# COLOUR SWITCH

CSE 201: Advanced Programming

T152
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# Implementation and Features

## Step 1

1. Opening the Game launches the **front page game menu**.

2.All navigation is happening using FXML in the game.

3. The player can either open a **new game** or load a previously **saved game** by clicking on respective options.

4. The player can pause the game at any instance. **Pause Menu** provides option to Shop, Resume, Restart, Exit, Save game.

## Step 2

5. The player needs to enter the **game name** in case, he chooses the new game option.

6. The Play Game button launches the actual game.

7. Alphabetically arranged last **16 games** are displayed to choose from to Load Game.

8. If no Game is selected then user is prompted to pick.

## Step 3

9.The player can save the game midway and continue playing later.

10. **Game Over Menu** has options of Live Demo, Restart and shows Score, High Score, Total Stars.

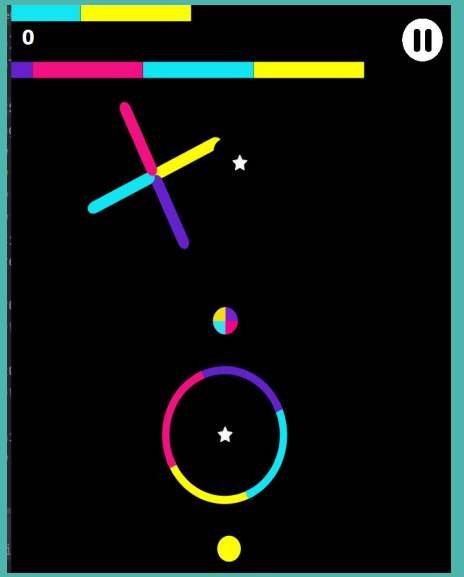
11.The player can **replay** the game or use his collected stars to **resume** the game.

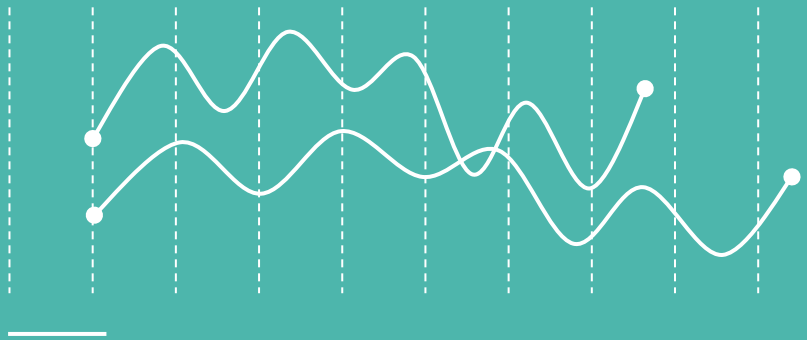
12. In case of insufficient Stars, **appropriate prompts** are printed on the screen itself.

# Design Patterns

1.**Singleton Pattern:** Game can have only a single instance in each game play. Thread safety has been maintained.
2.**Iterator pattern:** This is used to access elements in a synchronized fashion across collection objects.
3.**Factory pattern:** Spawning of different types of obstacles based on requirement for convenient gameplay.

Tasks have been implemented using threads. Obstacles are spawned randomly, End Game condition and collisions are checked based on Timer Tasks.
In case of Deserialization Errors, a new Game is started.

# INDIVIDUAL CONTRIBUTIONS

## *Harshita (2019244)*

- FXML: Game Over, Resume Game, Pause page, How to play
- Animations: Rotating all obstacles,Translation of Line Obstacle
- Animations: Translation of Obstacles in infinite mode
- Random Spawning of new Obstacles
- Construction: Line Obstacle
- Implemented Functions in PlayGame Controller
- Implemented Bonus Shop Feature
- Implemented Bonus Live Demo Feature
- Implemented Bonus SuperStar feature
- Implemented Bonus How to Play Feature
- Added Background Music
- UML: Class Diagram

## *Aditi (2019228)*

- FXML: Front Page, New Game Page, Play Game page,Load Game page
- Animations: Ball motion
- Serialization and Deserialization of Game
- Construction: Rectangle,Triangle,Circle and Cross Obstacle
- Implemented Load Game feature
- Implemented collision between Ball and Obstacles and Stars
- Implemented Game Over Condition
- Implemented High Score across Games feature
- Implemented features of Player class
- Implemented random Colour Switch Feature
- UML: Use Case Diagram

# BONUS FEATURES

1. **Saving Games by GAME NAME** - Games are saved by Game Name in Database folder, if no name is entered Game is saved as Guest.txt, Player can save games by choice
2. **SHOP PAGE** - Player can buy **upgrades** for the Ball *(4 Animated Skins)* and Add-Ons *(2 Bonus score multipliers with a short life)* using collected Stars
3. **LIVE DEMO Page** - Player can watch a live demo of the game from the Game Over Menu
4. **How to Play Page** - Provides a step-by-step guide to playing Colour Switch
5. **SUPERSTAR** - A Special Star that provides more points than a normal star (5 points)
6. **CHALLENGE Page** - Provides the Highest Score of a Player across multiple games
7. **Increasing Difficulty** - Obstacles rotate faster as Player reaches higher scores
8. **More Lives** - Player can choose to resume playing a Game even on losing if they have enough Stars to revive themself
9. **Game Over Page** - Options to Restart, Resume Game, Live Demo, Challenge Page and shows Score, Best Score, Total Stars
10. **Background Music** - Added background Music