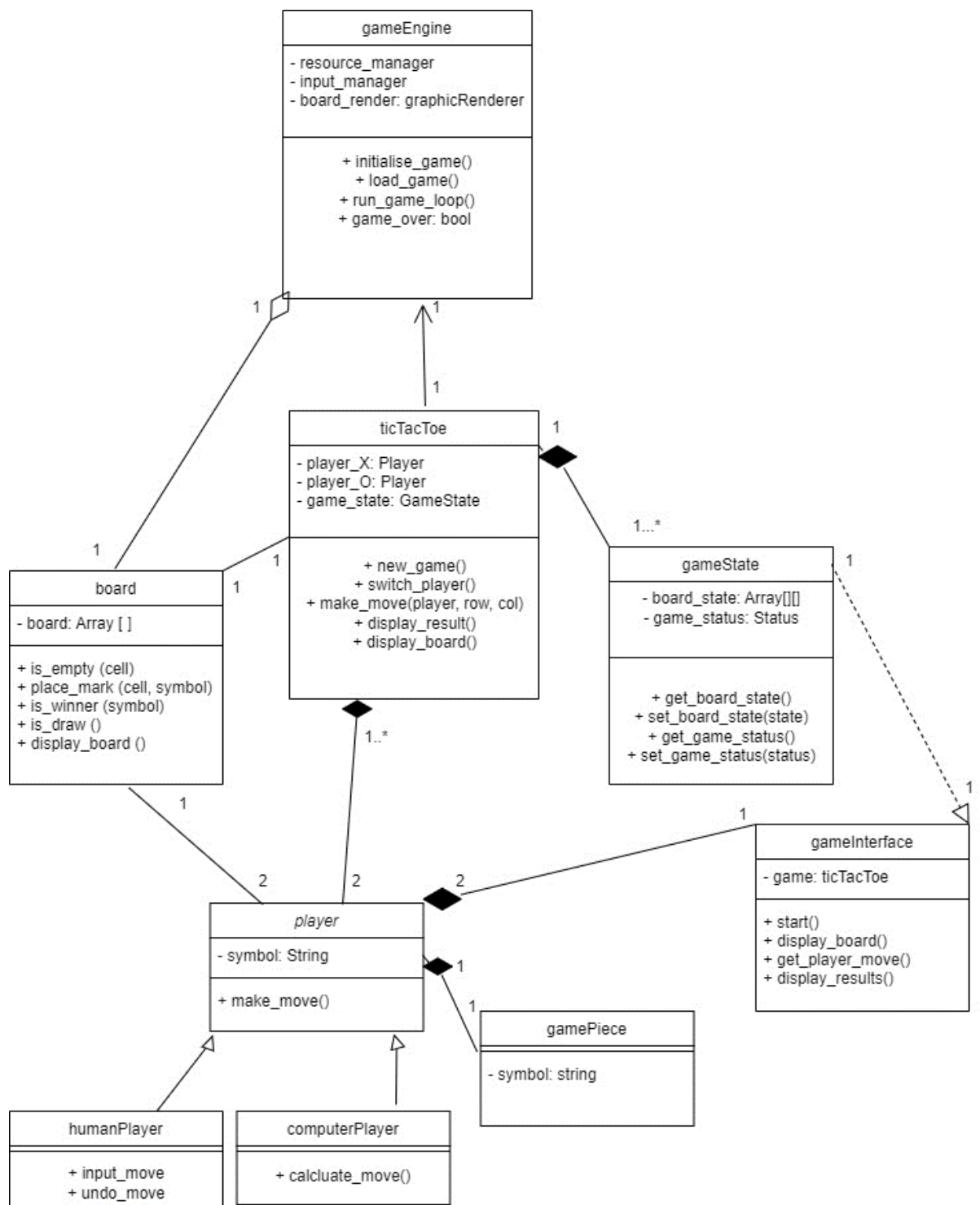
| Player (abstract class) | |
|---|---|
| responsibilities | collaborators |
| Controls own moves on board Has strategy Has game piece | piece Board gameState ticTacToe humanPlayer computerPlayer |

| humanPlayer (child class) | |
|---|--|
| responsibilities | collaborators |
| Has game piece to identify Has a score Makes moves on board Interacts with gameInterface | player Piece gameState ticTacToe board computerPlayer |

