



North South University
Department of Electrical and Computer Engineering
CSE215L Project
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Team Members:

Shaheer Farrubar Shamsi - 2222127642

Md Abu Bokar - 2221236642

Khan Raiyan Ibne Reza - 2222977642

Section: 1

Project Name: JavaFX Ball, a DX-Ball like game built using JavaFX.

Abstraction:

JavaFX Ball is a game developed using Java and JavaFX libraries. It incorporates object-oriented programming (OOP) concepts and features of Java to create an entertaining and interactive gaming experience. The game draws inspiration from the classic game DX-Ball and provides a modernized version with enhanced graphics and gameplay. The game provides an engaging and interactive experience, with the objective of breaking bricks using a paddle and a ball controlled by the user.

The project was made using JavaFX and OpenJDK. It uses various .java files for its classes, interfaces, abstract classes. It was made keeping in mind all concepts of Object Oriented Programming in JAVA.

Introduction:

JavaFX Ball is a dynamic and engaging game where the player controls a paddle to hit a ball and break bricks. The objective is to clear all the bricks on the screen by bouncing the ball off the paddle and avoiding it from falling off the screen. The game offers multiple levels with varying difficulty, allowing players to test their skills and progress through challenging stages.

A main menu is used for implementing the options. The user may sign in or sign up then start the game using the correct credentials. The score is counted and three lives are given in the level. The user is shown the achieved score when all lives are lost or level is completed. The user may reset and replay the levels as he chooses. The score is saved along with the user credentials.

Functional Features:

Paddle and Ball Interaction: The game allows the player to control the movement of the paddle using input devices. The paddle is used to bounce the ball and prevent it from hitting the bottom of the screen.

Brick Breaking: The player aims to break bricks by hitting them with the ball. Each brick hit increases the player's score.

Difficulty Modification: The game offers different levels of difficulty with changing parameters like speed, paddle size etc. As the user progresses, the level becomes more challenging.

Event Handling: User interactions, such as button clicks and key presses, are abstracted through event handling mechanisms. The game captures these events and maps them to specific actions, such as starting the game, changing difficulty settings, or navigating between scenes. This ensures a responsive and interactive gameplay experience.

Scenes and Transitions: The game utilizes scenes and transitions to create a seamless flow between different game states, including the login scene, main menu, gameplay scene, and ending scene. Scenes and transitions simplify the navigation and provides a smooth transition between different game screens.

