Elemental Clash

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Introduction to Computer Graphics
2024/2025

Main Ideas

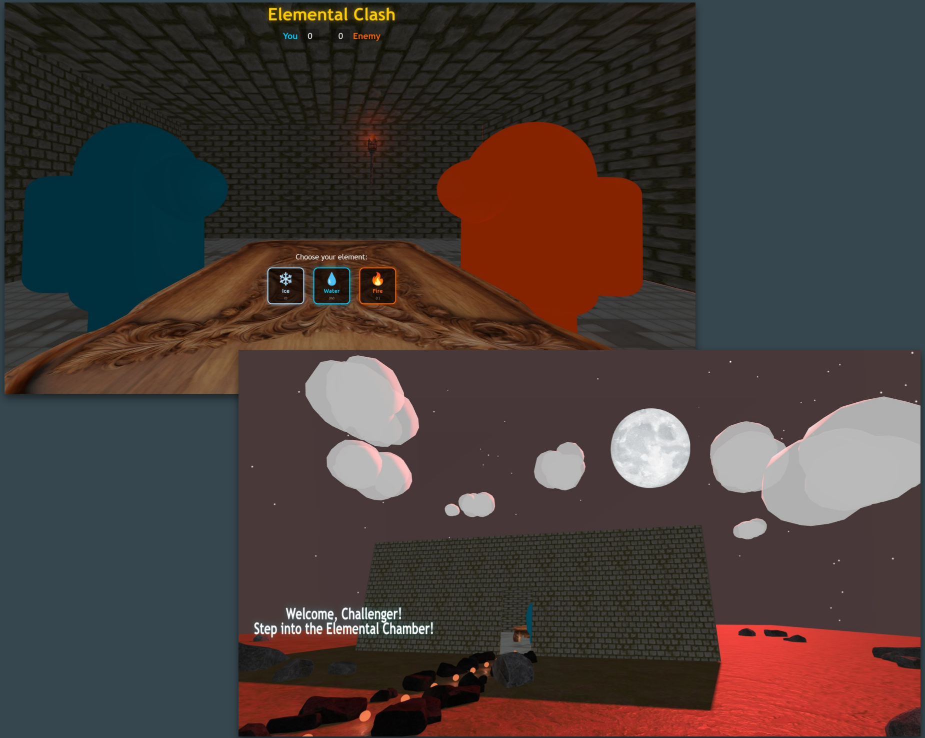
-Rock-Paper-Scissors Style mini-Game

- 3D Open World to Explore

  Using **Keyboard** and **Mouse**

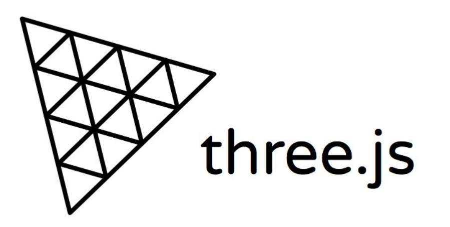
- Move freely through environment

- Interact with other characters



Welcome, Challenger!
Step into the Elemental Chamber!

Three.js

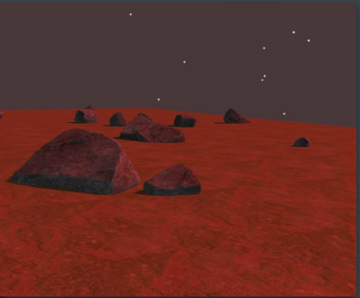


The imports structure reinforces the **readability** and **reusability** , keeping the code more **organized** .

{ **CanvasTexture** } → Converts 2D canvas drawings into textures for 3D objects.
{ **Vector3** } → Represents 3D positions and directions; essential for movement, positioning, and physics.
{ **Group** } → Lets you group multiple 3D objects to manipulate them as one.
{ **Box3** } → Used for bounding box calculations, crucial for collision detection and spatial logic.
{ **PlaneGeometry** } → A basic flat surface geometry, often used for floors, walls, or UI elements in 3D space.

