Assignment 4

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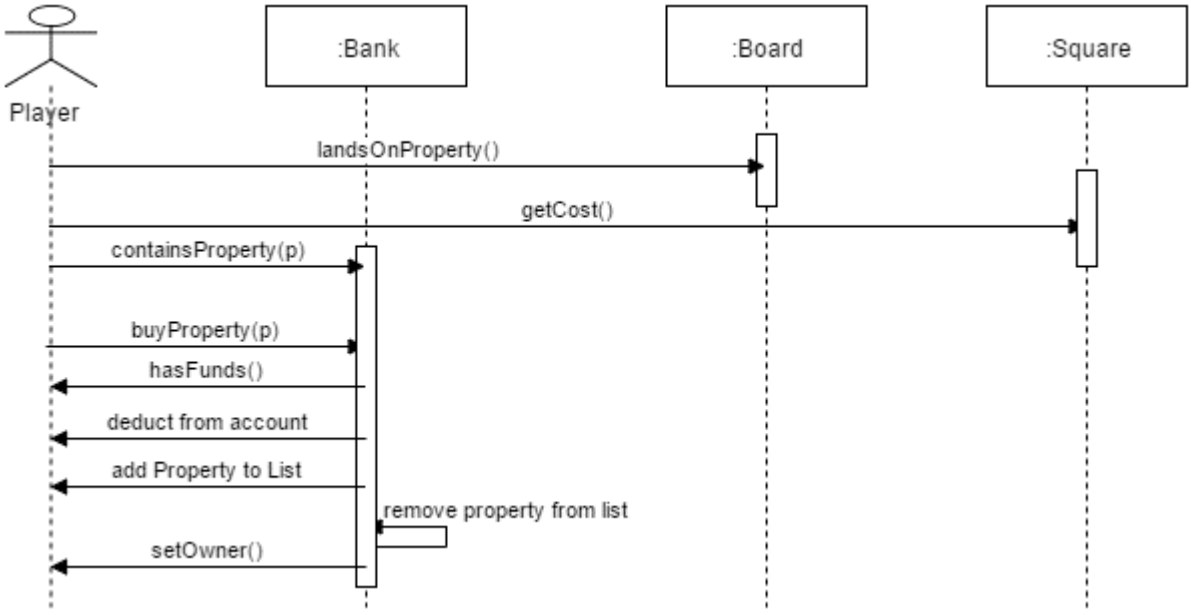
Sequence Diagrams

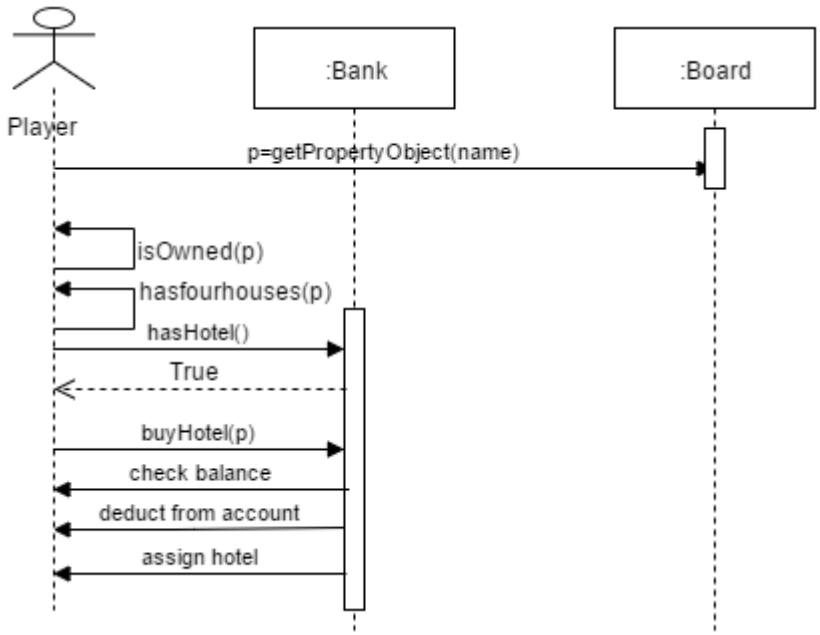
1. Buy Property
2. Pay Rent
3. Build a hotel

Buy Property



The player lands on a property. He might choose to buy the property (by clicking the buy property button) if it is not owned. For that the bank checks if the player has sufficient funds. If he does, the cost of property is deducted from his balance which is initially set at 1500. The property is added to player's ownedProperty set and player is set as the owner of the property.

