SYSC 3110 UNO Flip Milestone 1 Documentation

Group 16:

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A. Design Decisions

The following classes were used for the implementation of the terminal-based UNO Flip game - Game (C), Card (I), NumberCard (C), SpecialCard (C), Colors (C), and Player (C). Where (C) denotes class and (I) denotes Interface. This is subject to change as the project progresses.
In a traditional Uno Flip Game, the game begins on the light mode, 2-10 players are each given 7 random cards and the game selects a random random as the top (starting) card. During their turn, players can select 1 card from their deck to play. The card must with have the same colour or number/type with the exception of the Wild card. Scores are associated with each card are tallied after each play. First player to 500 points wins!

Class Breakdown:
- **Game (Model):**
  The Game class controls the flow of the game. It contains the cards, initializes and distributes them to the list of players it holds accordingly. The game keeps track of all the logic and data in the UNO Flip game. The Game class contains the main method used to run the game.
- **Card:**
  This is an interface for the card object. The reason for this choice stems from the types of cards used in the UNO Flip game (i.e. the NumberCard and SpecialCard). The Card class hold a set of enums - the type of the card (Regular or Special), and the Special cards implemented (Skip, Reverse, Wild and Wild_Draw_Two).
- **NumberCard:**
  The number card implements the Card interface and models a number card in the UNO Flip game. Number cards contain a color (from the Color class) and a number (range 1 - 9). The cards have the light and dark side. The light side implemented in this milestone, and the dark side - currently a placeholder for further milestones.
- **SpecialCard:**
  The SpecialCard class implements the Card interface and models a special card in the UNO Flip game. Cards like Wild_Draw_Two, Skip, Reverse, and Wild. Subsequent milestones will have additional special cards like Flip and they will be added accordingly.
- **Colors:**
  The color class is a container for all the possible assigned colors in the game. It contains the two enums - DARKCOLORS (Pink, Teal, Orange,Purple) - for the dark mode and LIGHTCOLORS (Red, Blue, Green, Yellow)- for the light mode.
- **Player:**
  The Player class models a player in the UNO Flip game. They have an identification (a name), a number of cards, and a turn index which is controlled by the game.

B. UML Diagrams

Class Diagram:
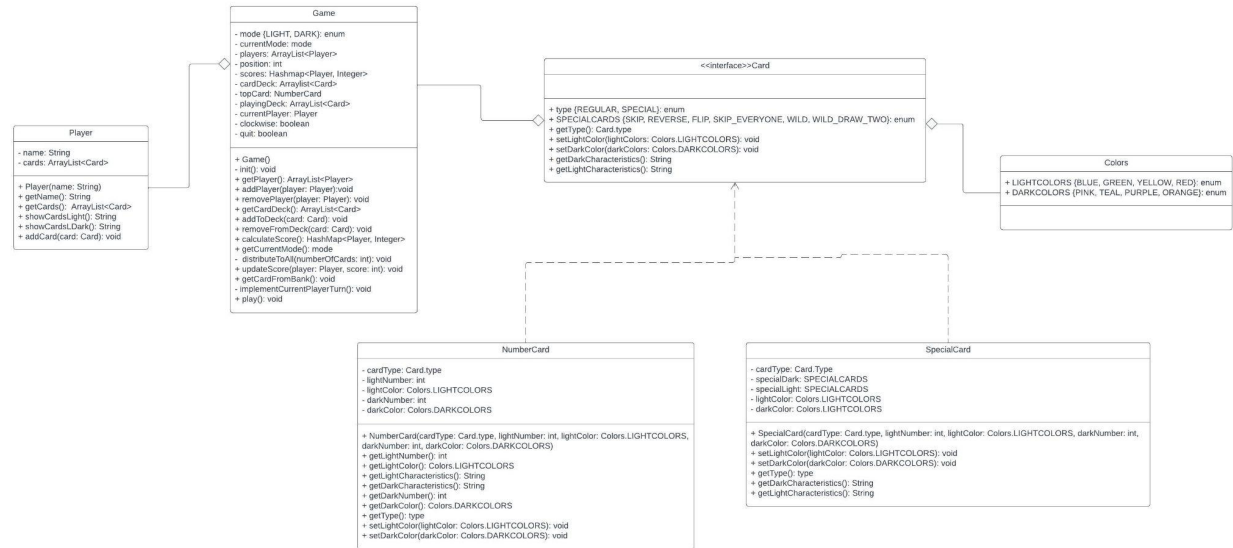
Sequence Diagram:
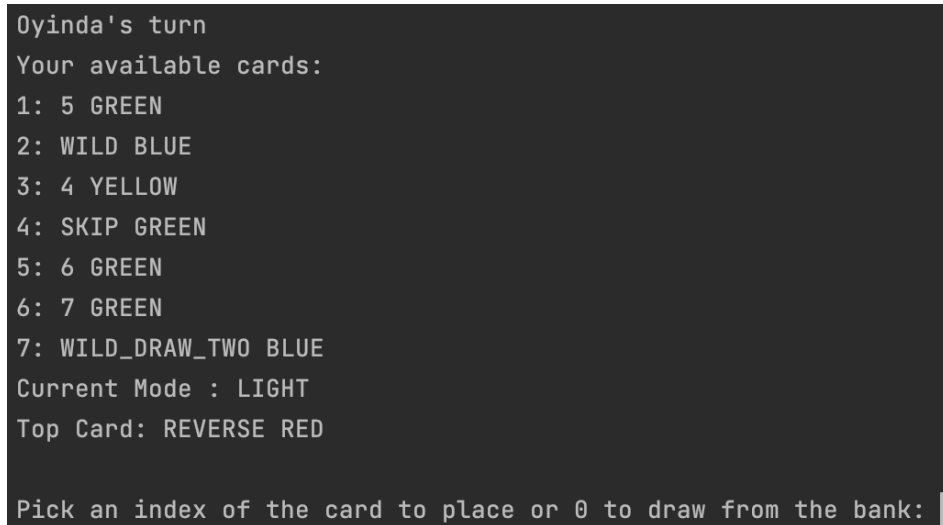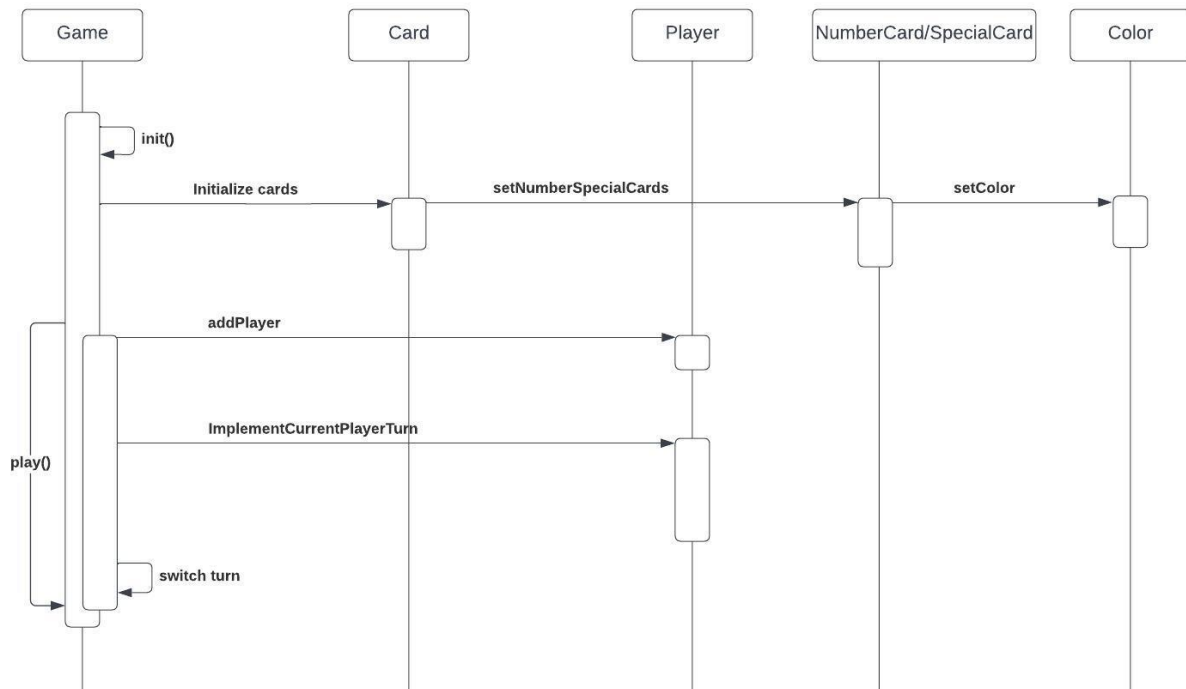
C. User Manual

