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Plan of Attack

This document outlines our proposed implementation for building the CS 246 final project. We will implement “BuildingBuyer7000”.

The structure of this outline is as follows:

1. A main function basic outline which describes the sequence of events that occur during gameplay.

2. A description of critical methods to ensure functionality of specified classes.

3. A Task Delegation List

4. A core requirements flowchar – detailing how we will implement the core requirements of the project - as specified in bb7k.pdf.

Main Function Basic Outline

Program is called from command line with optional arguments (-load file or -test).
I. -load: file the game is played from the state specified in file.
II.-test: the values of each die roll can be specified by the player.

Read number of players, player names, and chars(board pieces) from cin.

Array of player objects is created and stored in a field of the board. (This is detailed in flow chart)

<u>The commands are as follows:</u>

roll - theBoard->movePlayer is called. Method first checks if the player is in the Timsline. Method changes the players location pointer and calls the action method on the location pointer with it's self as an argument
. The method then calls textDisplay->notify(the appropriate coordinates and char). The board is then printed.

trade <name> <give> <receive> - active player offers to trade <give> with <name> in return for <receive>.
theboard->trade(currentPlayer) called.

improve <property> buy/sell â player->improve() improve method reads in property name and checks if player owns. Checks if player can afford improvement if yes calls
property->improve(buy/sell) this method bill/compensates the owner the appropriate amount. Board->print() is then called from main.

mortgage <property> - player->mortgage() called, reads in name of property, checks if it owns property. If player owns property property->mortgage() is called this method makes the property stop charging tuition and compensates the owner.

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unmortgage <property> - player->unmortgage() called, checks if it owns property bills the owner the lent money plus ten percent. Makes the property start charging tuition again.

bankrupt - player->bankrupt() is called. Checks if player owes more money than has. If yes all assets are given to play who is owed. Players must immediately pay 10% of the principle when inheriting a mortgaged property. They may then choose to unmortgage be paying the principle if not they will have to pay the usual principle plus 10% when unmortgaging later.

Assets - calls player->displayAssets(). Does not print if player is deciding how to pay tuition

save - saves the state of the game

next - if player is not in tims line and has rolled this turn continues.

Description of Critical Methods

Board::Board() - NHDeckconfig.txt, SLCDeckConfig.txt, boardConfig.txt

- Before every game a new board must be made.
- The board constructor, Board::Board(), is entirely responsible for the new board.
- Board configuration is stored in textfiles. Includes property names, prices, improvement costs, tuition.
- Board::Board() constructs the squares using FileReads objects created using the configuration files.
- Construct DeckBuilder object. Run buildDeck(fileName) where fileName is the name of deck configuration file.

Board::startGame() - cin

- Reads in player names and avatars from cin to construct Player objects and puti them in the players. array.
- randomly decides who goes first. Sets currentActivePlay field.

Board::load() - saveFile.txt

- Creates ReadFile object with saveFill string and uses it to create and new players array.
- Resulting players have avatar, money, position, rollup the rim cups and turns left in the DC tims line as specified in saveFile.
- Order of players in array is same as oder they where read in.
- Game continues with first read in player going first.

Board::roll() - cin

- calls Board::movePlayer(numSpaces) where numSpaces is the sum of two random numbers between 1 and 6.
- runs currentActivePlayer->location->action(). Action() alters the currentActivePlayer appropriately.

Board::movePlayer(int numSpaces)

- moves the currentActivePlayer a numSpaces squares forward.

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March 25 2015

Board::trade(Player *otherPlayer, String offer, String recieve) - cin
- reads accept/reject from cin.
- if accept takes offer from currentActivePlayer and to otherPlayer the takes recieve from otherPlayer and gives it to currentActivePlayer.
- if reject do nothing.

Player::payDebt()
- defines local int payment as min(debt, savings). Calls creditor->recieveTuition(payment) and decrease savings and debt by payment.
- if all debt is paid creditor is assigned to null

Player::recieveTuition(int tuition)
- increases savings by tuition.

Bankrupt()
- All assets are given to the creditor using the trade member of the board.