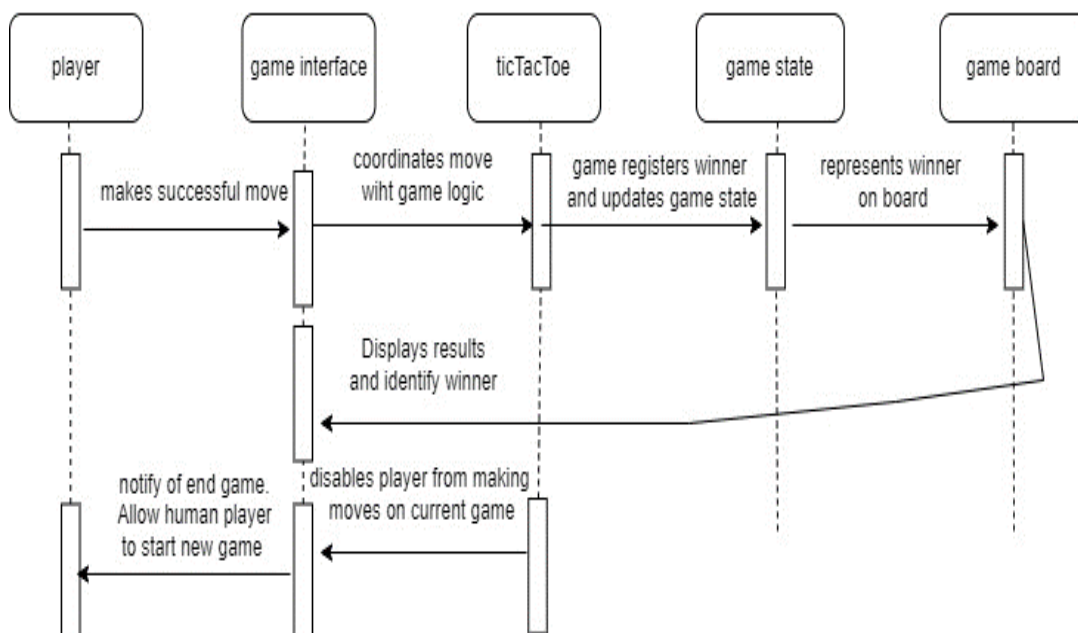
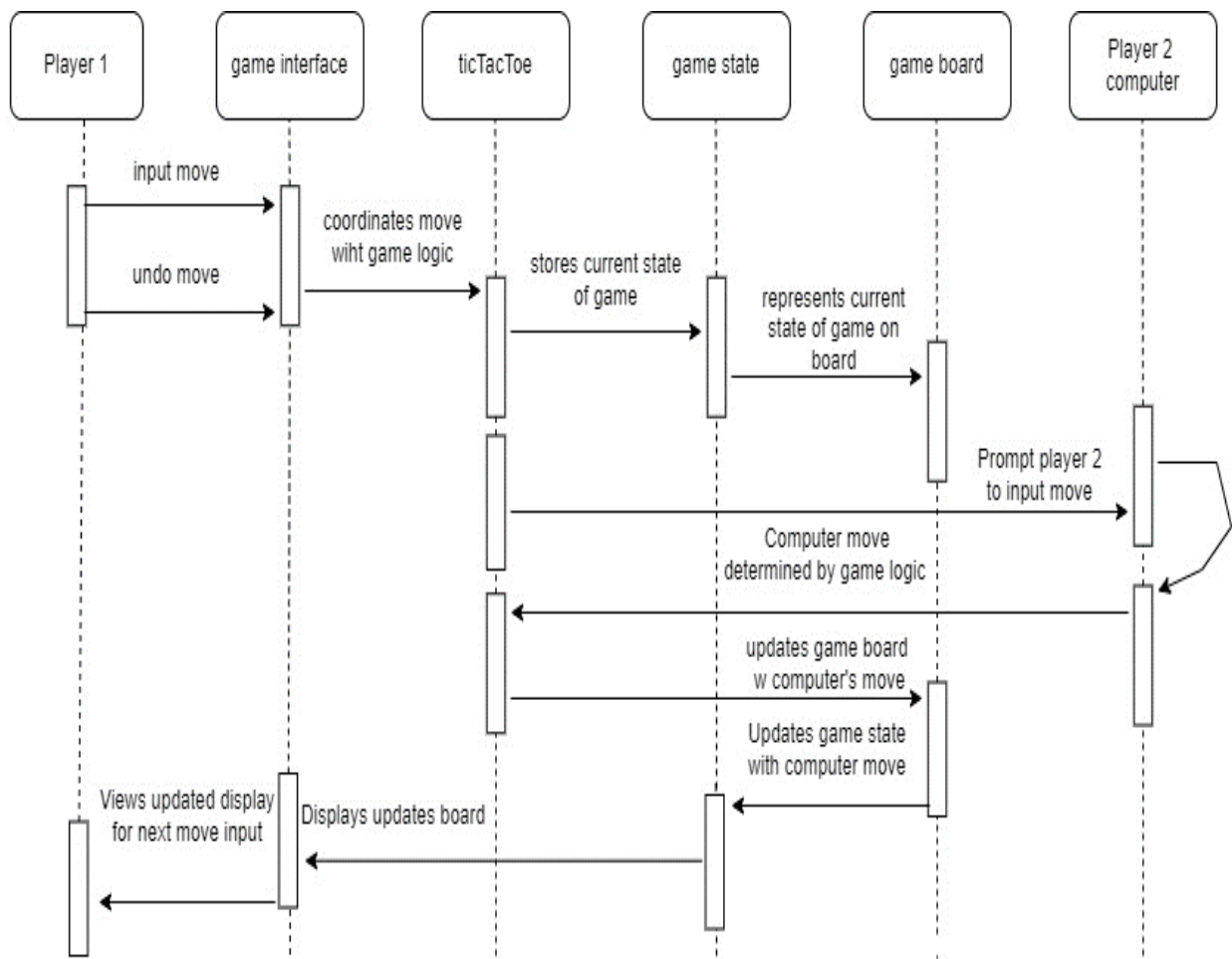
| computerPlayer (child class) | |
|--|---|
| responsibilities | collaborators |
| Has game piece to identify Has either alpha-beta algorithm or random selection strategy | player Piece gameState ticTacToe board humanPlayer |

| Piece | |
|--|-----------------|
| responsibilities | collaborators |
| Identifies player with X or O Allocated to player Occupies cells board Moves on board | player board |

2) Class diagram



3) Sequence diagrams- demonstrating dynamics of player completing move on board and player winning game



4) Object diagrams