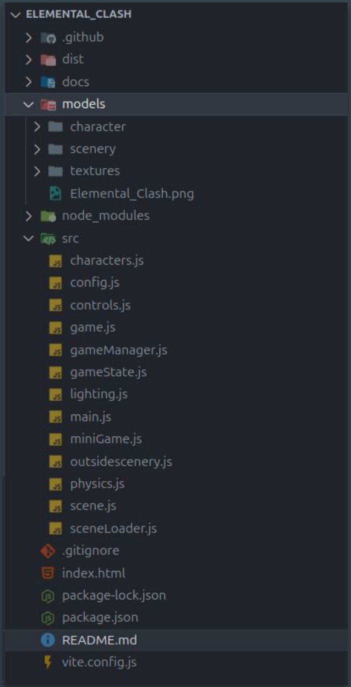
Models and Textures

Wall Torch
Rocks
Table
Characters



Ground
floor
Walls
Moon

Organization



```
ELEMENTAL_CLASH
  > .github
  > dist
  > docs
  v models
    > character
    > scenery
    > textures
      Elemental_Clash.png
  > node_modules
  v src
      characters.js
      config.js
      controls.js
      game.js
      gameManager.js
      gameState.js
      lighting.js
      main.js
      miniGame.js
      outsidescenery.js
      physics.js
      scene.js
      sceneLoader.js
    .gitignore
    index.html
    package-lock.json
    package.json
    README.md
    vite.config.js
```

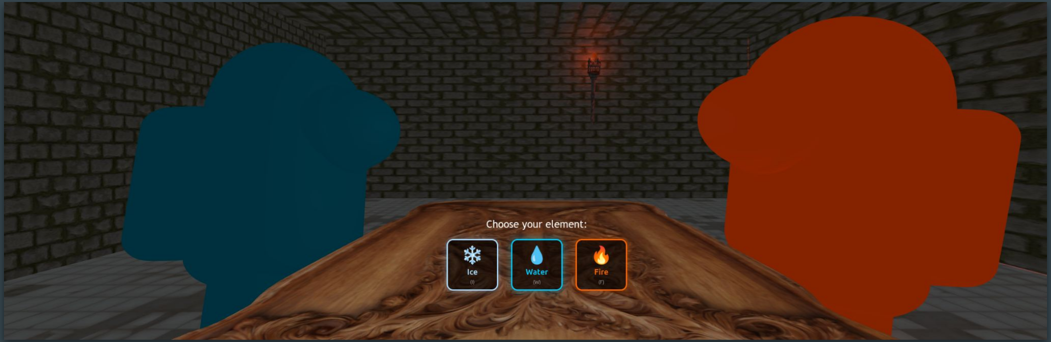
```
THREE.Scene
├── Environment (scene.js + sceneLoader.js)
│   ├── createTilesFloor()
│   ├── createWallEnvironment()
│   ├── createMetalCeiling()
│   └── createTable()
│
├── Outside Scenery (outsidescenery.js)
│   ├── createOutsideScenery()
│   ├── createRocks()
│   ├── addClouds()
│   ├── create Moon()
│   └── updateMoonBillboard()
│
├── Lighting (lighting.js)
│   ├── setupBaseLighting()
│   ├── addWallTorches()
│   └── updateTorchLights()
│
├── Characters (characters.js)
│   ├── setupCharacters()
│   ├── animateCharacter()
│   └── getCharacters()
│
├── Player Controls (controls.js)
│   ├── initControls()
│   ├── updateMovement()
│   └── updateCameraRotation()
│
......
```

```
....
│
├── Game UI & Overlays (scene.js, miniGame.js)
│   ├── createTextTexture()                        ← scene.js
│   ├── updateFloatingText()
│   ├── createSimpleVictoryDisplay()                ← miniGame.js
│   ├── createVictoryOverlayWithCountdown()
│   └── showDefeatOverlay()
│
├── Mini-Game Logic (miniGame.js)
│   ├── initGame()
│   ├── makeChoice()
│   ├── determineWinner()
│   └── resetGame()
│
├── Game Flow Manager (gameManager.js)
│   ├── registerMiniGame()
│   ├── registerExitGame()
│   └── startMiniGame()
│
├── Game Logic and Transitions (game.js)
│   ├── startGame()
│   ├── updateCameraTransition()
│   └── startVictoryTransition()
│
├── Game State (gameState.js)
│   ├── checkTableProximity()
│   ├── updateGameLighting()
│   └── onRoomEntry()
│
└── Physics (physics.js)
        ├── setTableReference()
        ├── isCollidingWithWalls()
        └── isInDoorway()
```

