DUCK

INVADERS

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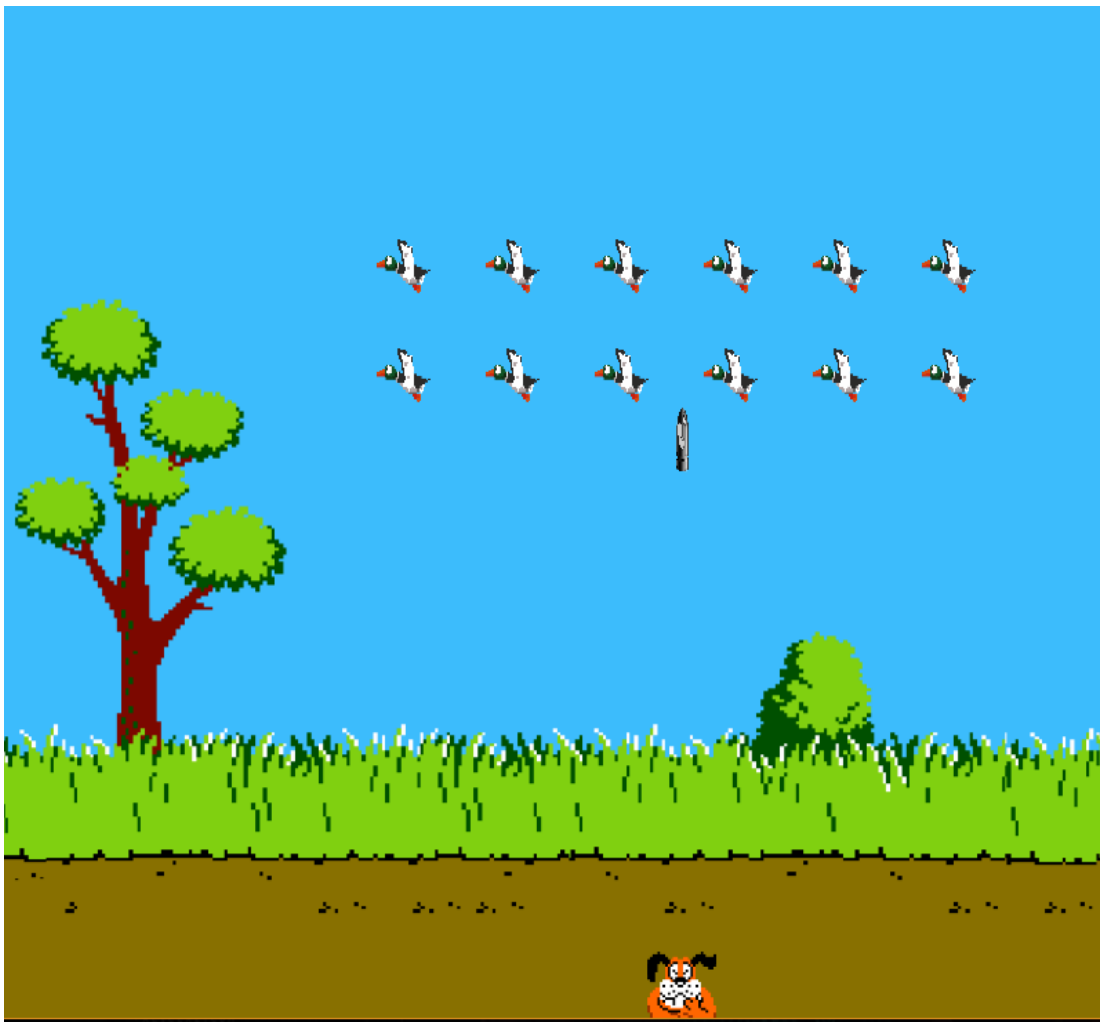

Introduction

Welcome to Duck Invaders! You are a dog. Your human has come down with bird flu, a result of the invading ducks you must hunt. Swarms of ducks will dive you as you attempt to shoot them from the sky and protect your human. Your goal is to eliminate the enemy and save your human. To win you must defeat many waves of enemies. Good luck hunter. Shoot straight. Shoot well. Shoot ducks.

Contents

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1 Accomplishments

This Java program was developed completely (without any code from the Internet) by Torrey Hoff and Andrew Johnson. The assets and images were found online. We used Scrum methodology to develop this project. We worked on one task at a time, and when the task was finished we ensured no bugs had been introduced to the project. We used GitHub to host the project for the helpful ability to utilize two developers at once. In the middle of our project, Andrew's GitHub was hacked. If that doesn't speak to this game's potential, what does?