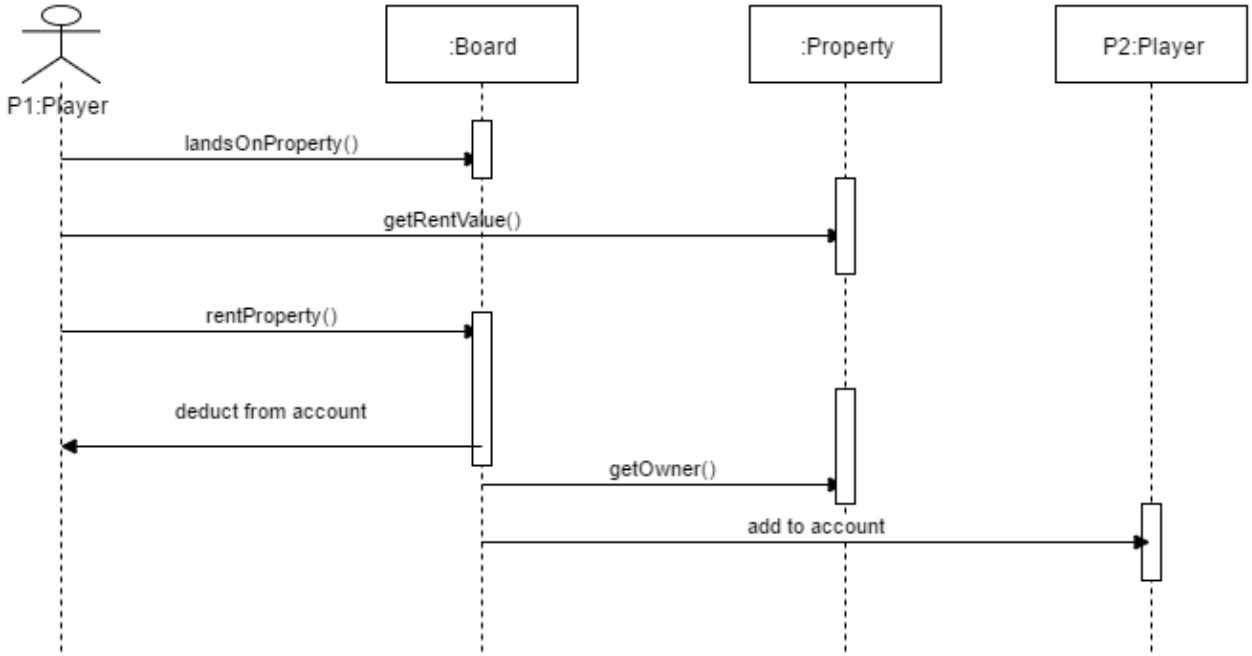
Buy a Hotel



A player is allowed to build a hotel on his owned property if he already has 4 houses built on that property.

