UNO Flip (Group 20)
User Manual

1. Introduction

This user manual explains
- How to run the project jar file
- How to start and play an UNO Flip game
- How to use all major features added across all milestones

2. System Requirements

- Java Development Kit version 25 or newer
- Desktop operating system that can run Java
- Keyboard and mouse or trackpad

Optional but recommended
- An IDE such as IntelliJ or Eclipse if you prefer running from source

3. How to Run the Program

3.1 Running the jar file
- Ensure Java is installed and available in your system path
- Locate the built jar file for this project in your file explorer
- You have two common options:

  Option A
  - Double click the jar file in your file explorer
  - If your system is configured to run Java archives, the game window will open

  Option B
  - Open a terminal or command prompt
  - Change directory to the folder that contains the jar file
  - Use the standard Java command that runs a jar archive, followed by the project jar name

Note about card images

If the assets folder is not bundled inside the jar, card images may not appear.
The game logic still works correctly, and you can still play the game.
For full card images, run from source with the assets folder present.

3.2 Running from source code

If you have all project files and the assets folder
- Open a terminal in the folder that contains the source code
- Compile all Java files

   javac *.java

- Run the main frame class

                                java UNO_Frame

- The main window will open, and you can begin setting up a game

4. Main User Interface

Once the program starts, you will see the main game window, which includes:

- A display for the top card of the discard pile
- A hand area that shows your cards
- A draw card control
- A control to move to the next player
- Controls for special features such as undo, and redo.
- Scoreboard for the players.
- Current player indicator.
- Direction indicator.
- A textbox indicating what card was last played.
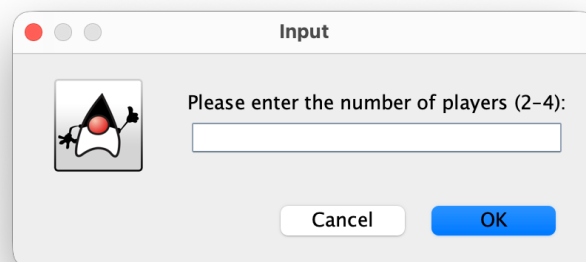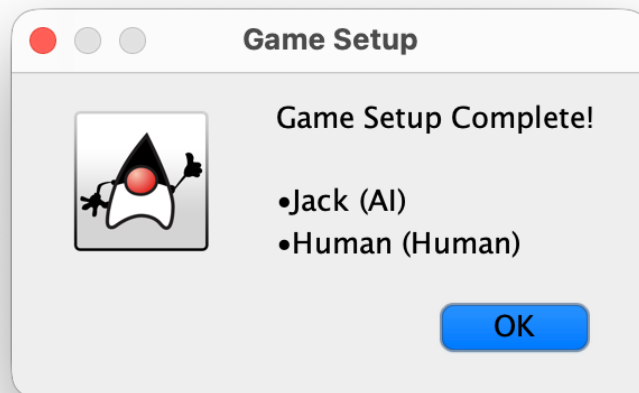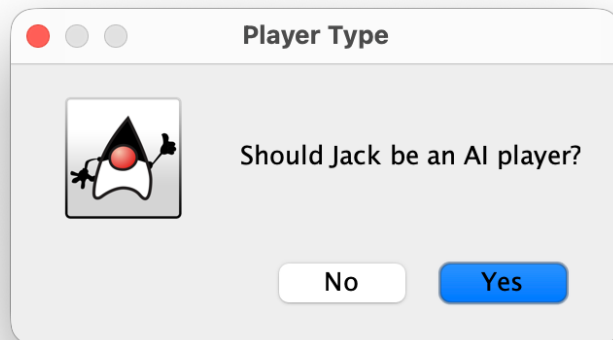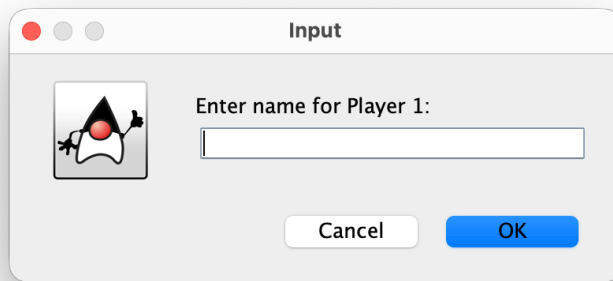- A file menu at the top left to save the game or load a saved game.
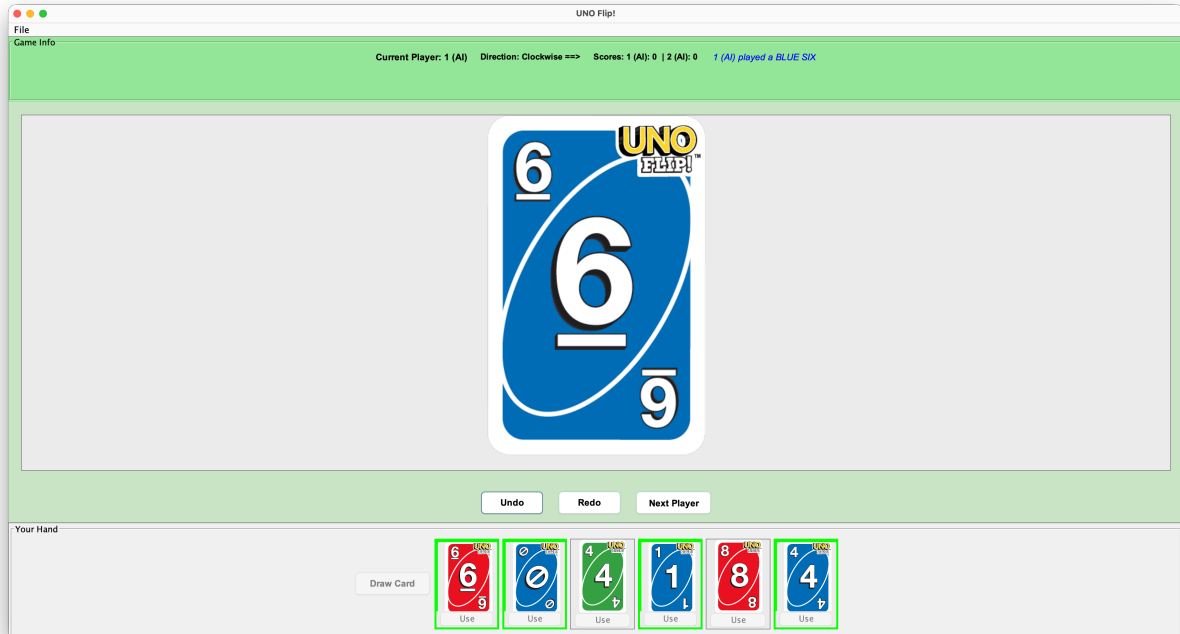
5. Starting a New Game