To Play the UNO Flip game:

- To start the game, click on the jar file or load the project into a your IDE and run it.
- Enter the number of players you want join the game (minimum 2).
- Enter the names of the players. This will help to keep track of the turns.

- When all the players are inputted, the first players deck of 7 random cards will be displayed.
- The game will also print the top card and game mode (light side or dark side). Further implementation for switching game modes will be implemented in upcoming milestones.
- To play a card from the deck, the player will have to type in the number associated with the card (e.g 1 - 7). The card selected will be validated (checks if either the number/ card type or colour matches).
- If the player has no card option to play they can type in 0 to draw from the market.

```
Oyinda's turn
Your available cards:
1: 5 GREEN
2: WILD BLUE
3: 4 YELLOW
4: SKIP GREEN
5: 6 GREEN
6: 7 GREEN
7: WILD_DRAW_TWO BLUE
Current Mode : LIGHT
Top Card: REVERSE RED

Pick an index of the card to place or 0 to draw from the bank: |
```

- After the first player makes a makes a move, the moved played is printed and the players score is calculated based on UNO Flip rules. Scores are as follows:
  - All number cards (1-9): Face Value
  - Reverse: 20 Points
  - Skip: 20 Points
  - Flip: 20 Points
  - Wild: 40 Points

- ○ Wild Draw Two: 50 Points
- The game play continues.
- If the player selects a number card the game continues to player 2.

```
Current player score: 7


----------------------------------------------------
Osas's turn
Your available cards:
1: WILD GREEN
2: 7 YELLOW
3: 3 RED
4: WILD_DRAW_TWO GREEN
5: REVERSE YELLOW
6: 8 YELLOW
7: 7 GREEN
Current Mode : LIGHT
Top Card: 7 YELLOW


Pick an index of the card to place or 0 to draw from the bank:
```

- If the player selects a Wild Draw Two card, the next player is automatically is distributed two random cards from the market. Normal game validation rules still apply.
- If the player selects a Skip card, the next player misses a turn and the game continues. Normal game validation rules still apply.
- If the player selects a Reverse card, the game completely reverses the order of the game. Normal game validation rules still apply.
- If the player selects a Wild card, they can select what colour they would like the top card to be. The next player continues with the selected colour.
- If a player selects a Flip card, all the players have to automatically switch to the opposite side. Which means all players will have a deck of brand new card values and have to change their game play.
- The game play continues.
- Once the score for the round has been tallied, if no player has reached 500 points, reshuffle the cards and begin a new round. The scores differ based on which mode (light or dark) the game ended on.
- The winner is the first player to reach 500 points.