SoftDev P05

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Overview

DevoRoyale is a 2D online multiplayer game inspired by ZombsRoyale. In DevoRoyale, devos will team up and fight to the death with items they have accumulated from looting towns and the bodies of defeated devos. But there's a catch! The devos must not only face each other, but strategically avoid the ever-enclosing storm that forces all teams together. Last devos standing wins. The highest achieving devos will be placed upon a pedestal on the leaderboard, which keeps track of who has the most wins, kills, etc.

Program Components

Frontend:
- Serves pages with Tailwind, HTML, CSS, and JS
- Displays all in-game graphics and animations as directed by Node.js

Node.js:
- Serves as middleware server – brain behind the operations
- Handles asynchronous in-game logic as well as page routing
- Facilitates client to client communication
- Controls communication between backend and frontend

SQL Database:
- Stores user account information
- Stores leaderboard information
- Stores game items information (healing items, guns, etc.)

Component Relations + Visualization

Frontend

Tailwind
HTML
CSS
JS

Node.js

SQL Database

| User Accounts |
|---|
| Leaderboard |
| In-game items |
| Map |
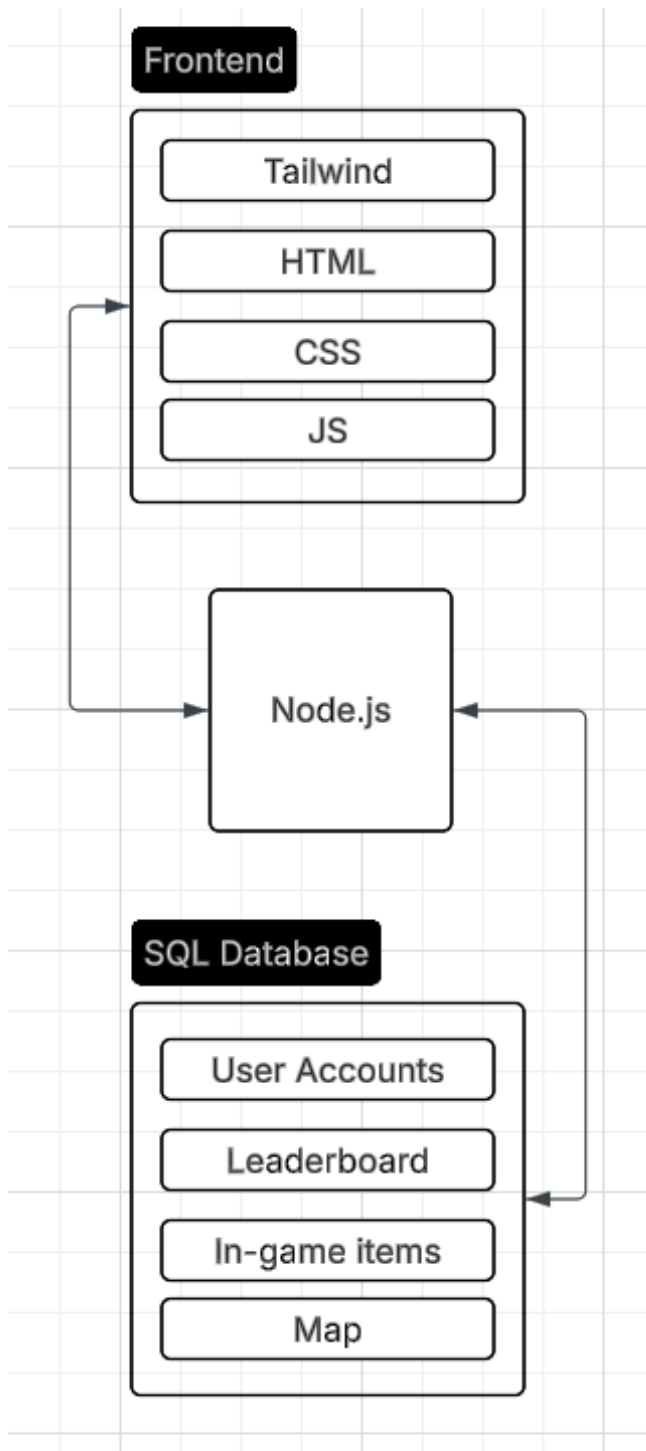
Node.js communicates with the **Frontend** in order to appropriately update graphics, ie:
- Health bar visually lowering upon taking damage
- Relaying other users' movements + actions to the screen

Node.js communicates with the **SQL Database** to both feed information to the **Frontend** *and* handle logical operations, ie:
- Database tells Node.js how much damage a user is to take for a certain gun
- Database tells Node.js how a gun is supposed to look, so that Node.js can tell the frontend.

