Super Space Maker

Totally Legit Balkans

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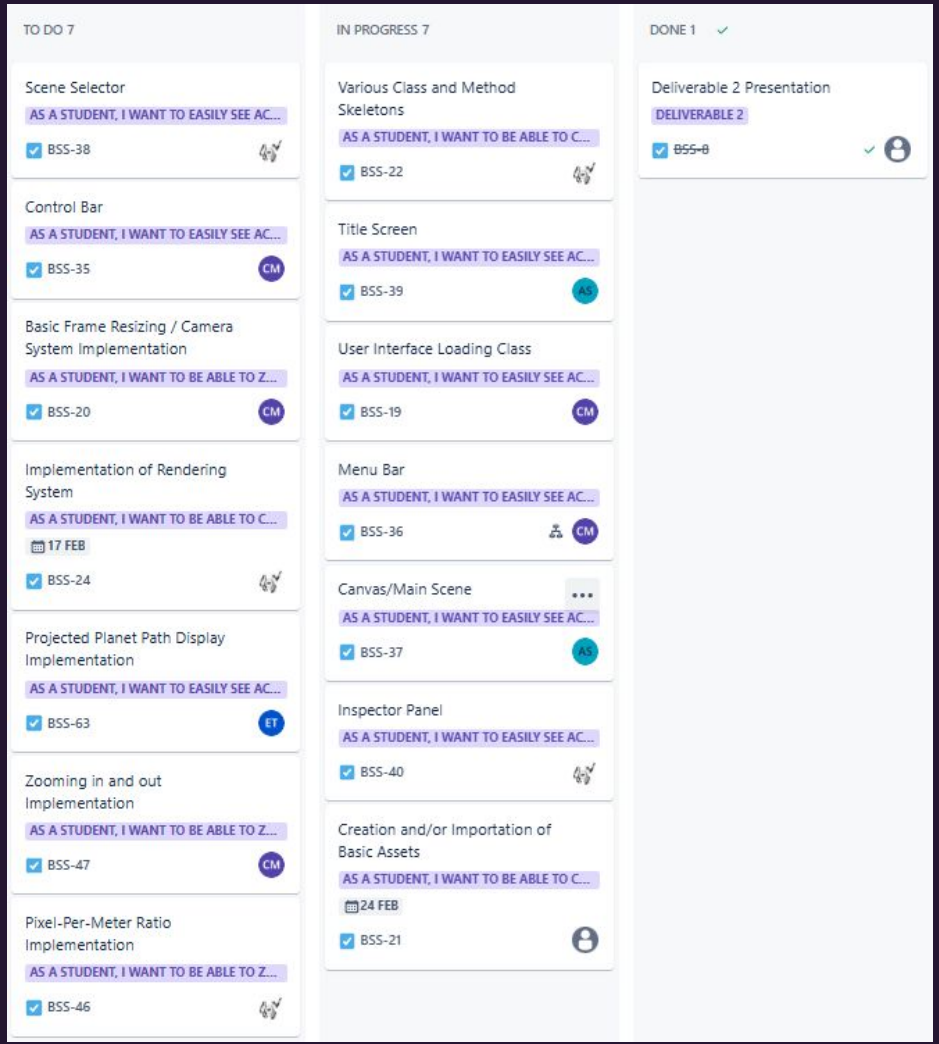
"10 Free Space Background Images (JPG)." *Unblast*, 2021, https://unblast.com/10-free-space-background-images-jpg/. Accessed 14 Feb. 2025.