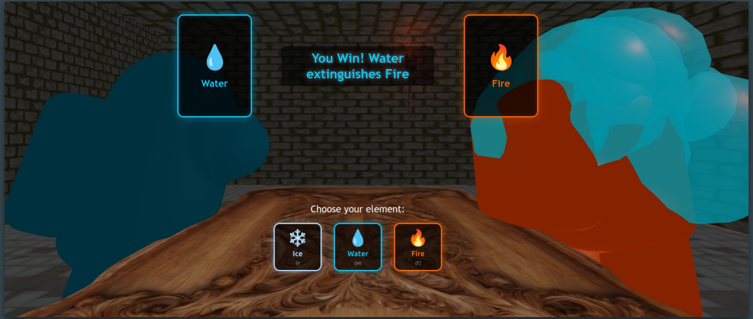
Animations

Character:
- bobAnimation()
- thinkingAnimation()
- tiltAnimation()
- jumpSpinAnimation()
- slumpAnimation()

miniGame:
- updateCard()
- makeChoice()
- startVictorySequence()
- showDefeatOverlay()



Choose your element:

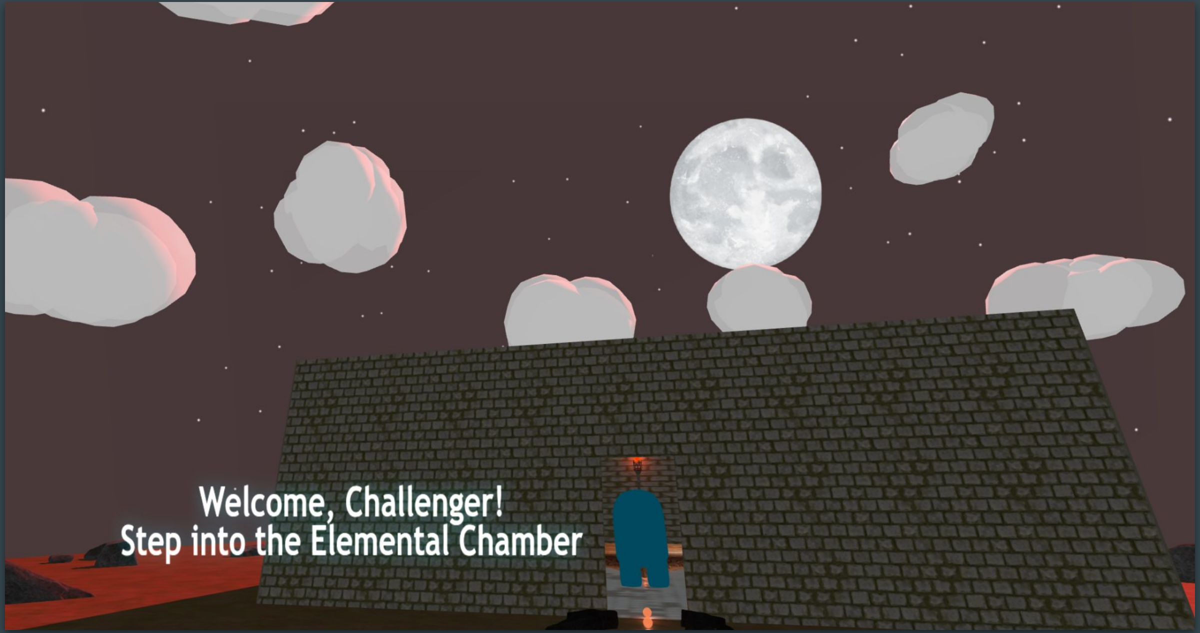


You Win! Water extinguishes Fire

Choose your element:

Animations

outsideScenery:
- animateClouds()
- updateMoonBillboard()
- updateFloatingText()

