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Professor Crandall

CPSC 224 01

29th October 2023

Summary of HW 3

Goal/Purpose: The purpose of this homework assignment is to add to our first two Farkle assignments. Now a user should be able to play a full game of Farkle until a selected point total is reached in both single and multi player! A new combo was added as well as some other niceties.

Overview of Design Choices: This iteration of the program ended up having 7 different classes, including the Die class provided by Professor Crandall. The other six classes used are labeled as follows: Farkle, Game, Round, Player, Hand, and Combo. Most of these have the same function as the previous build, aside from one addition and deletion. Farkle is the main class of this farkle program. Its job is to run an instance of farkle. Die is a class used to create die objects that have a side up and can be rolled to change the side up. The Game class is a class that manages a whole game of farkle. Here is where point total, whether the game will be single or multiplayer and number of players if multiplayer are decided. If playing multiplayer, this class creates an array list of players to keep track of points and usernames, these players are then fed into the Game classes round. The Round class is designed to manage a single round of farkle for a single player. To this end, it creates a Player and keeps track of whether or not the round is over or not and calls methods to create a user interface for the farkle game and to allow the user to make choices on which dice to add to a meld. The Player class keeps track of a user's Hand/Meld, Combos,

roundPoints and pointBank. Its methods are mostly used to manage/switch the dice between the Players Hand/Meld, and Combos as well as obtaining scoring. The Hand class has now taken over the meld class as well. It contains an ArrayList of 6 randomly rolled 6-sided dice as well as an integer array that contains the number of each value of dice in the ArrayList. Also now has a DVC that creates 6 dice of a specified side up, this is how meld has been replaced. Methods in this class are used to get and manipulate the dice in Hand as well as determine whether or not the user has rolled a “farkle” or a “hot hand”. Finally we have the Combos class which has an integer containing the value of the combos and an ArrayList containing dice. Its methods are used to add, manipulate, and remove dice to/from the ArrayList and perform all of the scoring operations for possible meld combos. The scoring for combos is split up into several different methods all called in the same method. Once again, I dare not to trespass into the domain of inheritance, however it may be used at a later date.

Design/Programming Issues: Most of the issues I ran into this time around were just minor bugs that came from me switching the game from a single round to a full game or Farkle. It took a little bit to fix mostly because the way I designed the newRound() method makes it really hard to read. That decision has kind of come back to bite me, but for the most part there weren’t any major issues.

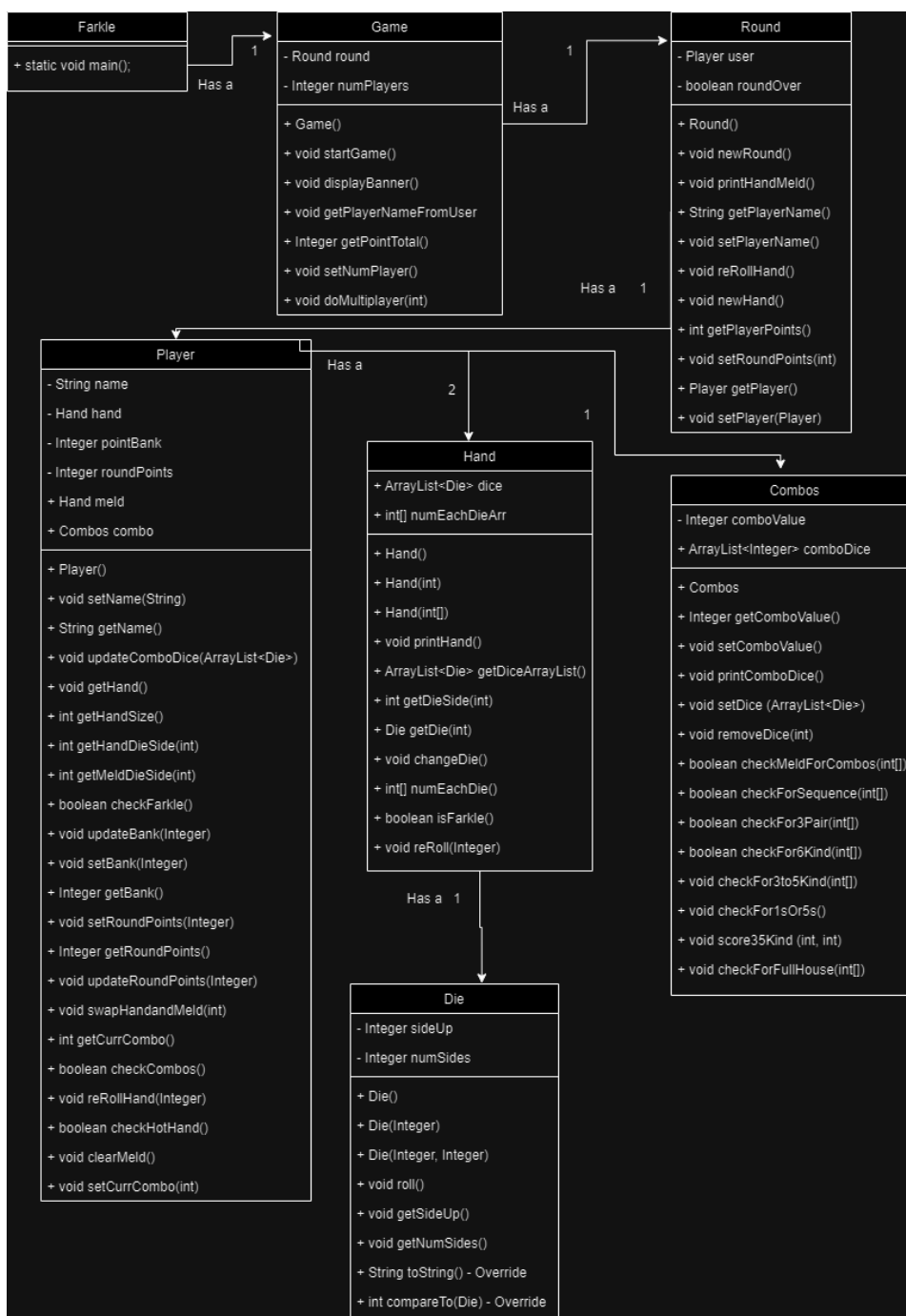
Retrospective: If I had more time for this assignment, I would have cleaned up my newRound method in the Round class. It’s really hard for me to read and I am the one who wrote it. Ideally I’d split it up into a couple of different methods to make it at least easier to look at.