Task Breakdown

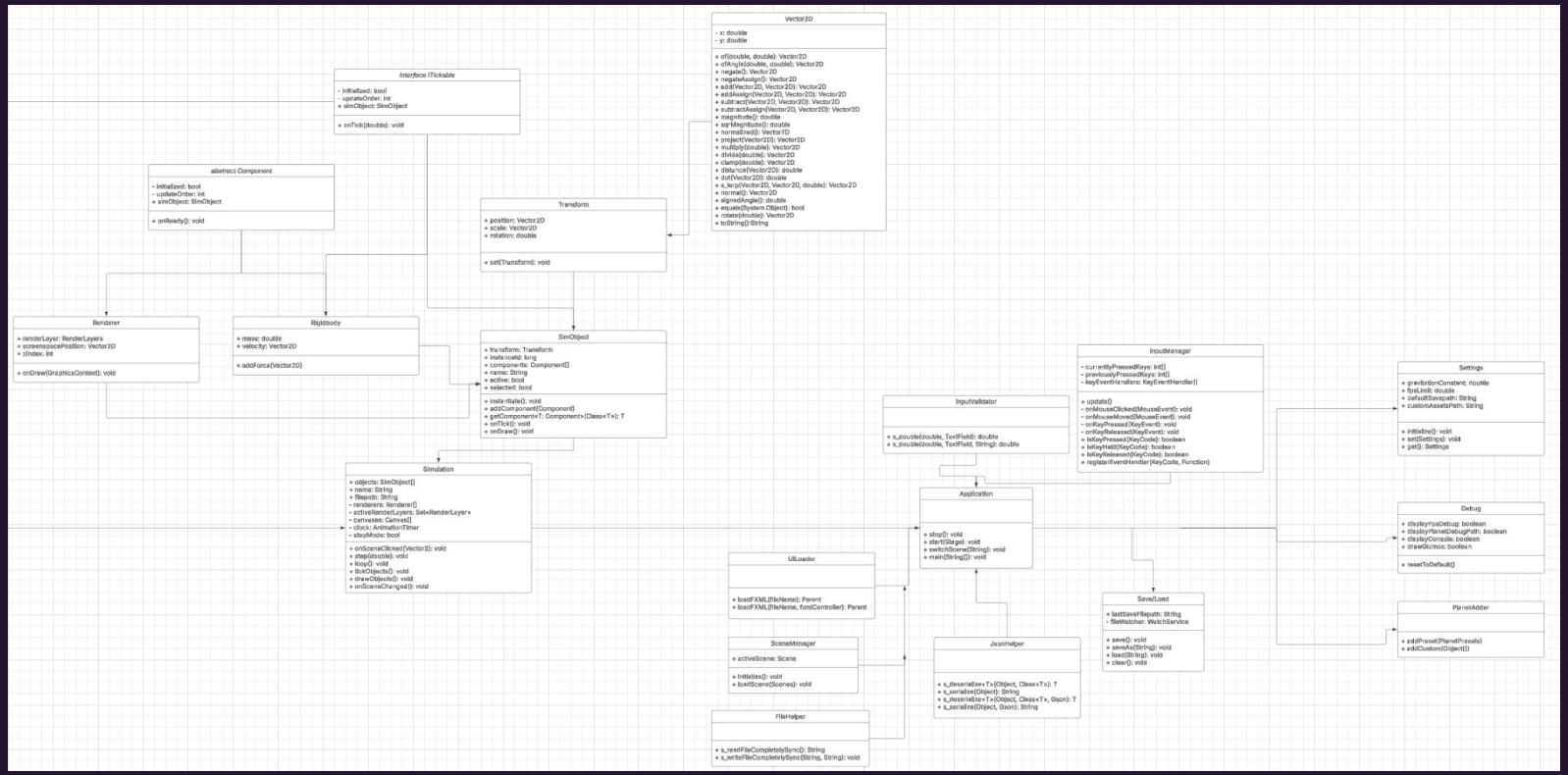
User Stories

- As a student, I want to be able to customize my own planets so that I can visualize how solar systems work. (February 17 - April 13)
- As a student, I want to have to option to save my simulations so that I can keep simulations that I like. (March 3 - April 13)
- As a student, I want to be able to zoom in on planets so that I can see their respective data. (February 17 - March 2)
- As a student, I want to calculate various properties of different spatial bodies so I can better understand the physics involved. (March 3 - March 23)
- As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved. (February 17 - April 13)
- As a student, I want to be able to customize the look of my animation so that I can find it more visually aesthetic. (March 24 - April 13)
- As a student, I want to be able to change variables so that I can simulate different outcomes. (March 3 - April 23)
- As a student, I want to be able to change the time frame of the animation so that I can see the evolution of my system over long periods of time. (March 3 - March 23)

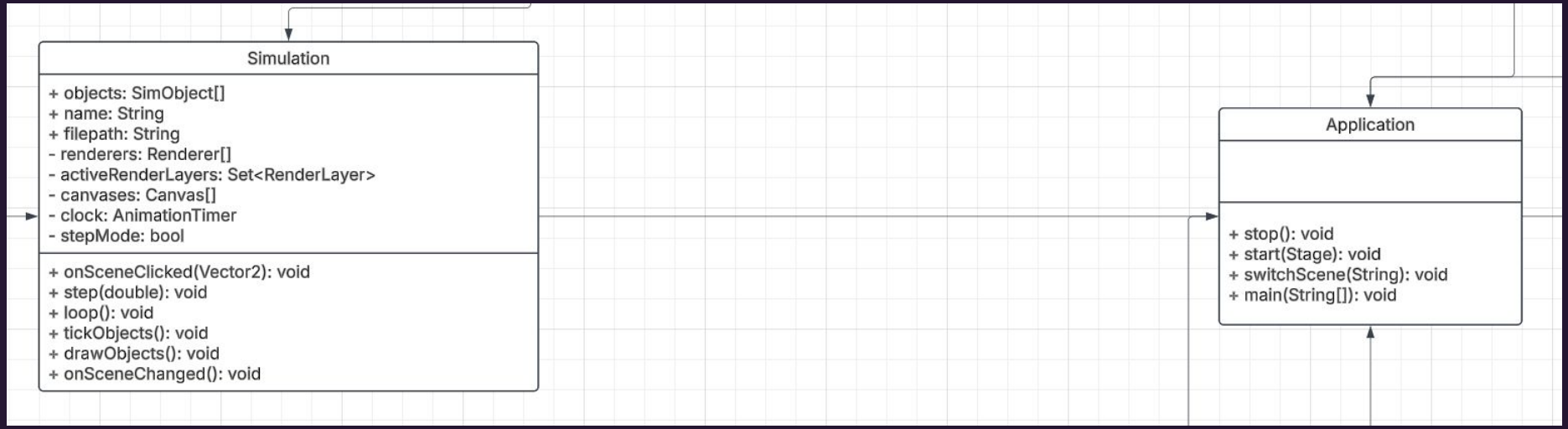
Jira Kanban (First Sprint)