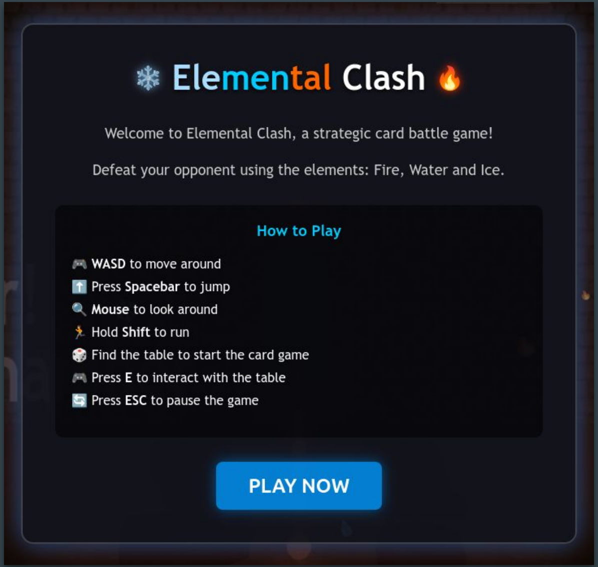


Lightning

- THREE.AmbientLight
- THREE.PointLight
updateTorchLights()

- updateMoonBillboard()

User Interaction



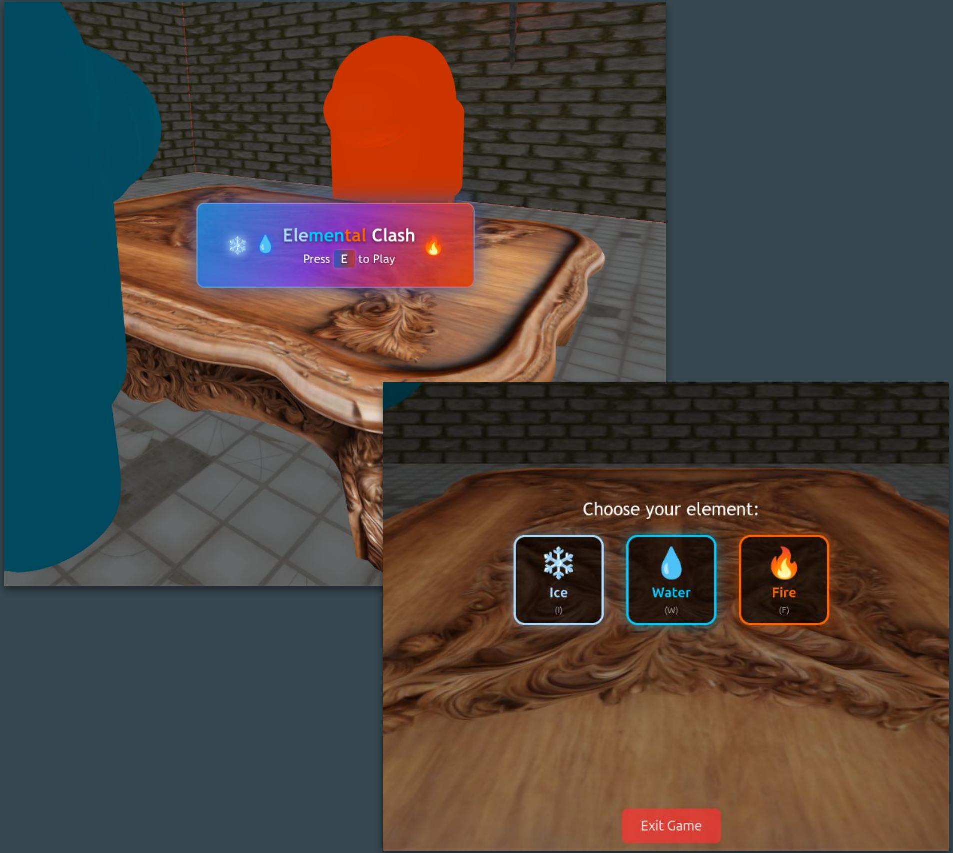
❄ Elemental Clash 🔥

Welcome to Elemental Clash, a strategic card battle game!

