Assignment 2: Identify Limitations and Propose Enhancements to Custom GPTs and Game Template

Objective: Critically analyze the performance of the provided custom GPT from Assignment 1, identify its limitations, and propose enhancements to improve its functionality. This assignment aims to deepen your understanding of leveraging AI tools in game development and enhance your problem-solving and critical thinking skills.

Expectations

We expect a **significant improvement** in your game submission as compared to A1.

Instructions

- Review Your Experience from Assignment 1
  - Reflect on the development process of your game.
  - Assess how effectively the custom GPT assisted in generating code and implementing game features.
- Identify Specific Limitations of the Custom GPT
  - Analyze areas where the GPT did not perform as expected.
  - Consider aspects such as:
    - Game Template Matching: How well did the GPT adhere to the provided game template?
    - Code Completion and Accuracy: Were there incomplete or inaccurate code snippets?
    - Complexity Handling: Could the GPT handle more complex game mechanics or features?
    - Creativity: Did the GPT introduce innovative or unique elements to the game?
    - User Interface (UI): How effective was the GPT in designing a user-friendly interface?
    - User Interaction: Were touch controls and other interactive elements adequately implemented?
- Propose Enhancements to Address Identified Limitations
  - Develop strategies to overcome the limitations you identified.
  - Possible enhancements include:
    - Refining Prompts: Adjusting the prompts to elicit more accurate or complete code.
    - Integrating Additional Tools: Utilizing supplementary tools or libraries to enhance functionality.
    - Suggesting New Ideas: Introducing novel features or mechanics to enrich the game.
  - Ensure that each proposed enhancement is supported by:
    - Proper Reasoning: Explain why the enhancement is necessary and how it addresses the limitation.

- ■ Proof-of-Concept: Provide examples or preliminary implementations that demonstrate the feasibility of the enhancement.
- ● Implement Proposed Enhancements
  - ○ Apply the enhancements to the custom GPT to create an improved version.
  - ○ Develop an enhanced version of your game that incorporates these improvements, ensuring that it:
    - ■ Strictly Follows the Given Template: Maintain consistency with the provided structure.
    - ■ Ensures Code Completion and Accuracy: Deliver fully functional and error-free code.
    - ■ Enhances User Interface Design: Create a more intuitive and aesthetically pleasing UI.
    - ■ Improves User Interaction: Implement better controls and interactive features, especially for mobile devices.
- ● Game Template Optimization
  - ○ As part of this assignment, you are also required to critically evaluate the provided game template and implement modifications to enhance its efficiency, optimization, and robustness, specifically tailored to your game genre. Your modifications should aim to:
    - ■ Improve Performance: Optimize the template's structure and code efficiency to enhance execution speed and responsiveness.
    - ■ Enhance Scalability: Modify the template to better accommodate additional features, mechanics, or future expansions.
    - ■ Adapt to Game Genre Requirements: Customize the template to better align with the specific needs and mechanics of your chosen game genre.
- ● Ensure Mobile Device Compatibility
  - ○ Enhance your game to be mobile-friendly by:
    - ■ Adding Support for Touch Inputs: Ensure that controls are optimized for touchscreens.
    - ■ Readjusting the UI Based on Screen Size: Use responsive design techniques to adapt the layout to various device dimensions.
  - ○ Testing on Mobile Devices:
    - ■ Utilize your web browser's developer tools to simulate mobile environments:
      - ■ Right-click on the game in your browser and select "Inspect".
      - ■ Navigate to the "Responsive Design Mode" or similar option.
      - ■ Choose different mobile device dimensions to evaluate and refine your game's appearance and functionality.
- ● Images and Sounds (manual download)
  - ○ For completeness, you can manually download image/sound assets and integrate them into your games.
- ● Documentation and Reporting
  - ○ Analyze GPT's Limitations:

- - - Provide a detailed analysis of the specific limitations encountered in Assignment 1, supported by concrete examples.
  - Detail Proposed Enhancements:
    - Explain the enhancements you propose to address each limitation.
    - Include reasoning and proof-of-concept for each enhancement.
  - Compare Original and Improved GPT Outputs:
    - Highlight the differences between the initial GPT-generated code and the enhanced version.
    - Demonstrate how the enhancements have improved functionality, code quality, and user experience.
  - List Final Prompts for the GPTs:
    - Present the refined prompts used to generate the improved game code.
  - Enhancements made to the Game Template

Attachments:

- **Game Template**
- **Custom GPTs**

Deliverables:

- Game files:
  - index.html
  - Game.css (this could be part of index.html)
  - game.js (this could be part of index.html)
  - images/* .png or .jpg
  - sounds/* .mp3 or .wav
- A brief report (1-2 pages) detailing:
  - Group members: Names and netids
  - Instructions on how to play
  - Novel features and mechanics
  - The report should also include:
    - **Detailed Analysis of GPT's Limitations:** Specific examples where the GPT fell short in Assignment 1.
    - **Proposed Enhancements and Changes to GPTs:** Detailed explanations of each enhancement, supported by reasoning and proof-of-concept.
    - **Comparison Between Original and Improved GPT Outputs:** Clear illustrations of how the enhancements have improved the game.
    - **Final Prompts for the GPTs:** A list of the refined prompts used to generate the improved game code.
- Video:
  - Recorded video demo of game in action
  - Recommended formats: .mp4 | .wav