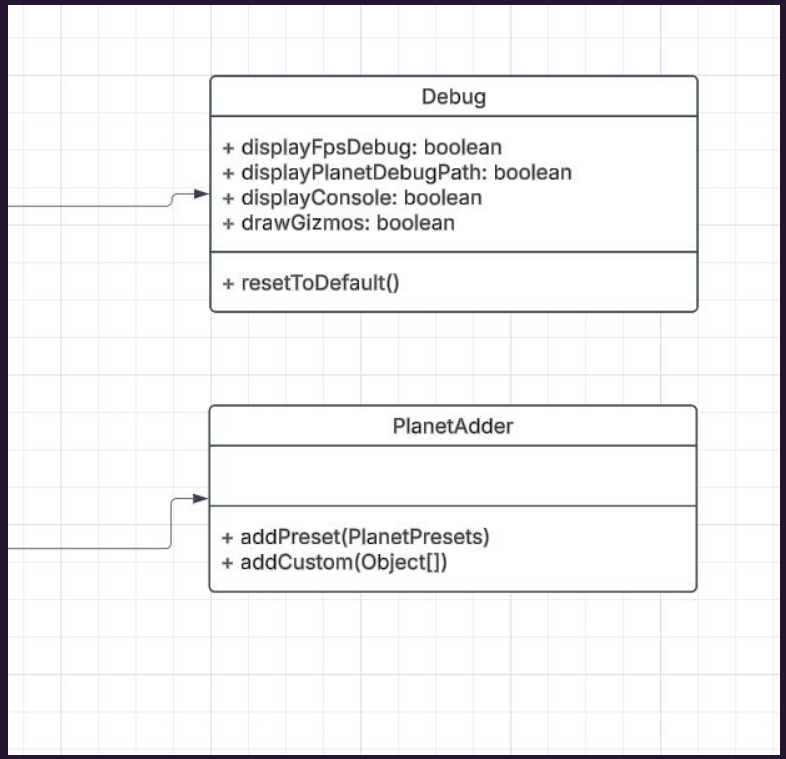
Class Diagram



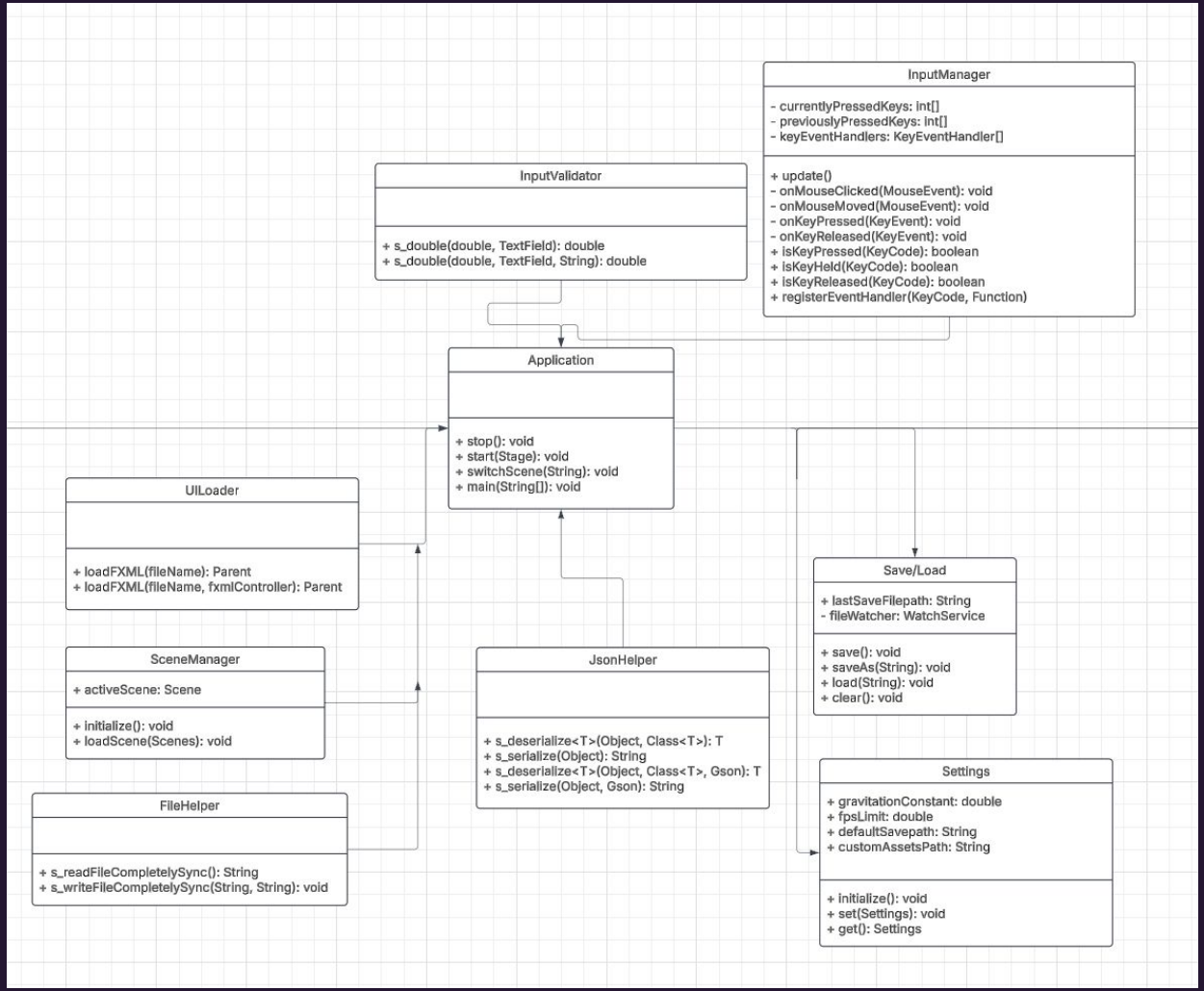
Overview


Simulation
+ objects: SimObject[]
+ name: String
+ filepath: String
- renderers: Renderer[]
- activeRenderLayers: Set<RenderLayer>
- canvases: Canvas[]
- clock: AnimationTimer
- stepMode: bool
+ onSceneClicked(Vector2): void
+ step(double): void
+ loop(): void
+ tickObjects(): void
+ drawObjects(): void
+ onSceneChanged(): void
Application
+ stop(): void
+ start(Stage): void
+ switchScene(String): void
+ main(String[]): void

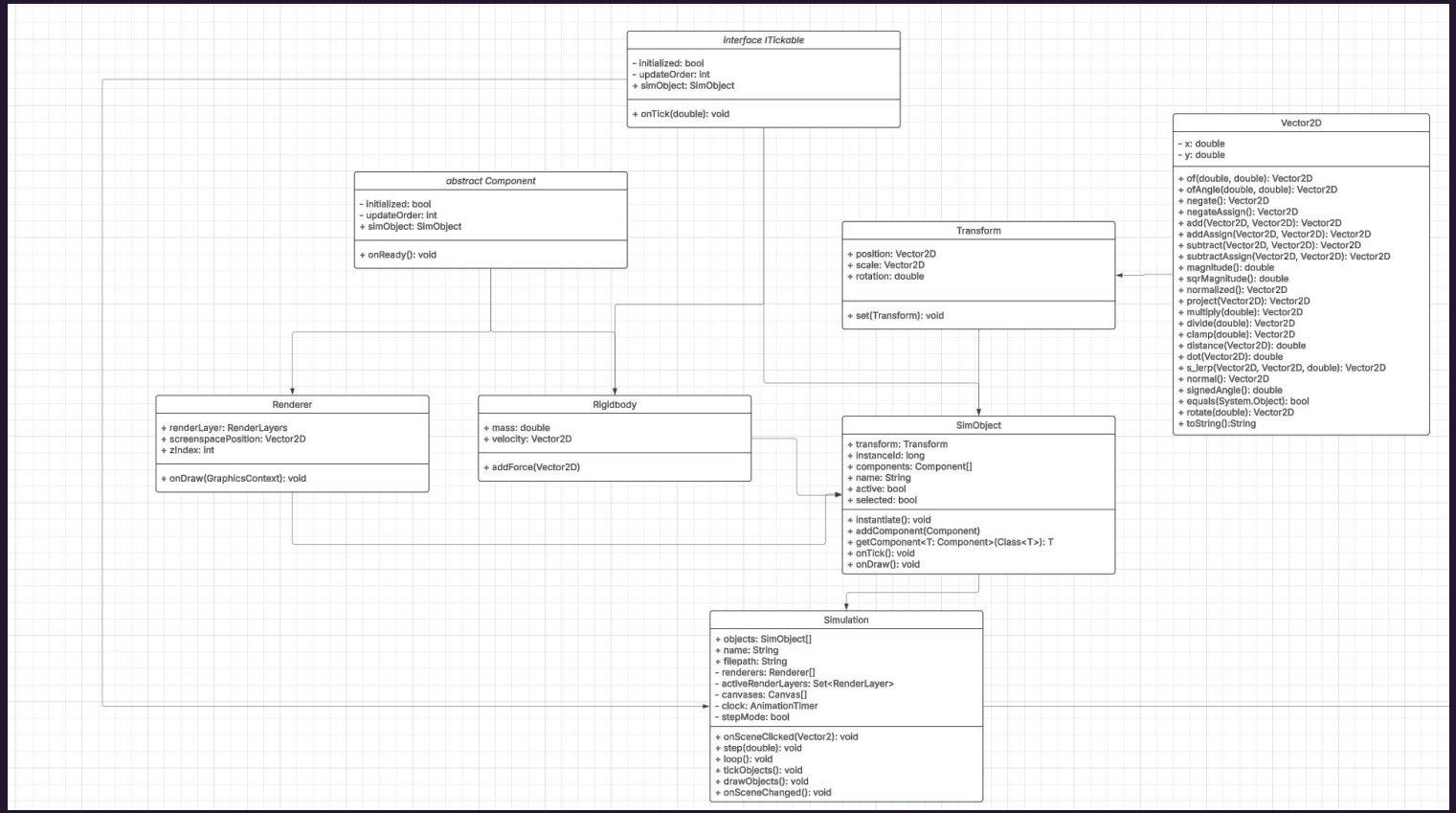
FXML Controllers



Utilities


InputManager
- currentlyPressedKeys: int[]
- previouslyPressedKeys: int[]
- keyEventHandlers: KeyEventHandler[]
+ update()
- onMouseClicked(MouseEvent): void
- onMouseMoved(MouseEvent): void
- onKeyPressed(KeyEvent): void
- onKeyReleased(KeyEvent): void
+ isKeyPressed(KeyCode): boolean
+ isKeyHeld(KeyCode): boolean
+ isKeyReleased(KeyCode): boolean
+ registerEventHandler(KeyCode, Function)
InputValidator
+ s_double(double, TextField): double
+ s_double(double, TextField, String): double
Application
+ stop(): void
+ start(Stage): void
+ switchScene(String): void
+ main(String[]): void
UILoader
+ loadFXML(fileName): Parent
+ loadFXML(fileName, fxmlController): Parent
Save/Load
+ lastSaveFilepath: String
- fileWatcher: WatchService
+ save(): void
+ saveAs(String): void
+ load(String): void
+ clear(): void
SceneManager
+ activeScene: Scene
+ initialize(): void
+ loadScene(Scenes): void
JsonHelper
+ s_deserialize<T>(Object, Class<T>): T
+ s_serialize(Object): String
+ s_deserialize<T>(Object, Class<T>, Gson): T
+ s_serialize(Object, Gson): String
Settings
+ gravitationConstant: double
+ fpsLimit: double
+ defaultSavepath: String
+ customAssetsPath: String
+ initialize(): void
+ set(Settings): void
+ get(): Settings
FileHelper
+ s_readFileCompletelySync(): String
+ s_writeFileCompletelySync(String, String): void

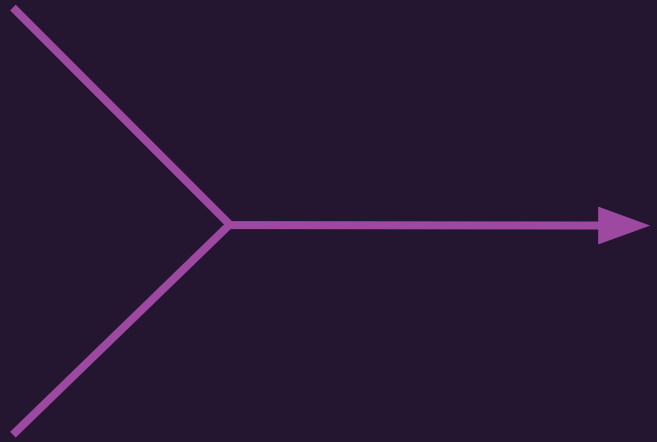
Entity-Component-System



Inputs and Outputs

Inputs

- Mouse Inputs
- Number Value Inputs (Keyboard)

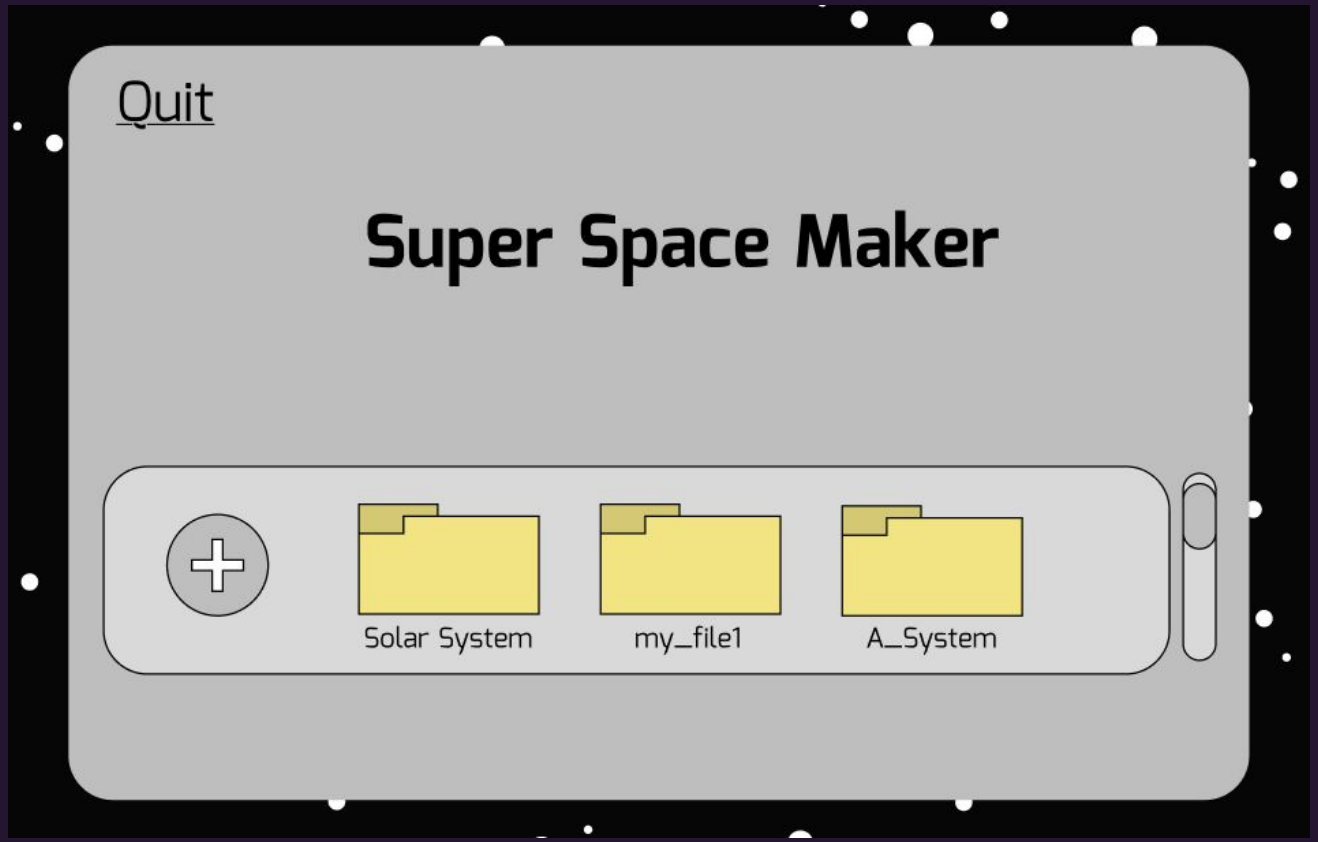


Outputs

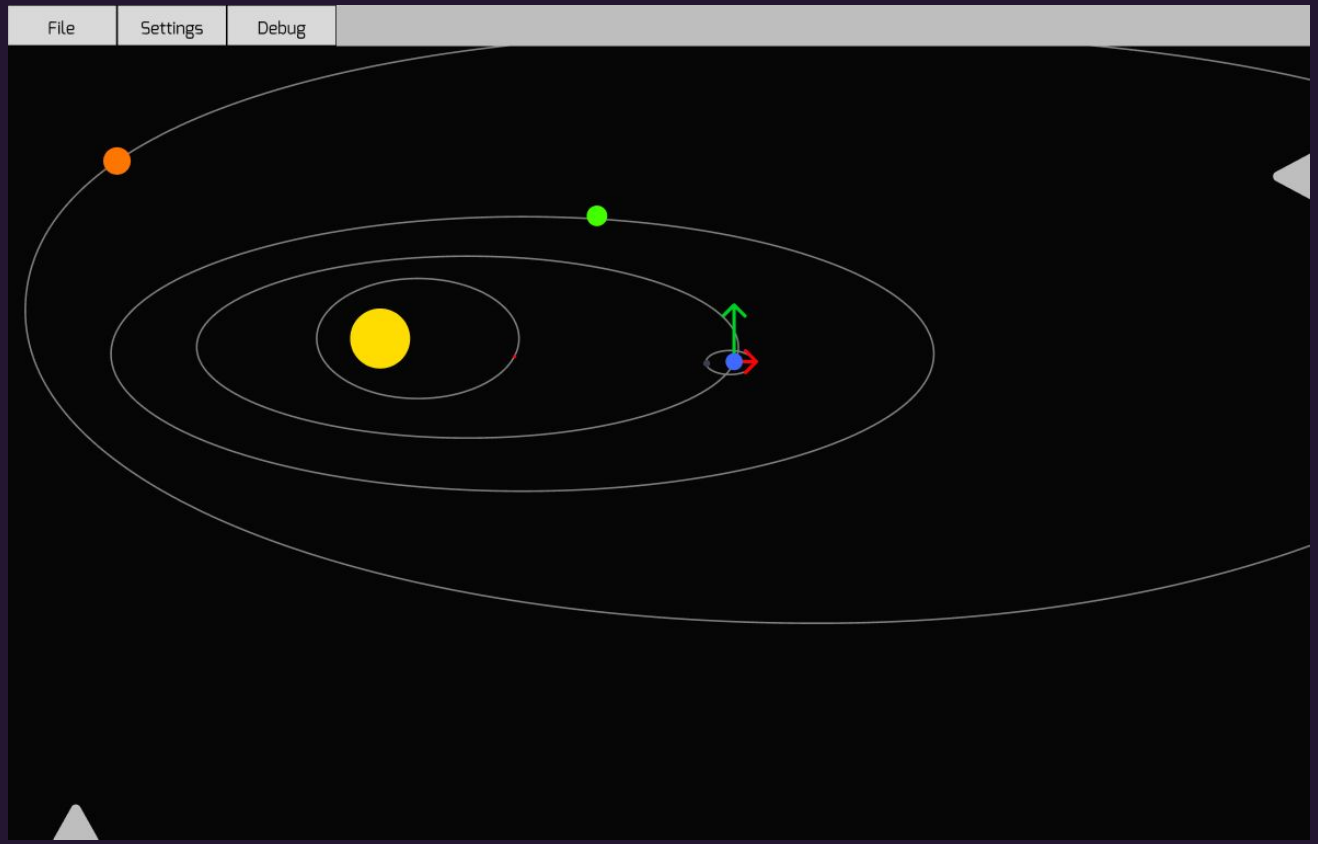
- Numerical Properties of Each Astral Object
- Animation of the Space System