When you first open the program or after finishing a game, you can start a new one.

Typical flow:

- Choose the number of players
  - The game supports 2 to 4 players
- For each player, you will be asked
  - Player name
  - Whether the player is human or AI
- Confirm the setup to start the game
- The initial hands are dealt and the first top card is placed on the discard pile
- The game starts on the light side deck

Input

Enter name for Player 1:

[   ]

Cancel   OK

Player Type

Should Jack be an AI player?

No   Yes

Game Setup

Game Setup Complete!

- Jack (AI)
- Human (Human)

OK

6. How to Play UNO Flip in this Program

This section gives a short guide to gameplay for this implementation.
For complete rules, you can refer to the official document by Mattel.

6.1 Objective

Be the first player to get rid of all cards in your hand.
Rounds continue and points are scored.
Games can continue until someone reaches a target score, for example 500 points for our version of the game.
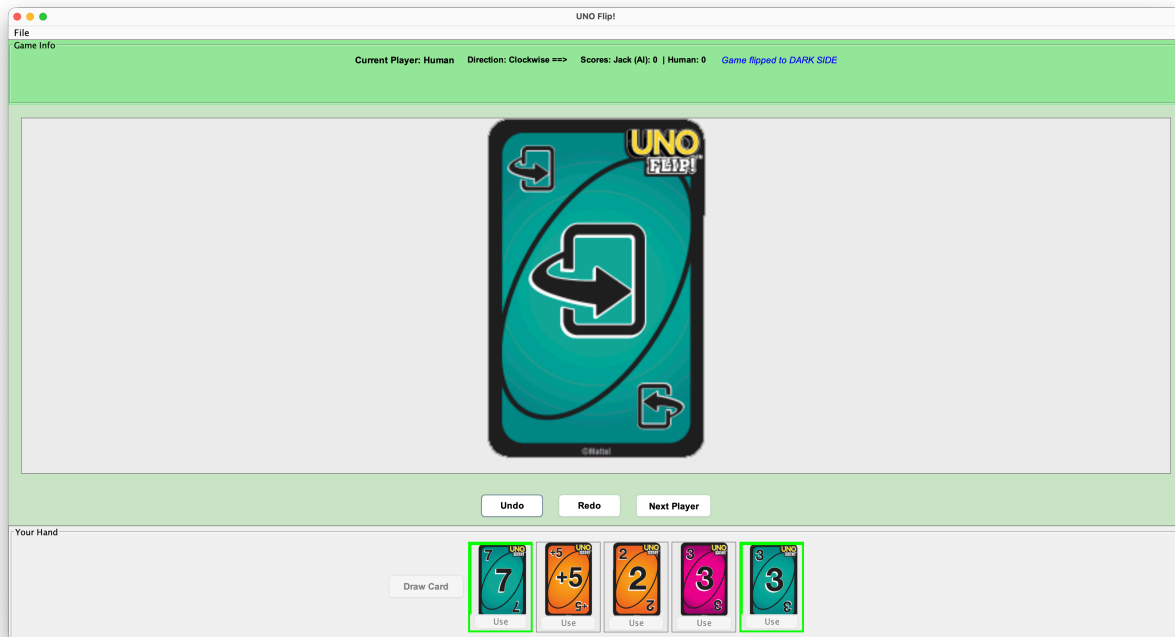
6.2 Light side and dark side