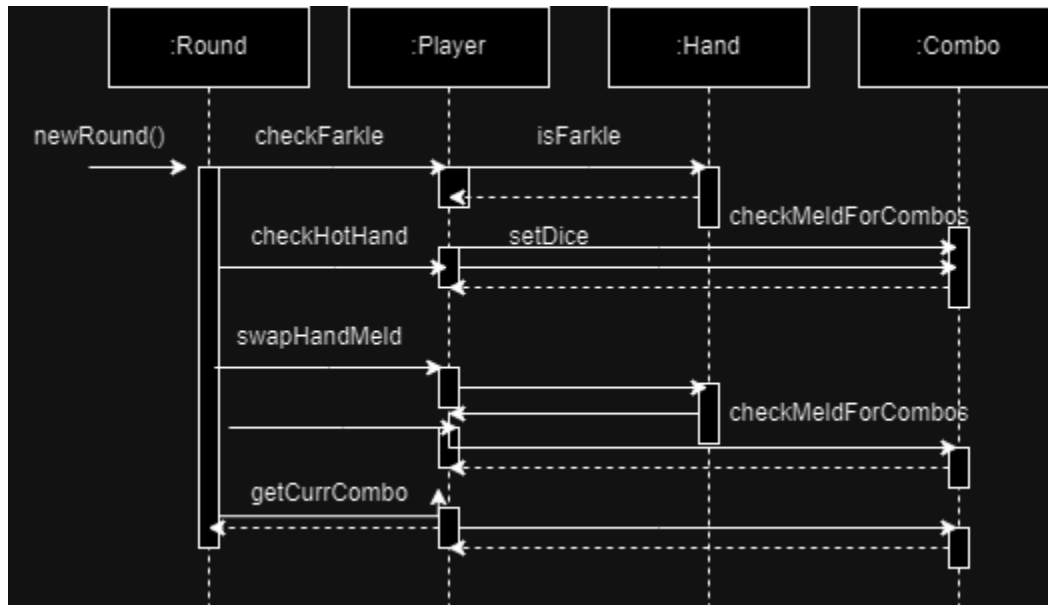
Unit Test: One unit test I wrote for the Combos class,

test3TripsHasHigherPrecedenceThanFullHouse() creates a combo with three 1's and three 6's.

Then the test calls checkMeldForCombos to make sure that trips have a higher precedence than a full house. The test asserts equals the actual combo value after checkMeldForCombos is run with the expected value of 1600.

UML Diagram:



Sequence Diagram:Appendix:

Intro Screen:

```

*****
*                CPSC 224 Farkle                *
*          Created By: McEwan Bain              *
*****
How many players do you have: 1
How many points would you like to play to? 10000
Username: Charles

Charles, it is your turn! Rolling your dice....
*****

```

Full House:

```

*****
Your Hand:      *      Melds
*****
a) 0            *      1
b) 0            *      1
c) 0            *      2
d) 0            *      1
e) 0            *      2
f) 3            *      0
*****
Current Meld Worth: 1500
Current Round Score: 0
Bank: 100
Please Select Dice to add/remove to Meld!
a) 0
b) 0
c) 0
d) 0
e) 0
f) 3

```

Single Player Win:

```

*****
Your Hand:      *      Melds
*****
a) 3            *      0
b) 0            *      6
c) 0            *      6
d) 0            *      6
e) 0            *      6
*****
Current Meld Worth: 1200
Current Round Score: 100
Bank: 9700
Please Select Dice to add/remove to Meld!
a) 3
b) 0
c) 0
d) 0
e) 0
g) Bank
r) Reroll
q) Quit
g
Round Over
Game Over!
Final Score: 11000

```

Entering Multiplayer:

```

*****
*                  CPSC 224 Farkle                  *
*                  Created By: McEwan Bain            *
*                  *****                            *
How many players do you have: 4
How many points would you like to play to? 5000
Username: Black
Username: Red
Username:
Username: Green
Black, it is your turn! Rolling your dice....
*****

```

Multiplayer Scores:

```

r
*****
Your Hand:      *      Melds
*****
a) 4            *      0
*****
Current Meld Worth: 0
FARKLE!

```

Multiplayer Winning Screen:

```

*****
Your Hand:      *      Melds
*****
a) 0            *      1
b) 0            *      1
c) 5            *      0
d) 2            *      0
e) 0            *      1
f) 4            *      0
*****
Current Meld Worth: 1000
Current Round Score: 0
Bank: 0
Please Select Dice to add/remove to Meld!
a) 0
b) 0
c) 5
d) 2
e) 0
f) 4
g) Bank
r) Reroll
q) Quit
g
Round Over
Current Scores:
Black: 150
Red: 200
Unkown Player 3: 1000
Green: 0

Game Over!
Final Scores:
Black: 150
Red: 200
Unkown Player 3: 1000
Green: 0
Unkown Player 3 wins!

```