Wireframes

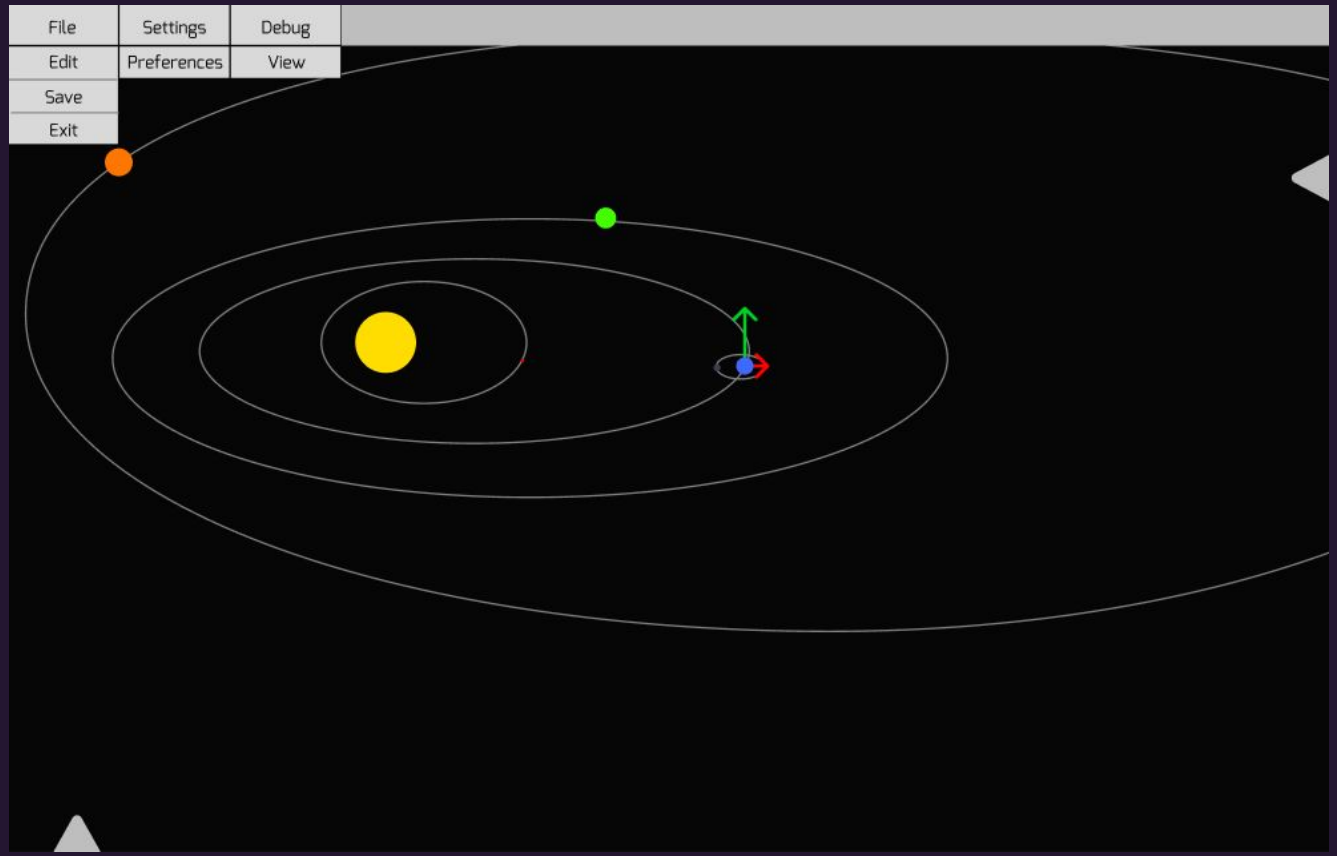
Title Screen



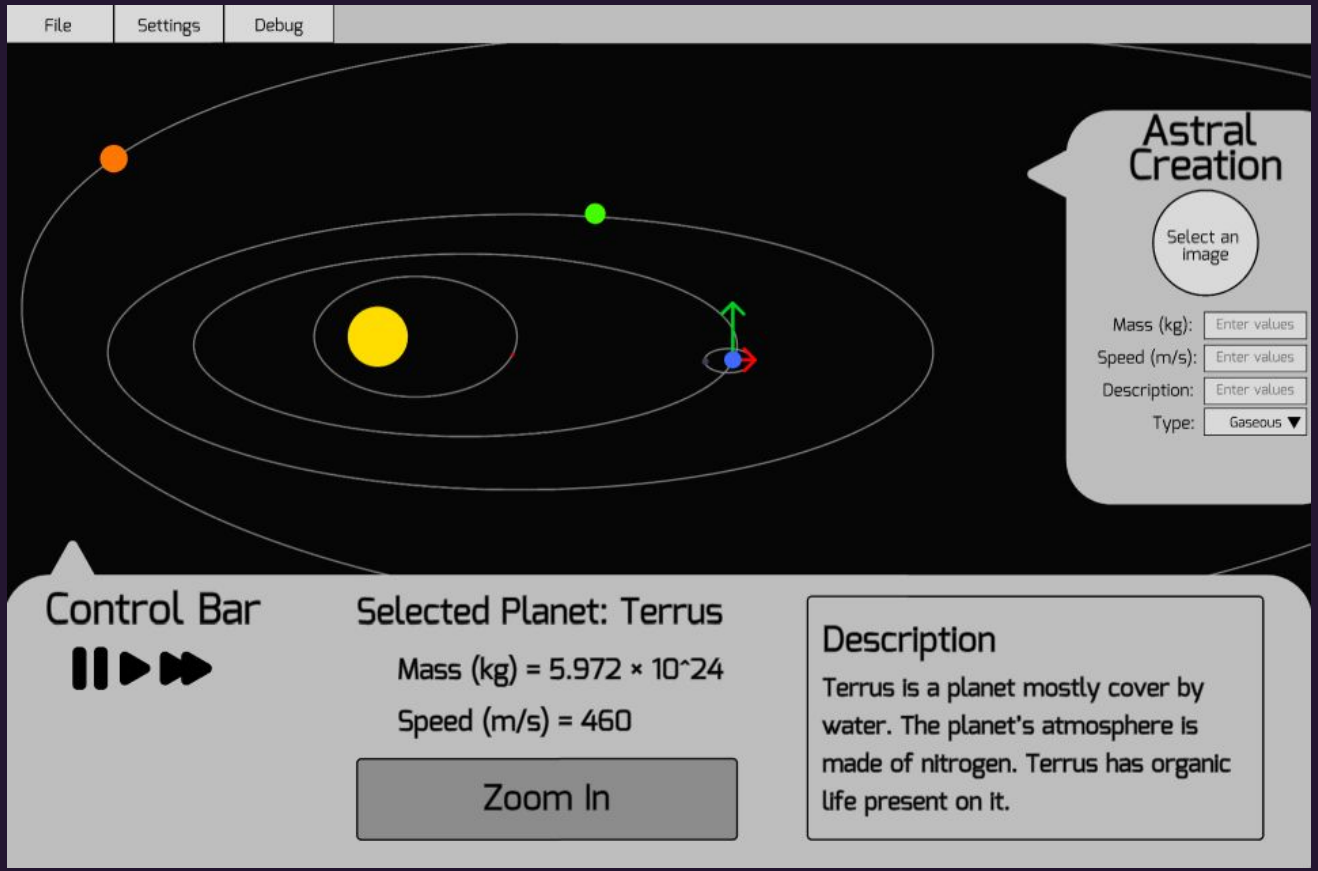
Main Screen



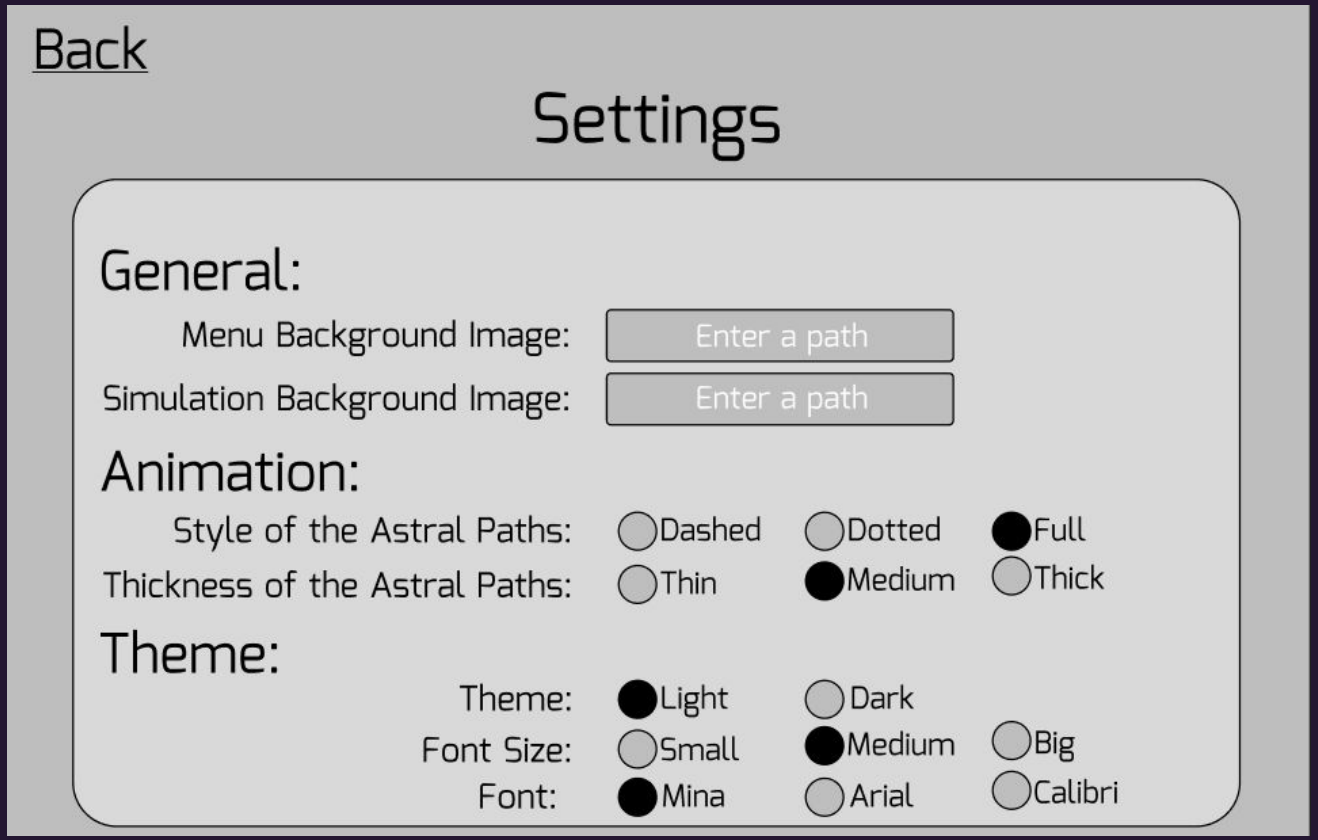
Main Screen



Main Screen


File
Settings
Debug
Astral Creation
Select an image
Mass (kg):
Enter values
Speed (m/s):
Enter values
Description:
Enter values
Type:
Gaseous
Control Bar
Selected Planet: Terrus
Mass (kg) = 5.972 × 10^24
Speed (m/s) = 460
Zoom In
Description
Terrus is a planet mostly cover by water. The planet's atmosphere is made of nitrogen. Terrus has organic life present on it.

Settings Screen



Stories Progress

Stories the team starts in this sprint:

- ➔ As a student, I want to be able to customize my own planets so that I can visualize how solar systems work.
- ➔ As a student, I want to be able to zoom in on planets so that I can see their respective data.
- ➔ As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved.

Cristian's Tasks

Received Stories	Resolved Stories	Carry Over Stories	Blocked Stories
As a student, I want to be able to customize my own planets so that I can visualize how solar systems work. (7)			
As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved. (5)			
As a student, I want to have to option to save my simulations so that I can keep simulations that I like. (5)			
As a student, I want to be able to customize the look of my animation so that I can find it more visually aesthetic. (11)			
As a student, I want to be able to zoom in on planets so that I can see their respective data.(15)			
