Stick Hero Game

This JavaFX application implements a simple Stick Hero game where the player extends a stick to cross platforms.

LINK TO THE Video:

https://drive.google.com/drive/folders/1rIBDO2nllO1CVWYJ2yqsxZJ9VDQ5EDMq?usp=drive_link

Introduction

Stick Hero is a game where the player controls a character attempting to cross platforms by extending a stick. The goal is to reach as far as possible by accurately extending the stick to the next platform.

Features

- **Simple Controls:** The game features straightforward controls. Press the spacebar to extend the stick and release it to make the character move.
- **Dynamic Platform Generation:** Platforms are randomly generated, providing a unique gameplay experience in each session.
- **Animated Character:** The character is animated, providing a visually engaging experience.

Installation

1. Download from Google Classroom.
2. Open the project in your preferred Java development environment.
3. Run the **SceneController.java** file to launch the game.

How to Play

- Press the spacebar to extend the stick.
- Release the spacebar to make the character move.
- Aim to land the character on the next platform.
- Repeat the process to advance and score points.

Game Mechanics

1. **Stick Extension:**
    - The player can extend the stick by pressing and holding the spacebar.
    - The stick height increases while the spacebar is held.

2. **Stick Rotation:**
    - Upon releasing the spacebar, the stick rotates, and the character moves forward.
3. **Platform Generation:**
    - Platforms are randomly generated with varying widths.
    - The goal is to land the character accurately on the next platform.
4. **Score Calculation:**
    - The score is determined by the distance travelled by the character.
5. **Fall Mechanism:**
    - If the character falls, short or extends beyond the platform, the game ends.
6. **Platform Shifting:**
    - After successfully crossing a platform, the game shifts to a new set of platforms.

Code Structure:

Design Patterns Used

- **Singleton Pattern**

Purpose: Ensures that there is only one instance of SceneController.

Implementation: Utilizes a private constructor and a static method (getInstance()) to return the single instance.

- **Factory Method Pattern**

Purpose: Abstracts the creation of game elements (rectangles, circles, etc.), allowing flexibility in instantiation.

Implementation: GameElementFactory interface and GameElementFactoryImpl class provide methods for creating game elements.

- **FXML Files:**
    - **hello-view.fxml**: Contains the main game layout.
    - **End.fxml**: Represents the end screen.
    - **Start.fxml**: Displays the start screen.
- **Java Classes:**
    - **SceneController.java**: Controls the game logic, animations, and transitions.
    - **SceneTransition.java**: Manages scene transitions for the Stick Hero game.

Dependencies

- **JavaFX:** The game utilizes the JavaFX library for building the graphical user interface.

Contributing:

Both partners contributed equally to the design, development, and testing phases.

GIF: