

[PLANE GAME]

The Coincidental Baristas: Michael Borczuk (Liberty/Baby Yoda), Shyne Choi (Bun bun), Aryaman Goenka (Untitled), Daniel Sooknanan (Sussy)

SoftDev

P02 – Plane Game Design Document

2022-03-02

Time spent: 1.3 hours

Target Ship Date: 2022-03-28 (Monday)

Project Description:

We plan to create a game that would be something along the lines of Flight! It uses **advanced** physics to simulate the flight path of a paper airplane, and features can be upgraded using cash gained on the flight. The number of meters flown by the plane will be shown on a leaderboard with other players.

Players can collect boosts on their flight that give them cash multipliers.

The user can sign up / login to play & save / access their progress, or play as a guest and have their progress stored locally.

Inspiration Pictures



The flight screen.



The upgrade screen.

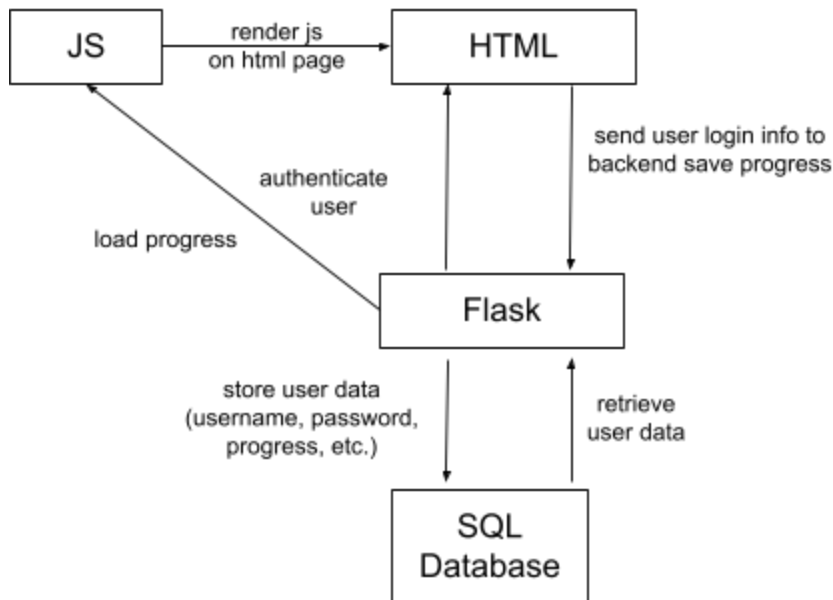


The post-flight screen.

Program Components

- JS canvas - render the game itself (includes physics)
- Python File - facilitate JS and database linkage (possibly store fixed attributes as well - to be changed with upgrades)
- Database - store user-specific information

Component Map



Database Organization

USERS

| Username (Text) | Password (Text) | Cash (Integer) | UPGRADE #1 (Integer) | ... | UPGRADE #N (Integer) | Progress (Integer) |
|--------------------|--------------------|-------------------|-------------------------|-----|----------------------------|-----------------------|
| | | | (level of upgrade) | ... | (level of upgrade) | 0-100 |

*Upgrades names TBD

Game Mechanics

Throwing the Plane

- The user picks up and throws the airplane using the mouse
- The speed & angle of the throw is dependent on the speed of the mouse movement and direction of the mouse while throwing

Flight

- Cranes give a multiplier that adds \$5 to the value of collecting crane
- [if time allows] The user can use the mouse keys, or WASD to control the angle of the airplane during flight
- Plane slows down due to air friction

During/Post-flight Stats

- Horizontal distance traveled, velocity, altitude are all displayed at the top of the GUI
- Post:
 - Stars collected (\$5-\$25 each depending on the crane multiplier at time of collection)
 - Total horizontal distance traveled
 - Total Reward Money: $([\text{Star money}] + (0.4 * [\text{Horizontal Distance Traveled}])) * (1 + \text{bonus})$

Location Changes

- After a certain number of meters, the location will change. Each location has different properties (air density, ground friction, etc.)

Upgrades

Plane Model

- Visual difference in plane model
- Increased max speed
- Decreased gravity
- Increased fuel capacity*

Weight

- Decreased gravity, falls slower

Speed

- Decreased air friction (lose velocity at a lower rate)

Boost*

- Stage 1 - Allows the user to consume fuel and accelerate in the direction of the plane
- Stage 2+ - Increases the speed of boost

Steering Control*

- Stage 1 - Allows the user to consume fuel and control the angle of the plane
- Stage 2+ - Increased handling & lowered fuel consumption
- The angle of flight will affect the drag of the plane

Fuel Efficiency*

- Decreases the rate at which boost consumes fuel

Throwing Power

- Increases the max speed at which the user can throw the paper airplane with each subsequent upgrade

Crane Duration

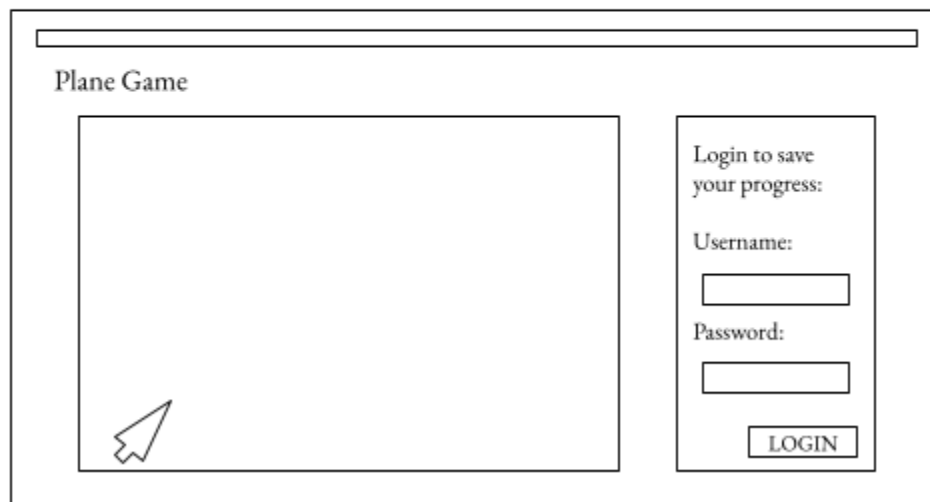
- Increases the duration of the crane multiplier

Landing Gear

- Reduced ground friction

*Upgrades that may not make it to the final game are marked with an asterisk

Site Map



Tasks

Michael (**PM**) - **P**hysics, **M**echanics

Shyne - Physics, Game Mechanics

Daniel - Front-end & game assets (JS graphics, canvas)

Aryaman - Flask Routing, DB

Front-end Framework

We'll be adding a little *Bootstrap*, as it's generally more smooth and customization is more easily done. We'll be using the grids and gutters to adjust the positions of the canvas and scoreboard on the game page.