As a student, I want to be able to change variables so that I can simulate different outcomes. (1)			
Total points: 44	Total points: 0	Total points: 0	Total points: 0

: task started this sprint

Adriano's Tasks

Received Stories	Resolved Stories	Carry Over Stories	Blocked Stories
As a student, I want to be able to customize my own planets so that I can visualize how solar systems work. (8)			
As a student, I want to have to option to save my simulations so that I can keep simulations that I like. (4)			
As a student, I want to calculate various properties of different spatial bodies so I can better understand the physics involved. (3)			
As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved. (12)			
As a student, I want to be able to change variables so that I can simulate different outcomes. (1)			
As a student, I want to be able to customize the look of my animation so that I can find it more visually aesthetic. (6)			
Total points: 34	Total points: 0	Total points: 0	Total points: 0

: task started this sprint

Andrei’s Tasks

Received Stories	Resolved Stories	Carry Over Stories	Blocked Stories
As a student, I want to be able to customize my own planets so that I can visualize how solar systems work. (20)			
As a student, I want to calculate various properties of different spatial bodies so I can better understand the physics involved. (15)			
As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved. (6)			
As a student, I want to have to option to save my simulations so that I can keep simulations that I like. (1)			
As a student, I want to be able to zoom in on planets so that I can see their respective data. (1)			
Total points: 43	Total points: 0	Total points: 0	Total points: 0

: task started this sprint

Eric's Tasks

Received Stories	Resolved Stories	Carry Over Stories	Blocked Stories
As a student, I want to be able to customize my own planets so that I can visualize how solar systems work. (8)			
As a student, I want to calculate various properties of different spatial bodies so I can better understand the physics involved. (18)			
As a student, I want to have to option to save my simulations so that I can keep simulations that I like. (8)			
As a student, I want to be able to customize the look of my animation so that I can find it more visually aesthetic. (8)			
As a student, I want to be able to change the time frame of the animation so that I can see the evolution of my system over long periods of time. (2)			
As a student, I want to be able to change variables so that I can simulate different outcomes. (1)			
As a student, I want to easily see accurate planetary physics so that I can better understand the physics involved. (3)			
Total points: 48	Total points: 0	Total Points: 0	Total points: 0

: task started this sprint

Work Cited

“10 Free Space Background Images (JPG).” *Unblast*, 2021, https://unblast.com/10-free-space-background-images-jpg/. Accessed 14 Feb. 2025.