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Media Engineering and Technology
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CSEN 401 - Computer Programming Lab, *Spring 2025*

Jackaroo: A New Game Spin

Milestone 3

Deadline: 21.5.2025 @ 11:59 PM

In this milestone, you are required to implement the GUI to be able to play the game.

1 General Guidelines

- The effects of any action performed in the GUI should be reflected in the engine and vice versa.
- The player should be able to view all content at all times without the need to resize/minimize/maximize the window during runtime.
- The action that is currently happening in the game should always be clearly indicated in the GUI.
- Make sure to handle all exceptions and validations for any input or action performed. In case any exception implemented in the second milestone arises the player should be notified and the action should be prohibited. The turns then carry on normally.
- The game should not be stopped/ terminated for any exception thrown. However, clicking the 'X' button on the window must be able to terminate the game at any instant.
- (Optional) Try to adhere to the MVC architectural pattern to organize the codebase, enhancing maintainability and scalability:
 - **Model:** Manages the data, logic, and rules of the application independently of the user interface.
 - **View:** Represents the GUI which displays game information to the player. The view should be dynamic and reflect changes made in the model.

- **Controller:** Accepts input, converting it into commands for the model or view. This ensures that the UI is separated from the data processing.
- You are **not allowed** to use Swing for the GUI, only JavaFX is allowed.
- You're free to use SceneBuilder when building the GUI.

2 GUI Requirements

The requirements that should be covered in the GUI are explained below. You will be graded based on the requirements detailed in the following checklist:

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| Need to be shown / done when starting the game:- | Prompt human player to enter name. |
| | Auto-assign names to 3 CPU players. |
| | Initialize game board with all cells and zones. |
| | Initialize all marbles at player's home zones. |
| | Distribute 4 cards to each player. |
| Need to be shown during the game:- | Each player's name and colour. |
| | Each player's remaining cards. |
| | The top card on the fire pit should be visible. |
| | No cards from the deck itself should be visible. |
| | Show current player's turn. |
| Need to be available for the human player:- | Show next player in turn order. |
| | The human player should be able to see all his cards and their details. |
| | The human player should be able to pick a card to play. |
| | The human player should be able to pick marbles to play with. |
| | The human player should be able to select a split distance input for the Seven card. |
| Need to be available for the computer player:- | The human player should be able to deselect card / marbles. |
| | The human player should be able to play their turn with all different card actions. |
| | The 3 computer players should be able to play their turn with a random card action. |
| | There should be a wait time between each player's turn. |

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| Need to be shown / done for each marble:- | The marble colour. |
| | Destroyed marbles has to be removed from the track and return to the respective player's home zone. |
| Need to be shown / done for each card:- | The card name / rank. |
| | The card suit. |
| Need to be shown / updated whenever a player ends a turn:- | Played / Discarded cards has to be removed from the player's hand into the firepit. |
| | Any updates to the board and marbles should be shown. |
| | Falling for a trap cell should be indicated. |
| | All selected marbles / card gets deselected. |
| | Distribute 4 cards to each player at the end of each round and refill the deck when needed. |
| Need to be shown for any invalid action:- | Be displayed as a popup message, as well as indicate to the player why the exception occurred. |
| | The game should not be stopped / terminated for any exception thrown. |
| | Closing the popup should NOT terminate the game. |
| Need to be shown whenever a player wins:- | The winner's colour gets announced. |
| Shortcut:- | The game should have keyboard keys to field any player's marble as a shortcut. |
| Bonus:- | Fantastic GUI. |