List of Responsibilities

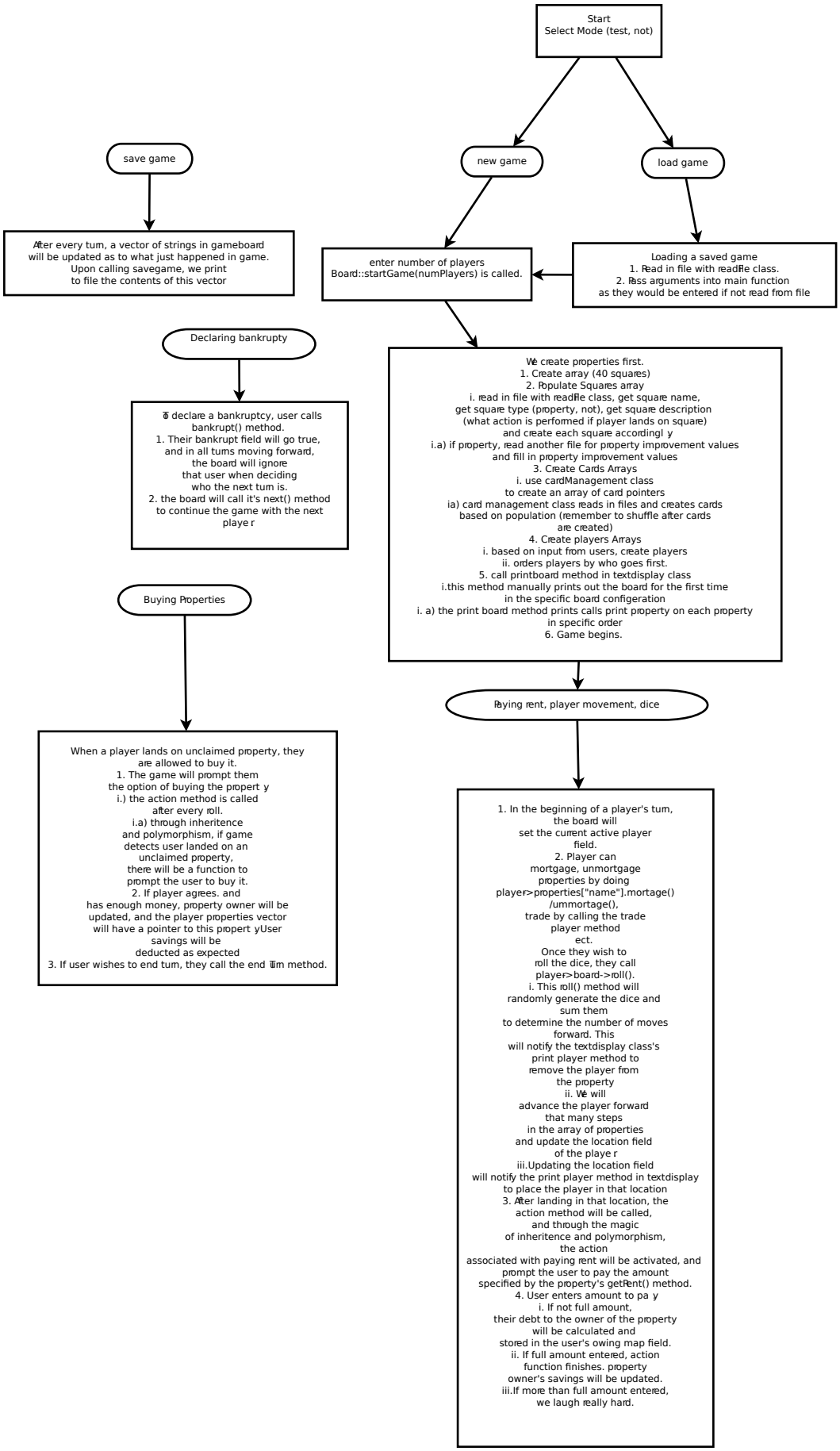
Specifies what classes each partner is responsible for implementing.

Amanda:

Textdisplay, fileReader, board, player, save files, card config files, property config files.

Travis:

mainfunction, card and all subclasses, deckBuilder, Square and all subclasses, TimCupDispenser.


Start
Select Mode (test, not)
new game
load game
save game
After every turn, a vector of strings in gameboard
will be updated as to what just happened in game.
Upon calling savegame, we print
to file the contents of this vector
enter number of players
Board::startGame(numPlayers) is called.
Loading a saved game
1. Read in file with readFile class.
2. Pass arguments into main function
as they would be entered if not read from file
Declaring bankrupty
We create properties first.
1. Create array (40 squares)
2. Populate Squares array
i. read in file with readFile class, get square name,
get square type (property, not), get square description
(what action is performed if player lands on square)
and create each square accordingl y
i.a) if property, read another file for property improvement values
and fill in property improvement values
3. Create Cards Arrays
i. use cardManagement class
to create an array of card pointers
ia) card management class reads in files and creates cards
based on population (remember to shuffle after cards
are created)
4. Create players Arrays
i. based on input from users, create players
ii. orders players by who goes first.
5. call printboard method in textdisplay class
i.this method manually prints out the board for the first time
in the specific board configeration
i. a) the print board method prints calls print property on each property
in specific order
6. Game begins.
To declare a bankruptcy, user calls
bankrupt() method.
1. Their bankrupt field will go true,
and in all turns moving forward,
the board will ignore
that user when deciding
who the next turn is.
2. the board will call it's next() method
to continue the game with the next
player
Buying Properties
Paying rent, player movement, dice
When a player lands on unclaimed property, they
are allowed to buy it.
1. The game will prompt them
the option of buying the propert y
i.) the action method is called
after every roll.
i.a) through inheritence
and polymorphism, if game
detects user landed on an
unclaimed property,
there will be a function to
prompt the user to buy it.
2. If player agrees. and
has enough money, property owner will be
updated, and the player properties vector
will have a pointer to this propert yUser
savings will be
deducted as expected
3. If user wishes to end turn, they call the end Turn method.
1. In the beginning of a player's turn,
the board will
set the current active player
field.
2. Player can
mortgage, unmortgage
properties by doing
player->properties["name"].mortage()
/ummortage(),
trade by calling the trade
player method
ect.
Once they wish to
roll the dice, they call
player->board->roll().
i. This roll() method will
randomly generate the dice and
sum them
to determine the number of moves
forward. This
will notify the textdisplay class's
print player method to
remove the player from
the property
ii. We will
advance the player forward
that many steps
in the array of properties
and update the location field
of the player
iii.Updating the location field
will notify the print player method in textdisplay
to place the player in that location
3. After landing in that location, the
action method will be called,
and through the magic
of inheritence and polymorphism,
the action
associated with paying rent will be activated, and
prompt the user to pay the amount
specified by the property's getRent() method.
4. User enters amount to pay
i. If not full amount,
their debt to the owner of the property
will be calculated and
stored in the user's owing map field.
ii. If full amount entered, action
function finishes. property
owner's savings will be updated.
iii.If more than full amount entered,
we laugh really hard.