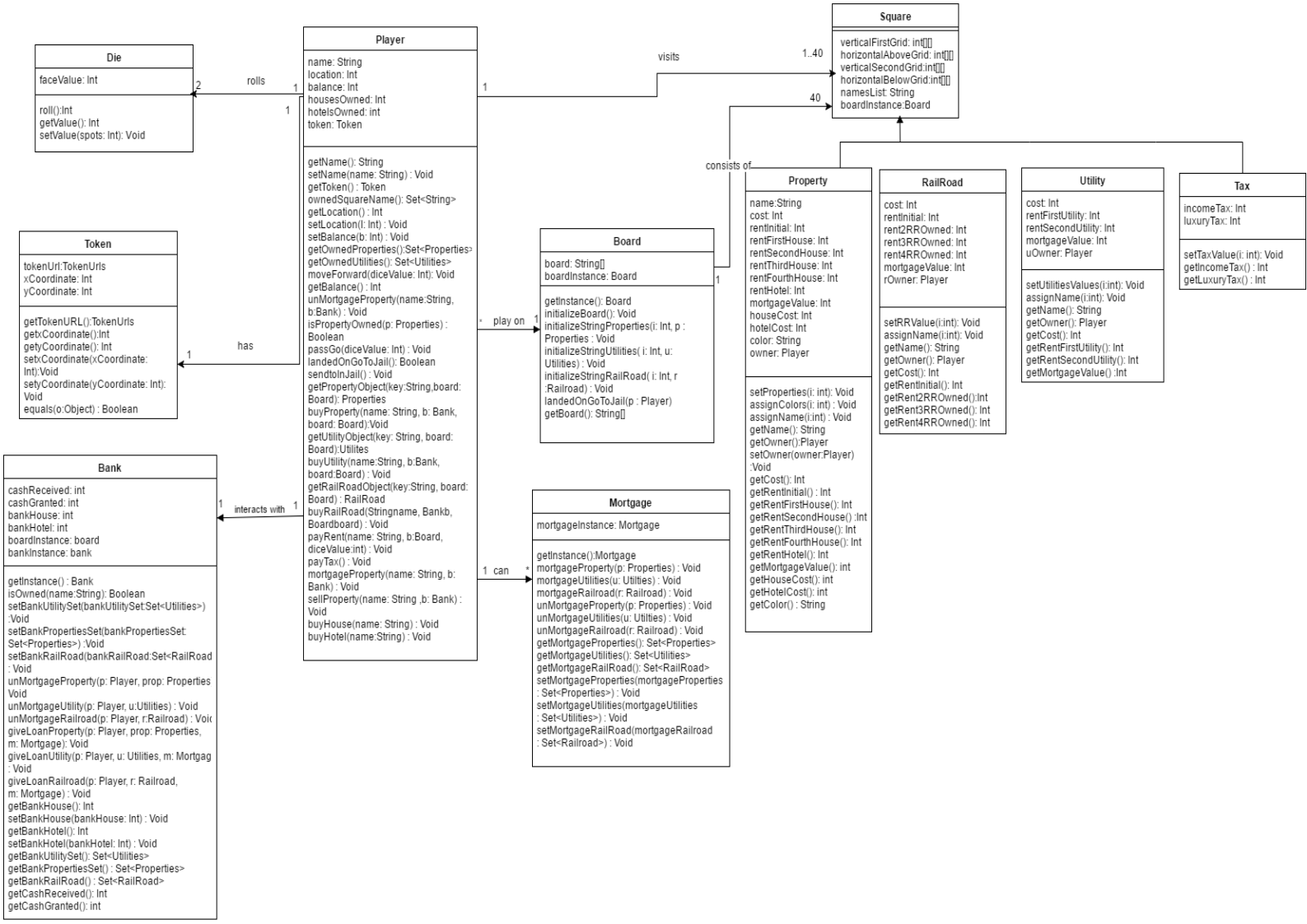
So for this, it is first checked if the player owns the property, and has four houses on it already. If this information is true, the bank sells a hotel to the player after checking if player has sufficient balance to do so. The cost of house is deducted by the bank from the player's balance.

Pay Rent



If a player lands on another player's property, rent is gotten from the property/utility/railroad class for that property/utility/railroad. Rent is paid via the payRent( ) function, and rent is deducted from player's balance added to the owner's balance.

