

Echoes of Tomorrow: A Climate Change Management Game - Project Report

1. Introduction

- **Game Title:** Echoes of Tomorrow
- **Concept:** A web-based simulation game where the player assumes the role of a town manager of a small coastal community.
- **Objective:** Over a 10-year term, the player must make critical decisions to navigate the challenges of climate change, balancing the town's economy, environmental health, and citizen happiness.

2. Game Theme Topic Justification

- **Relevance:** Climate change is one of the most pressing global issues of our time. This game aims to make this complex topic more accessible and understandable to a wider audience.
- **Educational Approach:** By putting players in a decision-making role, the game provides a hands-on experience of the trade-offs and consequences associated with climate change management.
- **Engagement:** The game format is an engaging way to encourage players to think critically about sustainability and the long-term impacts of their choices.

3. Potential Impact

- **Increased Awareness:** To raise players' awareness of the multifaceted nature of climate change and the difficult decisions that leaders face.
- **Empathy and Perspective:** To foster empathy for communities affected by climate change and to provide a new perspective on the importance of balancing various societal needs.
- **Empowerment:** To inspire players to think about real-world solutions and to feel empowered to contribute to positive change in their own communities.

4. Technology Stack

- **Frontend:**

- **HTML5:** For the structure of the game.
- **CSS3:** For styling and creating a visually engaging user interface.
- **JavaScript (ES6+):** For the core game logic and interactivity.
- **Web Libraries:**
 - **Chart.js:** To create dynamic charts that visualize the player's progress and the town's key metrics over time.
 - **Intro.js:** To provide an interactive, guided tutorial for new players, explaining the different elements of the game.
- **Artificial Intelligence:**
 - **Google Gemini API:** To dynamically generate in-game scenarios and events, creating a unique and replayable experience for each player. This allows the game to adapt and present new challenges based on the player's decisions.

5. Overview of Game Mechanics

- **Core Gameplay Loop:**
 - A **Annual Events:** Each year, the player is presented with a new event related to climate change (e.g., storms, investment opportunities, pollution issues).
 - B **Decision Making:** The player must choose from a set of options, each with different impacts on the three core metrics.
 - C **Impact and Feedback:** The player's choice affects the town's **Economy**, **Environment**, and **Community** scores, as well as the budget. Players receive feedback in the form of letters from citizens.
- **Key Metrics:**
 - **Economy:** Represents the financial health and development of the town.
 - **Environment:** Represents the health of the local ecosystem.

- **Community:** Represents the happiness and well-being of the citizens.
- **Endings:** The game has multiple endings, determined by the state of the three core metrics at the end of the 10-year term. This encourages replayability and exploration of different strategies.

6. Reflection

- **Challenges:**
 - Balancing the educational aspects of the game with engaging gameplay.
 - Integrating the AI-powered scenario generation in a way that feels natural and responsive to the player's actions.
 - Simplifying complex climate change concepts into understandable game mechanics.
- **Learnings:**
 - The power of interactive storytelling to convey complex messages.
 - The potential of AI to create more dynamic and personalized game experiences.
 - The importance of user feedback in refining and improving the game.
- **Future Development:**
 - Expanding the range of AI-generated scenarios.
 - Adding more detailed data visualizations.
 - Developing a multiplayer mode where players can manage neighboring towns and collaborate or compete.