This program was built such that it can be improved relatively easily - if we wanted to increase the number of bullets, enemies, or even players, it would take little effort. This game has been through several waves of balance checks, ensuring that the game is fun for the player and challenging at the same time. Each time the player kills all the ducks, the next level can start. Each level gets harder.

2 Unique Features

2.1 Bullet Mechanics

At the start of the game, the player may shoot one bullet at a time and only one bullet may be on the screen at a time. When the bullet collides with the screen edge or a duck, the player may shoot another bullet. When you get to a round where the ducks have more health, you may notice something: to combat the increasing health of the ducks, you have gained more bullets. There will be a slight delay between shots so that the player doesn't just blast all the bullets at the same time.

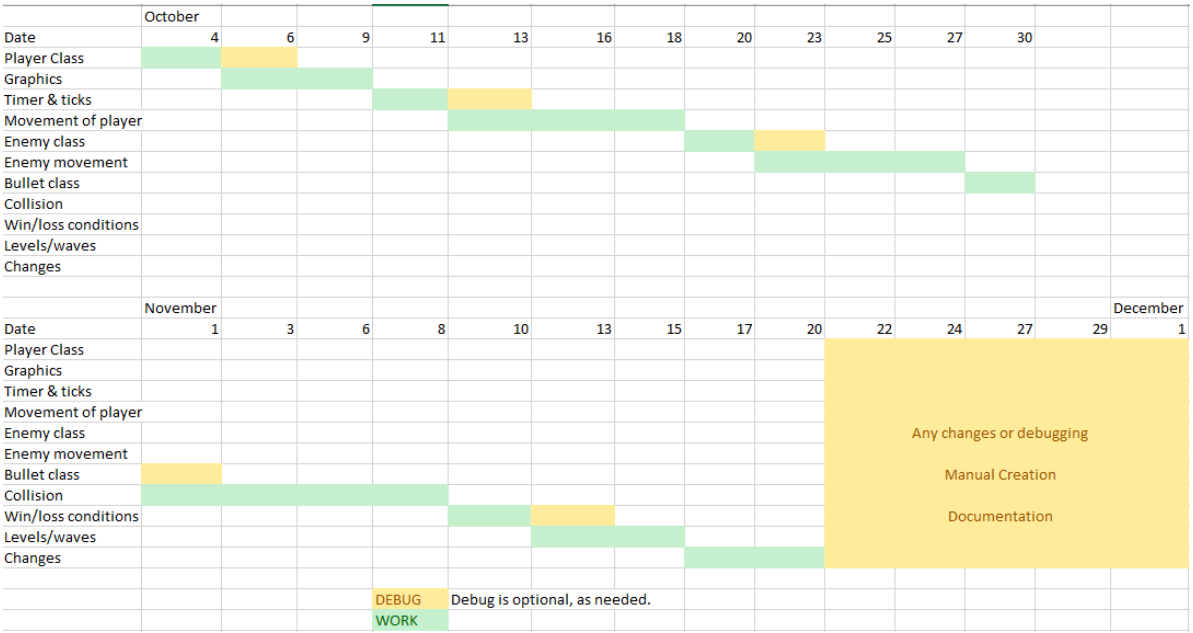
2.2 Art

We have blended two very successful games for which many people have nostalgia - Duck Hunt and Space Invaders. With our unique twist on Space Invaders and the art style of Duck Hunt, who wouldn't love to play this game?

2.3 Executable .jar

We've created the references to resources in our project in such a way that we can create a .jar file which is executable all by itself.

3 Gantt Chart



4 Scrum Paperwork

4.1 Road Map

- One player with movement no shooting
- Two enemies, no shooting, just movement.
- Bullets (without collision)
- Bullets (with collision)
- Win/lose conditions
- levels

4.2 Product Backlog

Difficulty scale of 1 to 6 - refers to number of class periods that implementation should take.