UNO Flip uses double sided cards.
- The game begins on the light side
- When a flip card is played, all cards in the draw pile, discard pile, and all hands switch to the opposite side.
- The dark side usually contains stronger penalties and more powerful action cards.
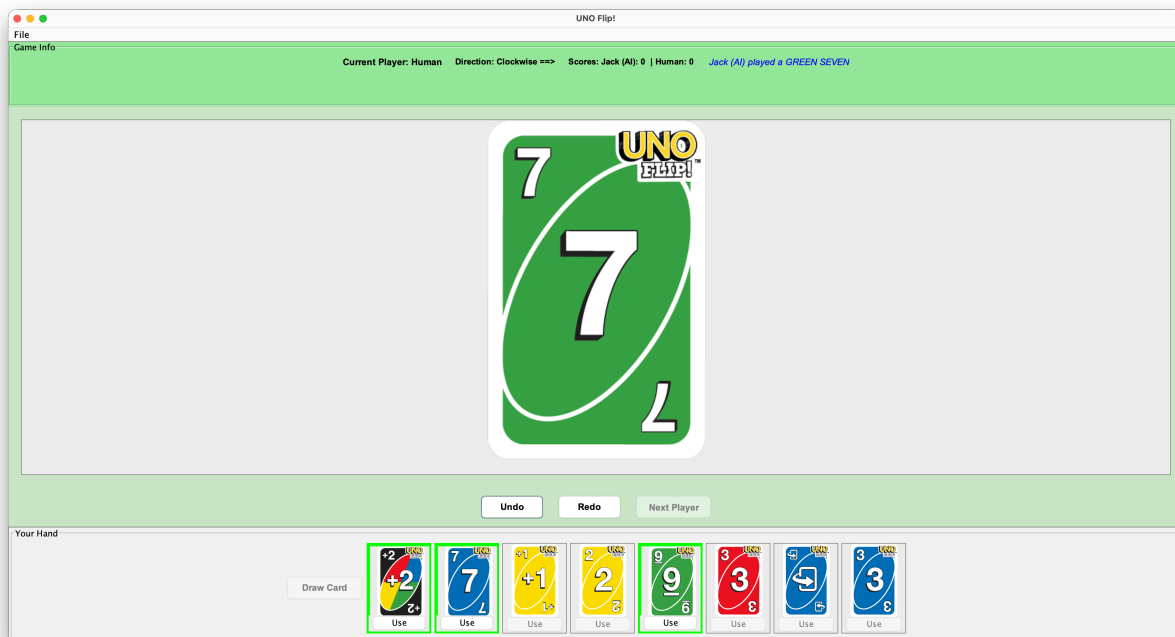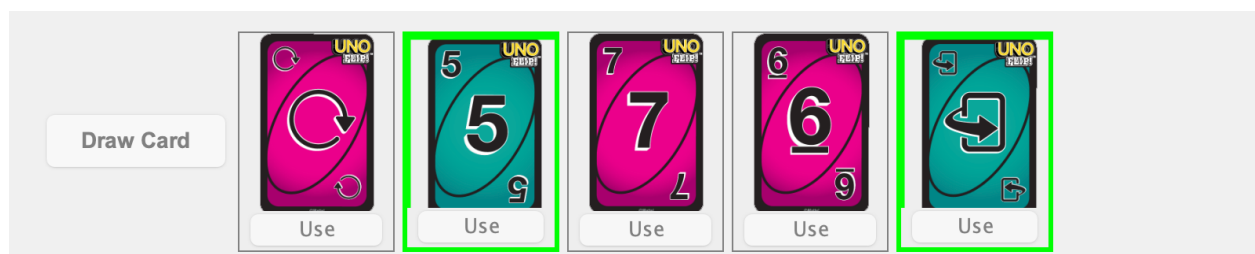