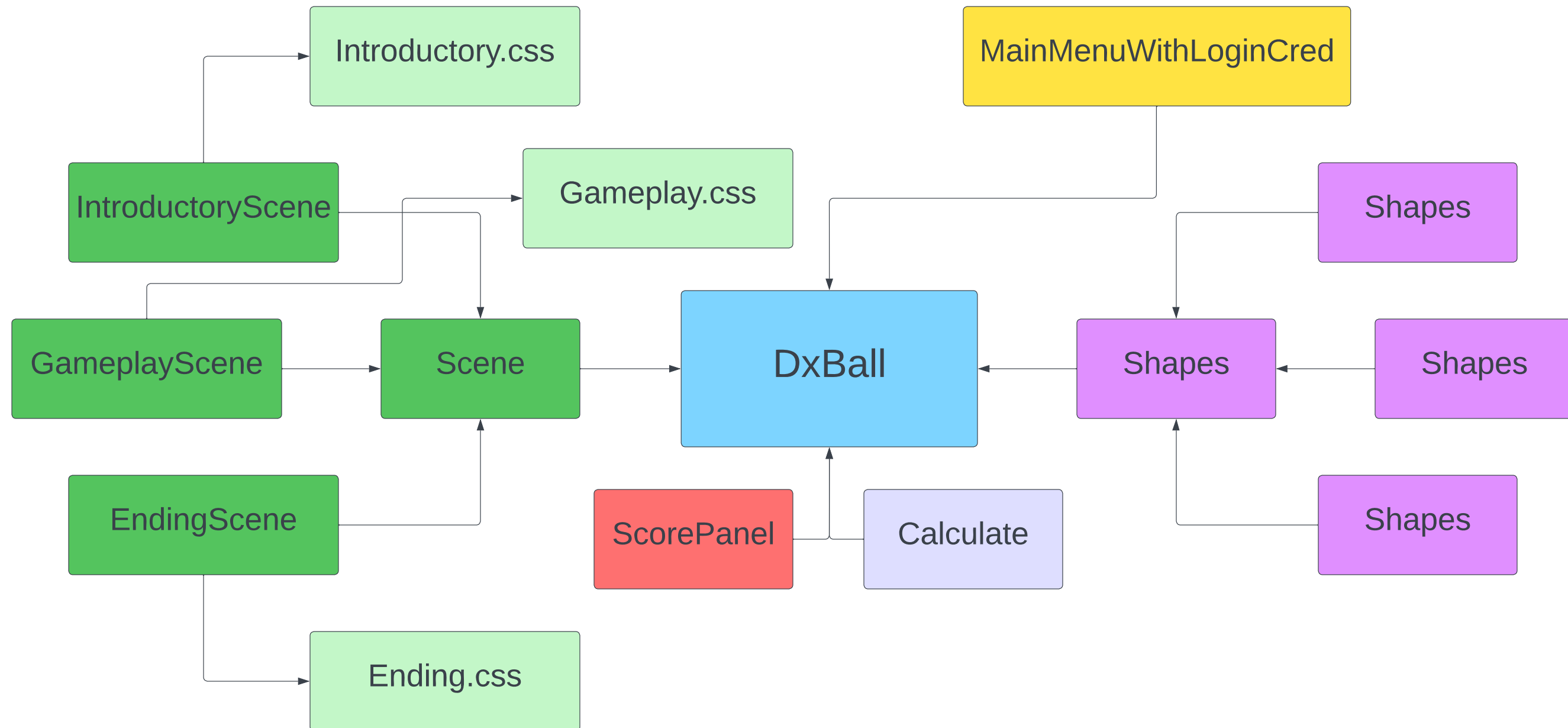
Score Tracking: The game keeps track of the player's score, which is updated whenever a brick is broken. The score is displayed on the screen, providing a sense of accomplishment and competition.

Game Over and Continuation: When the player loses all their lives or completes all levels, the game ends. The player has the option to restart the game or exit, allowing for continuous gameplay.