Design Class Diagram



Glossary

Class Description

Class Name	Attributes	Description
Bank	cashReceived,cashGranted,bankHouse,bankHotel,boardInstance,bankInstance	Class which owns all properties initially. Players interact with the bank class to buy/sell/mortgage properties or to take loan
Board	board,boardInstance	Class which contains the names of the blocks for all the coordinates
Die	faceValue	Class which keeps track of the value appearing on each die when a player rolls it.
Mortgage	mortgageInstance	Class which enables the players to mortgage, unmortgage properties
Player	name,location,balance,housesOwned,hotelsOwned,token	Class which tracks each player's name,location, owned properties and enables him/her to buy properties,pay taxes,pay rent
Property	name,cost,rentInitial,rentFirstHouse,rentSecondHouse,rentThirdHouse,rentFourthHouse,rentHotel,mortgageValue,houseCost,hotelCost,	Child Class of Square in which a player can own properties and collect rent. A Player has to pay rent if he/she lands on some other player's property
Railroad	name,cost,rentInitial,rent2RROwned,rent3RROwned,rent4RROwned,mortgageValue,rOwner	Child Class of Square in which a player can own railroads and collect rent. A Player has to pay rent if he/she lands on some other player's railroad
Square	verticalFirstGrid[][],horizontalAboveGrid[][],verticalSecondGrid[][],horizontalBelowGrid[][], namesList[],boardInstance	Class which contains the fixed values of everything involved in the game like the price to buy a particular property,the price of building houses/hotels etc.
Tax	incomeTax,luxuryTax	Child Class of Square in which a player has to pay a certain amount (Tax) to the bank
Token	tokenUrl,xCoordinate,yCoordinate	Class which keeps details of the all the tokens available in the game.
Utility	name,cost,rentFirstUtility,rentSecondUtility,mortgageValue,uOwner	Child Class of Square in which a player can own utilities and collect rent. A Player has to pay rent if he/she lands on some other player's owned utility. The rent is not fixed,it depends on the dice roll.

