Wild Realms - An Interactive Wildlife Education Simulation

Final Project Report - Summary

Group 10 - Muhammad Taha, Daron Jones, Sami Abu Shamat, Mirza Baig

Project Overview

Wild Realms is an interactive wildlife education simulation designed to teach users about ecosystems, biodiversity, and the impact of human activities on nature. The project aims to provide an immersive learning experience where users explore biomes, interact with wildlife, and make conservation-related decisions. By integrating AI-driven animal behaviors, real-world ecological data, and scenario-based learning, the simulation seeks to bridge the gap between traditional education and hands-on environmental awareness.

Key Deliverables:

- A fully immersive simulation featuring dynamic biomes and realistic animal interactions.
- Conservation challenge scenarios requiring user decisions with ecological consequences.
- Educator-focused modules for lesson plan integration and student tracking.
- Multiplayer functionality allowing collaborative ecosystem management.
- Scalable, cross-platform deployment (desktop, tablet, and mobile) ensuring accessibility.

Wild Realms follows a **Client-Server Architecture** with cloud-based storage and real-time synchronization across devices. The Unity engine powers the 3D simulation, with backend services managed via AWS.

Class Design:

Core classes include:

- **User, Student, Educator, Researcher** – Manage user roles and permissions.
- **Biome, Ecosystem, Species** – Define natural environments and species traits.
- **ObservationTracker, ReportGenerator** – Manage wildlife tracking and reporting.

Subsystems:

1. **Habitat and Environment:** Biome, Species, Ecosystem classes simulate real-world environments.

2. **Wildlife Monitoring:** Animal tracking and behavioral modeling.

3. **Reporting and Analytics:** Data-driven insights via observation reports and analytics engines.

Requirements

Wild Realms implements five major functional capabilities:

1. **Biome Exploration** – Users explore and interact with diverse ecosystems.

2. **Conservation Scenarios** – Users solve environmental challenges affecting wildlife.

3. **Animal Behavior Tracking** – Data collection on species movements and behaviors.

4. **Lesson Integration** – Educators integrate simulation activities into structured learning.

5. **Multiplayer Collaboration** – Users jointly manage virtual ecosystems.

Data models track species, habitats, user profiles, weather conditions, and observations. The system ensures accuracy, real-time updating of environmental variables, and ecological realism.

Conclusion

Wild Realms successfully fulfills its goal as an engaging educational simulation that bridges the gap between theoretical ecological learning and real-world conservation awareness. With its scalable, cross-platform design, strong educational focus, and rigorous testing standards, Wild Realms is poised to be a powerful tool in promoting environmental literacy and action.