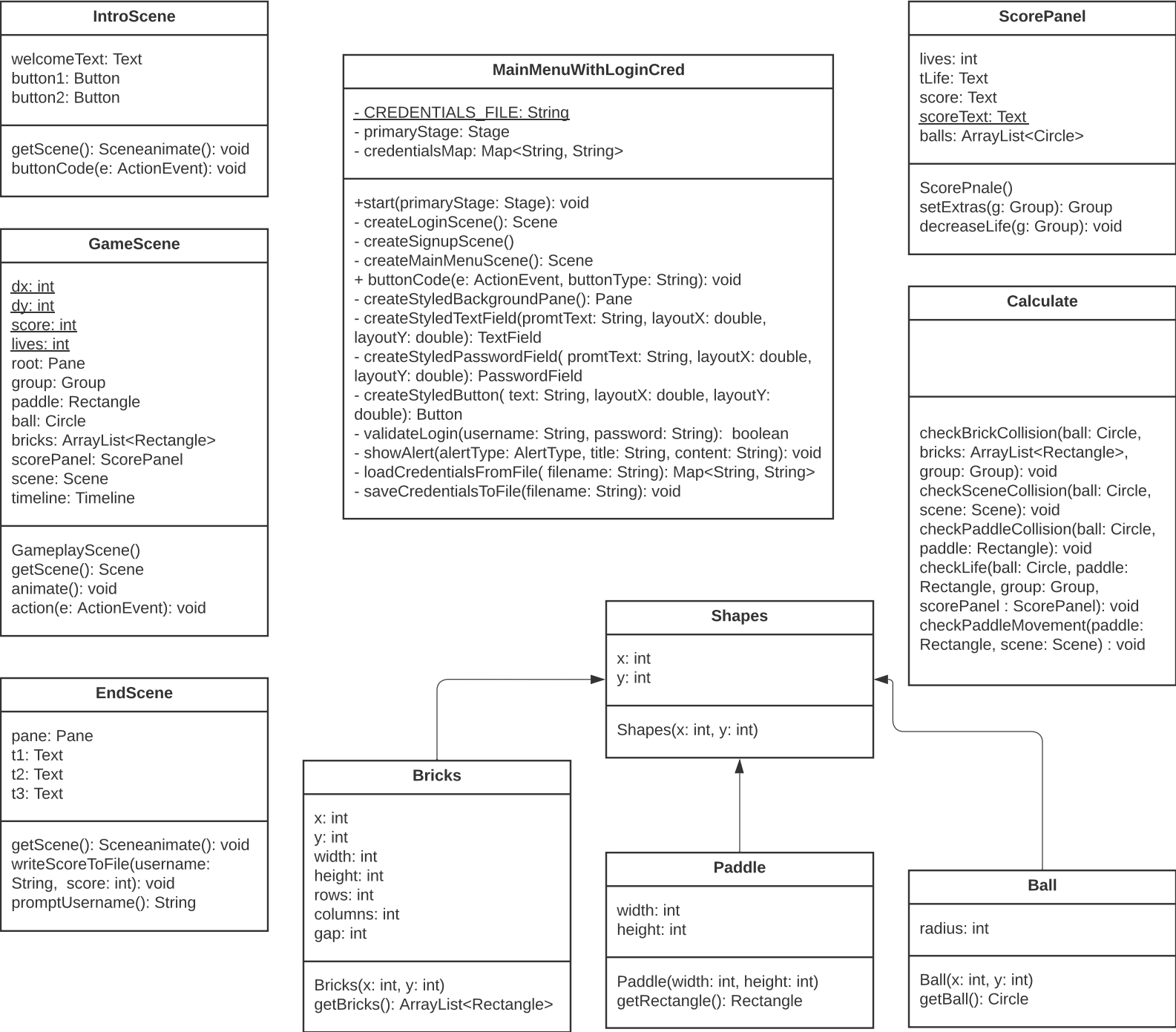
Limitations

Project Block Diagram

DxBall Block Diagram

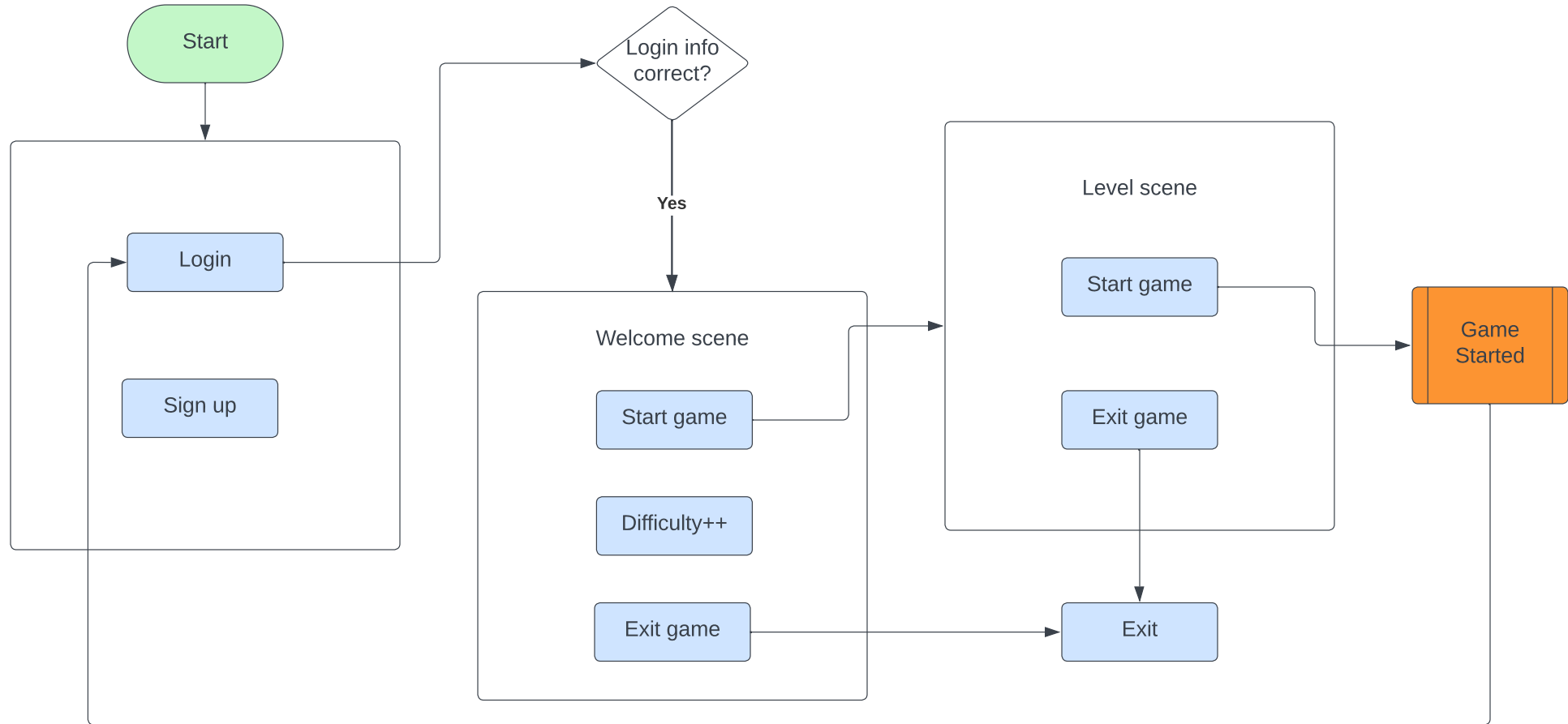


UML Diagram



User Interface Diagram

DxBall User Interface Diagram



Limitations:

While JavaFX Ball provides an enjoyable gaming experience, it does have certain limitations:

Sound: The game's sound effects are relatively basic compared to modern games. It may lack the visual and auditory immersion found in more advanced gaming platforms.

Limited Customization: The game does not offer extensive customization options for level building, or changing gameplay elements. Players have limited control over the game's parameters.

Single-Player Experience: JavaFX Ball is designed as a single-player game, lacking multiplayer or online features for cooperative or competitive play.

Graphics and User Interface: While the game provides an enjoyable gameplay experience, the graphics and user interface are relatively simple. The visual elements could be further enhanced to provide a more immersive and visually appealing experience.

Limited Levels and Variations: The game currently offers a single gameplay level with a fixed pattern of bricks. Additional levels and variations in gameplay could be introduced to provide more challenges and keep players engaged for longer periods.

Conclusion:

JavaFX Ball demonstrates the capabilities of Java and JavaFX in creating a classic arcade-style game. It showcases the principles of OOP, such as encapsulation, inheritance, and abstraction, through the implementation of various game elements. While it may have some limitations compared to more advanced games, it provides an entertaining and nostalgic experience for players. The project serves as an example of how Java and JavaFX can be utilized to develop engaging and interactive games.

By implementing these features, utilizing appropriate libraries, and adhering to the specified constraints, we aim to deliver an enjoyable and engaging Java game inspired by DX-Ball, providing players with an entertaining experience that combines nostalgia with modern enhancements.

In conclusion, JavaFX Ball is a game developed using openJDK and JavaFX, showcasing the application of object-oriented programming principles and advanced Java features. The game demonstrates the power of abstraction in simplifying complex systems, allowing for modular design, code reusability, and easy maintenance. Although the game has certain limitations in terms of graphics and level variations, it provides an enjoyable gaming experience. With further enhancements and additions, JavaFX Ball has the potential to become an engaging and entertaining game for players of all ages.