Defeat your opponent using the elements: Fire, Water and Ice.

How to Play

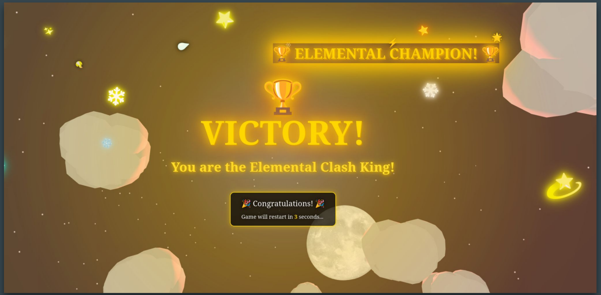
- 🎮 **WASD** to move around
- ⬆️ Press **Spacebar** to jump
- 🔍 **Mouse** to look around
- 🏃 Hold **Shift** to run
- 🎲 Find the table to start the card game
- 🎮 Press **E** to interact with the table
- 🔄 Press **ESC** to pause the game



Choose your element:

Difficulties

- Criação de Textos e Modelos 3D através de Canvas HTML, convertidos em THREE.Texture
  [Texturas/Modelos muito pesados]



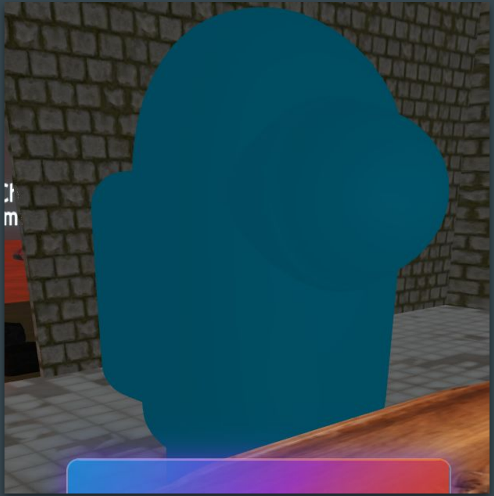
🏆 ELEMENTAL CHAMPION! 🏆

VICTORY!

You are the Elemental Clash King!

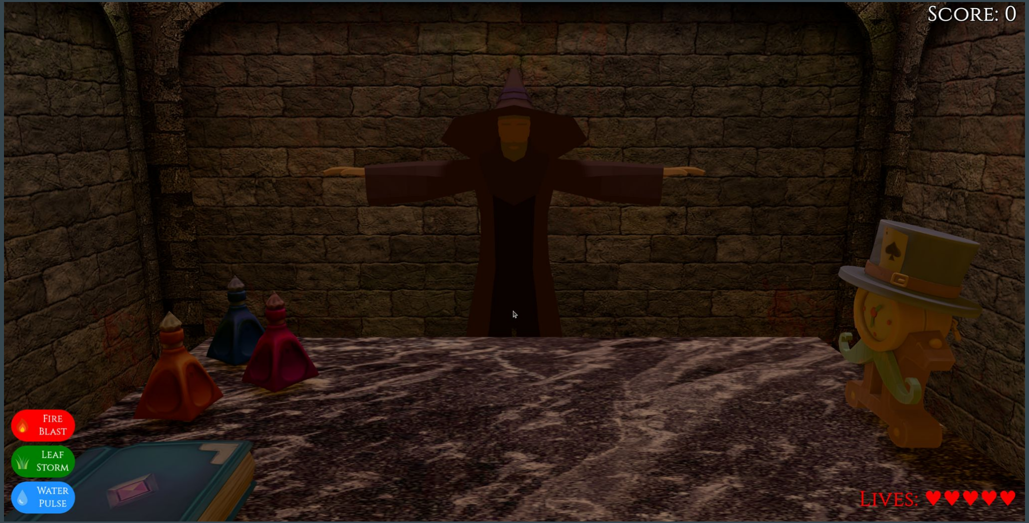
🎉 Congratulations! 🎉

Game will restart in 3 seconds...



Conclusion

Main Reference: https://g0ncalocunha.github.io/wizard_showdown/index.html



https://diogozeca.github.io/Elemental_Clash/