Example of light side

Example of dark side

6.3 Your turn

On your turn you normally do the following
- Look at the top card of the discard pile
- Choose a card from your hand that is legal to play, legal cards are automatically highlighted with a green border. A card is legal if it is:
  - Same color
  - Same number or symbol
  - A wild card
- If you have a playable card, click on the "Use" button under the card to play it.
- The program will validate the move and update the game state
- If you have no legal move
  - Click the draw card control
  - The game will draw a card for you
- Click on the "Next Player" button to move to the next player

Example of a typical hand with highlighted playable cards

6.4 Action cards

The program implements all official UNO Flip action cards on both sides.
The exact icon and color of each card match the assets in the project.

Common behaviors
- Draw cards
    - Force the next player to draw the specified number of cards
    - Skip their turn depending on the card
- Skip cards
    - Skip the next player directly
- Reverse cards
    - Reverse the direction of play
- Flip cards
    - Switch between light and dark sides for all cards
- Wild cards
    - Allow the player to choose the next color
    - Some wild cards combine with draw effects

When you play a wild card, a color selection interface appears, choose your desired color.
The program applies the color to the current state.

6.5 End of a round and scoring

A round ends when a player has zero cards.
- The program automatically counts the points from remaining cards in other hands
- The player who went out receives the sum of these points
- The score is accumulated across rounds
- The program supports replaying new rounds automatically so that a game can continue to a target score such as 500 points

7. AI Players

The program supports AI controlled players.

7.1 Adding AI players

During game setup you can select players to be AI instead of human.
The program marks these players internally and no manual input is needed for them during the game.

7.2 AI turn behavior

The AI follows a simple but valid strategy
- It scans its hand from the first card to the last
- It plays the first card that is legal on the current top card
- If no card can be played, it draws a card
- When playing a wild card, the AI chooses the color that it has most frequently in its hand

The program runs these steps automatically when it is an AI player's turn and displays the result in the game window.

8. Undo and Redo

The game supports undo and redo of moves.

8.1 Using undo
- During gameplay, click the Undo control
- The program reverts the game state to the previous step
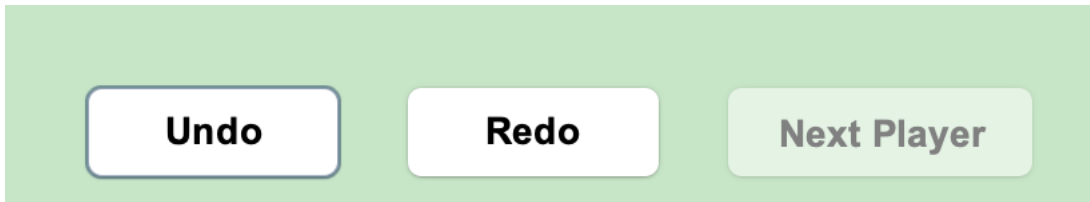   - For example, it can undo your last played card or your last draw

Undo is useful if you misclicked or wish to revert an action.