Site Map
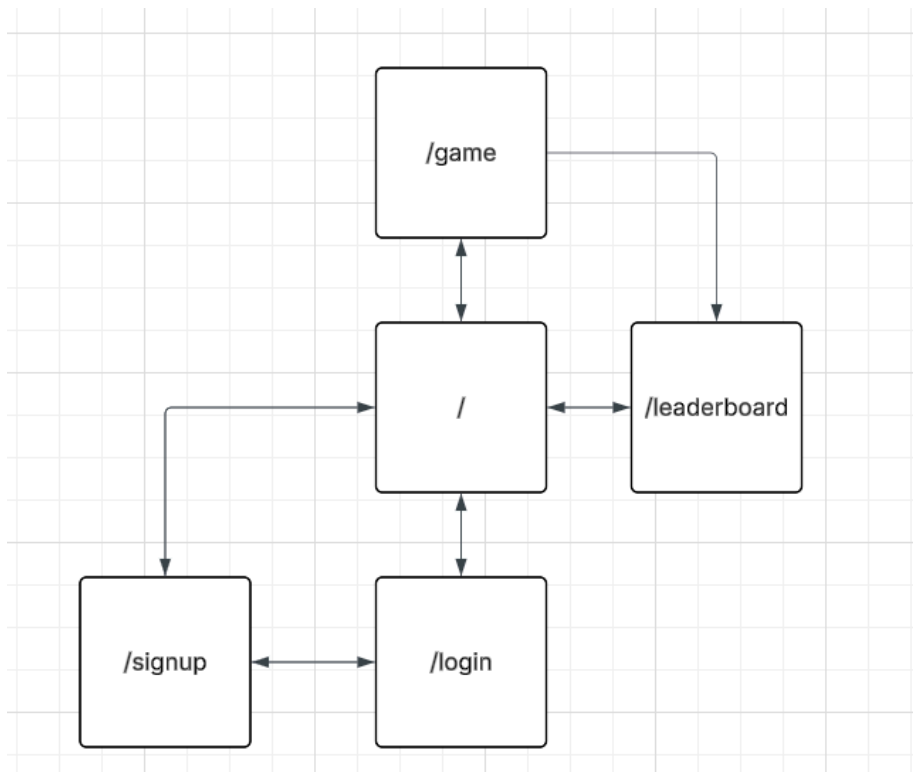
APIs

- We do not plan on using any APIs.

Front-End Framework: Tailwind

1)   Tailwind CSS's utility-first framework simplifies the web development process by reducing the need to write CSS or custom CSS.

2)   Styles can be quickly applied to elements directly in the HTML code without needing to write custom CSS, saving significant development time.

3)   Optimized and minimal CSS files are generated by Tailwind CSS, resulting in faster load times and improved overall website or application performance.

Database Organization

- **User Table**

Username (string)	Password (string)
Topher	*********
Mykolyk	*********
…	…

- **Leaderboard Table** (sort in decreasing order by wins then kills)

Placement (int)	Username (string)	Wins (int)	Kills (int)
1	Topher	42	13
2	Mykolyk	6	3
…	…	…	…

- **Item Table**

Item ID (int)	Item Name (String)	Item Type (String)	Item Strength (Int)	Asset Location (String)
1	Small Health Potion	Potion	25	"../assets/small_potion"
2	AR-15	Gun	12	"../assets/ar15_gun"
…	…	…	…	…

Libraries/Packages/Modules

- express – A minimal web framework for Node.js that serves game client files and can handle routes like leaderboard data.

- ws – A WebSocket library that enables communication between the game server and connected players.

- pixi.js – Good for animation and rendering graphics/assets.

Task Assignments

GENERAL TASKS	PMVC	DDP	DMM	DWN
Implement Database Interactions		X		
Construct Site-side Pages				X
GAME MANAGEMENT TASKS				
Game Map - Load initial obstacles and structures				X
Game Loop – Run core loop to update positions, physics, and game state (including storm function)	X		X	
Visual Experience - rendering graphics, animations, in-game UI		X		X
Input Handling - capture and process keyboard & mouse inputs and send to server			X	
Final Testing and Bug Fixing	X	X	X	X