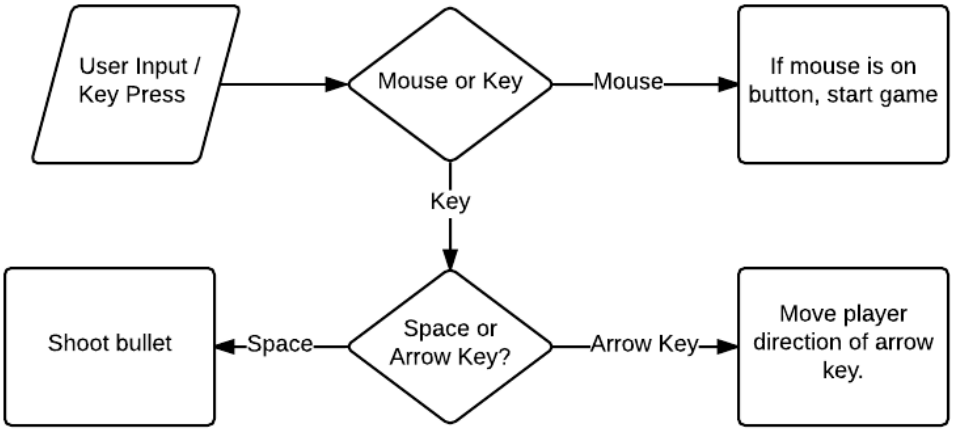
- Player Class
  - 1
- Graphics
  - 2
- Timer and Ticks
  - 1
- Movement of Player
  - 3
- Enemy Class
  - 1
- Enemy Movement
  - 3
- Bullet Class
  - 1
- Collision
  - 4
- Win/Loss Condition
  - 1
- Start Menu
  - 1

