# Angry Birds by Team ChadGPT

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## Introduction

Welcome to the Angry Birds game project! This report provides an overview of the game, which has been developed using the LibGDX framework in Java and tested with JUnit. The project is designed to implement core principles of object-oriented programming and advanced programming techniques.

## Setup Instructions

To set up, run, and test this project, follow these steps:
1. Ensure you have the following installed:
• Java Development Kit (JDK) (version 8 or above)
• IntelliJ IDEA (Community or Ultimate edition)
• LibGDX Framework
• JUnit
2. Clone the repository from GitHub.
3. Open the project in IntelliJ:
• Launch IntelliJ and open the cloned project.
• Import the project as a Gradle project if prompted.
4. Open the Gradle toolbar in IntelliJ.
5. Navigate to Tasks > application > lwjgl3:run.
6. Run the lwjgl3:run task to launch the game using the LWJGL3 backend.
If the game launches successfully, you should see the Loading Page, allowing you to play the complete game.

## 1Game Features

The game includes the following features:
• Levels: Three default levels featuring four birds, three pigs, and structures made of stone, wood, and ice blocks in three different shapes.
• Physics:
– Implements realistic physics with proper collision handling.
– All game entities have health and are destroyed when health becomes zero or negative.
– Each entity has unique health values and angular damping to slow their rotation.
• Winning Condition: The game is won when all pigs are eliminated.
• Bird Trajectory: Birds follow a trajectory opposite to the catapult drag, simulating a realistic launching mechanism.

## Bonus Features

The game offers several bonus features to enhance the gameplay experience:
• Power Abilities:
– Black Bird: Blast ability to cause explosive damage.
– Yellow Bird: Speed ability to accelerate and hit targets with greater force.
• Earthquake: Applies impulses to structures, creating additional challenges.
• Sandbox Mode: Allows players to design custom levels with their choice of birds, pigs, and structures. Players can save and load these custom levels at any time.
• Music: Adds an immersive audio experience during gameplay.

## Serialization (Save/Load)

The game supports saving and loading functionality, allowing players to save the game state at any point and reload it later, even after restarting the program.

## JUnit Testing

The project includes unit tests using JUnit. All test files are stored in the core/src/test/java directory. To run the tests:

• Right-click the test directory.
• Select Run Tests.
The tests cover various functions, including checkWinCondition, ensuring the game logic functions correctly.

## 2Project Structure

The project is organized as follows:
• core/src: Core game files for different screens and components.
• lwjgl3/src: LWJGL3-specific launcher code for the LibGDX framework.
• assets/: Contains images, sounds, and other assets used in the game.
• README.md: Documentation and setup instructions.
• build.gradle: Gradle configuration file with project dependencies.
• core/src/test/java: Directory containing JUnit test files.

## Resources and References

• LibGDX Documentation: Official documentation for setting up and using the LibGDX framework.
• Acknowledgment: Special thanks to dermetfan for providing invaluable tutorials and resources that aided in the development of this project.
• Images and sounds used in the game are either sourced from the internet or created using Canva.