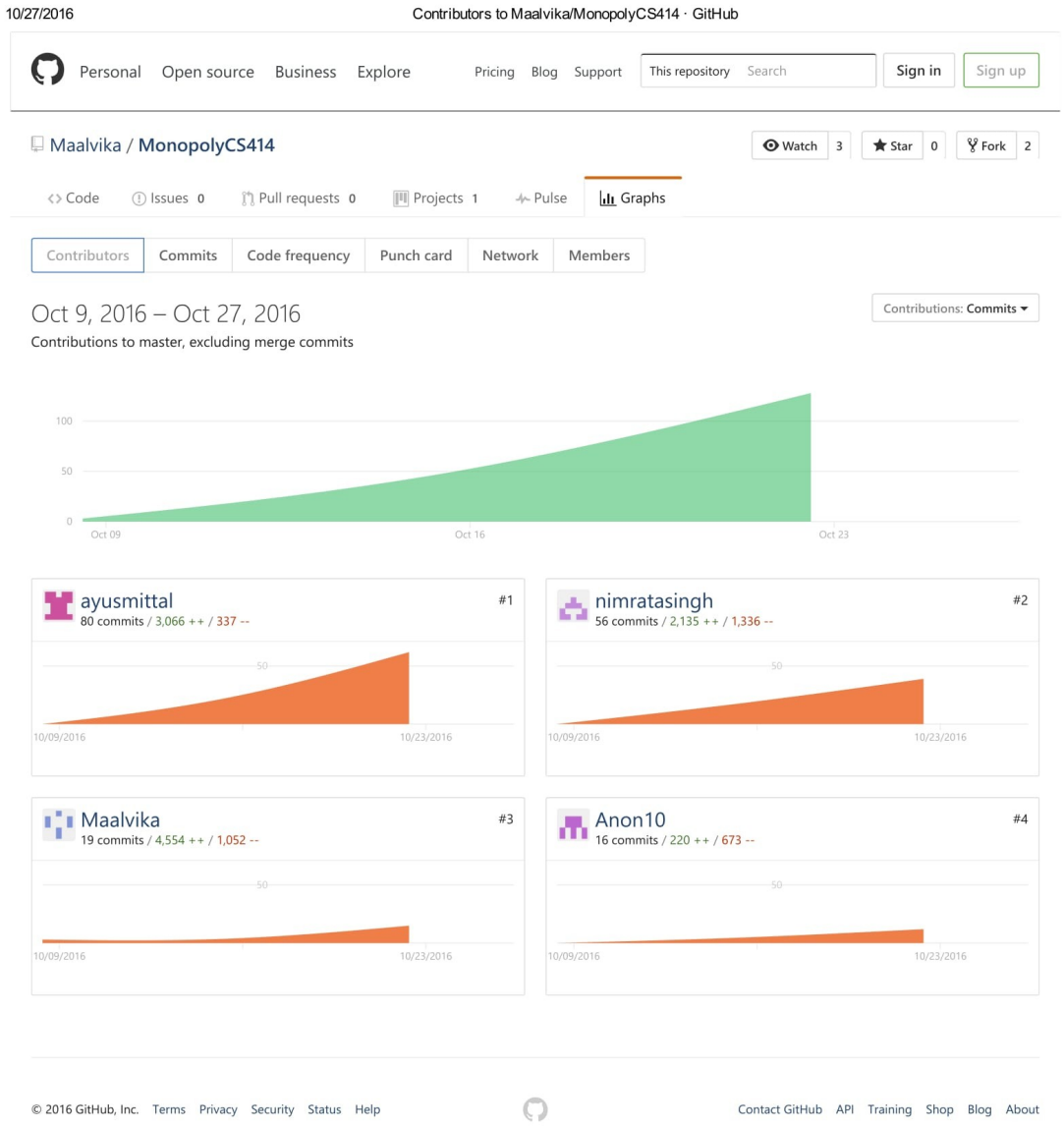
Association Description

Name	Source	Destination	Description
Can	Player	Mortgage	A player can mortgage property
Consists of	Board	Square	A board consists of 40 squares.
Has	Player	Token	Each player in the game is identified by a token.
Interacts with	Player	Bank	Player interacts with bank to buy/sell/mortgage properties or to take loan.
Play on	Player	Board	Many players play on one board
Rolls	Player	Die	Each player rolls two die.
Visits	Player	Square	Based on the number on dice,player visits a square.

System Test Cases

S.No	Test Case Name	Description	How to run	Expected	Actual	Result
1	Start Test	To check if the user is able to start game when start game is clicked	The user launches the game , enters the number of desired player number and name	After clicking on Start , the game should starts and a screen with monopoly board should appear, the chance is given to the first player	The game starts, a screen appears with the monopoly board on it.	Pass
2	Roll Dice test	This check that when roll dice is clicked, two randon values on the dice should be generated.	The player on his chance cliks on the roll dice.	Random number should be generated on the two dices, and token of player moves accordingly.	Random number is generated on two dices and token of player moves accordingly	Pass
3	Continue Test	To test by clicking continue the chance is given to the other player	The player clicks on continue button the UI	After Clicking on continue the chance should be transferred to next player	After clicking on continue the chance is transferred to next player	Pass
4	Buy Property Test	To check if a player is able to buy a certain property, if it is not owned by someone	During the play the player lands on a property which is not owned by any other player and the player clicks on the Buy Property	The player should be able to buy the property, the cost of property should be reduced from the player balnce	The player is able to buy the property, the cost of property is reduced from the player balance	Pass
5	Build Property	To check if a player is able to build a house on a owned property	During the play the player lands on a property which is owned by himself and he wants to build a hous eon it.	The player should be able to build a house on the propert he owns, the amount of house should be reduced from the players balance	The player is able to build a house on the propert he owns, the amount of house is reduced from the players balance	Pass
6	Mortgage Property	The player is able to mortagage property to the bank	During the play the player lands on a property which is owned by himself and he wants to mortage it.	The player should be able to mortgage the desired property , the mortgage value of the property should is added to player's balance	The player is able to mortgage the desired property , the mortgage value of the property is added to player's balance	Pass
7	End Game	The player is able to end the game	The Player wants to end the the game and clicks on exit game	The player should be able to exit game and final screen should appers showing the current balance of all the other players and properties owned by them	The player is able to exit game and final screen appears showing the current balance of all the other players and properties owned by them	Pass

Running the game:

PlayerDetails.java class contains the main method. In order to run the game you have to sun this class. It will start with a screen which asks for the user details. After each screen is passed by entering the valid information, the game is started.

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