- Levels
  - 2
- Additions if we have time

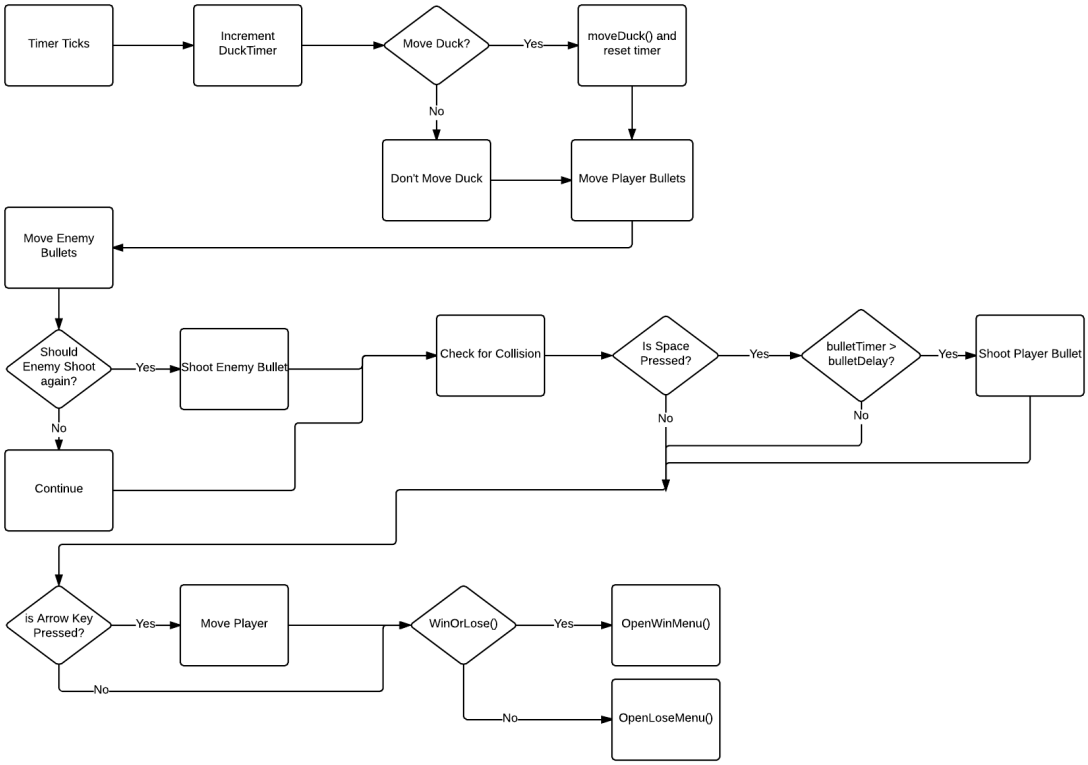
5 UML Activities Diagram

Start Game

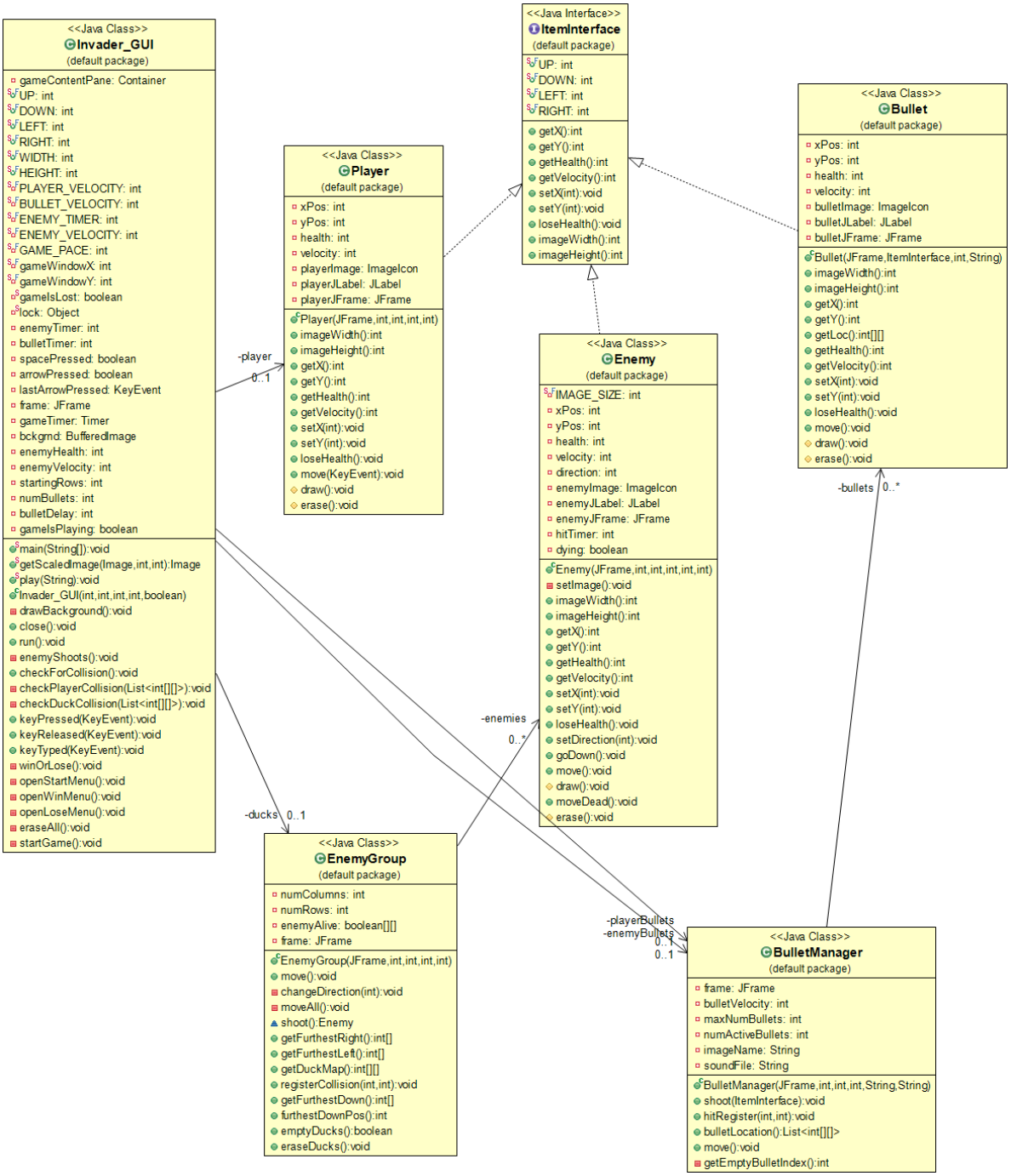
User Input



Timer Tick


Timer Ticks
Increment DuckTimer
Move Duck?
Yes
moveDuck() and reset timer
No
Don't Move Duck
Move Player Bullets
Move Enemy Bullets
Should Enemy Shoot again?
Yes
Shoot Enemy Bullet
Check for Collision
Is Space Pressed?
Yes
bulletTimer > bulletDelay?
Yes
Shoot Player Bullet
No
No
No
Continue
is Arrow Key Pressed?
Yes
Move Player
WinOrLose()
Yes
OpenWinMenu()
No
No
OpenLoseMenu()

6 UML Class Diagram



7 Project Development

This project was developed in CS230- Software Engineering as a final project. It was done all in Java by Torrey Hoff and Andrew Johnson.

8 Testing

The game was tested step by step as development was done. When a feature was added, we stopped development and tested before moving on. We would then fix bugs and go on to the next feature.

9 Conclusion

This project was a great way to learn about software development. We were able to build this project and document it in a semester, and enjoyed it a lot. We would love to make more improvements and likely will if we end up having the time in the future. Possible improvements would include enemies like those found in Galaga, points, high scores, player profiles, background music, and more. Overall, it was a fun and educational process. The project and all the code can be found at https://github.com/AndrewJohnson150/Duck-Invaders