8.2 Using redo
- After an undo, click the Redo control
- The program reapplies the last undone move

These features are implemented with appropriate state tracking and tested with JUnit.
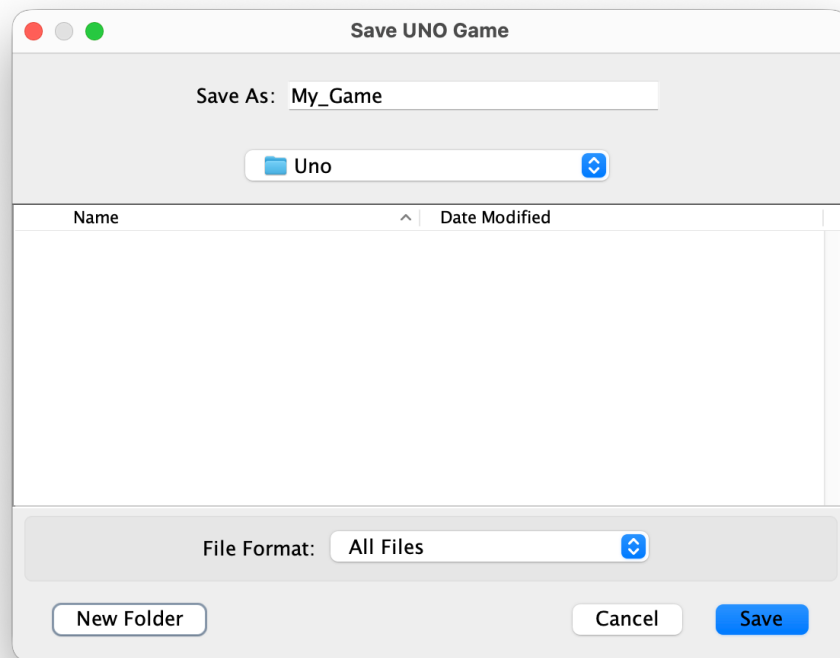

<u>Example of controls for undo and redo</u>

9. Save and Load Game

The game supports saving and loading so that you can pause and continue later.

9.1 Saving a game
- While a game is in progress, use the Save control located inside the "File" menu
- Choose a file location and file name.
- Hit "save" to save the game.
- The program serializes the current game state to a file

<u>Example of saving a game</u>

9.2 Loading a game

- From the "File" menu, use the Load control
- Choose a previously saved game file
- The program restores the saved game state
- You can resume gameplay from exactly where you left off
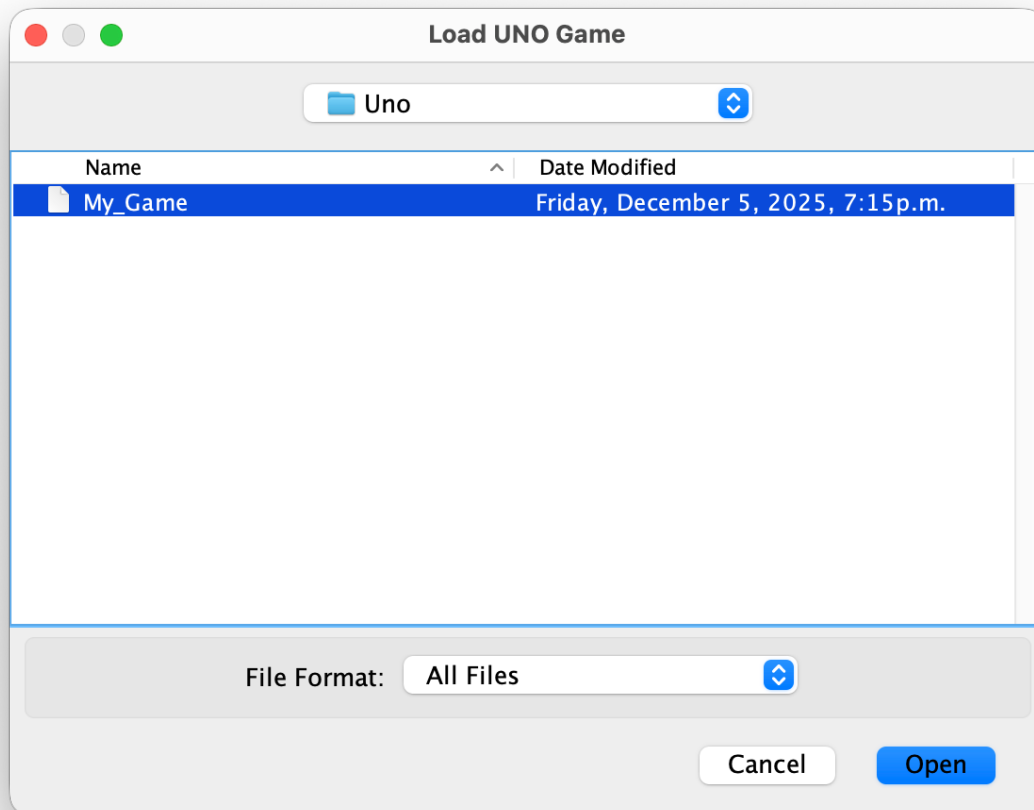
Example of loading a game

10. Replaying games

After one player reaches the target score, for example 500 points, the program supports continuing with additional games.

- When a game ends, a summary appears
- You can choose to start another game with the same group