Game Design Document

Subject: Fundamental Game Development

Lecturer: Va HongLy

Group 2 : Software Engineering

Group: 34

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1. Introduction

Cyber Kroma: The Scam Hunter is a 3D educational multiplayer shooter game developed as the final project for the Game Development course at Cambodia Academy of Digital Technology (CADT). The project was developed over a five-week period using Unity 2022.3 LTS and targeted Android mobile devices. The primary objective of the game is to raise awareness of online scams and cybersecurity threats among Cambodian teenagers and students through interactive gameplay.

The game transforms real-world digital threats such as phishing, fake social media accounts, and deepfake technology into in-game enemies, allowing players to learn cybersecurity concepts while engaging in cooperative combat gameplay.

2. Game Overview

1. Task Division

Name	Task
Leom Kimhour	Team leader responsible for technical coordination, handling core technical requirements, resolving system issues, managing the GitHub repository, and supporting overall development.
Chut Homey	Responsible for gameplay mechanics coding, including player movement, shooting systems, and core interaction logic.
Rina Longboren	In charge of level design, visual design, and providing game materials such as environments, UI elements, and visual assets.
Heak An	Responsible for testing the game, identifying bugs, and contributing to report writing and documentation.
Khemrin Pranha	Focused on combat system development, including weapon mechanics, player controls, and assisting with gameplay balancing.

Task Division Table

2. Objectives

The main objectives of the project were:

- To design and develop a functional mobile game using Unity
- To integrate educational cybersecurity content into gameplay mechanics
- To implement AI-controlled enemies and wave-based progression
- To explore multiplayer networking concepts using Unity Netcode
- To apply proper software engineering practices such as version control, documentation, and task division

3. Game Description

Cyber Kroma is set in a futuristic cyberpunk version of Phnom Penh, combining Cambodian cultural landmarks with digital and neon visual elements. Players take the role of members of an elite cyber-defense unit tasked with protecting a central objective called the “Data Core” from waves of digital threats.

Each enemy represents a real-world scam type, and after each wave, players receive educational pop-ups explaining the scam tactics they encountered. This approach reinforces learning through direct interaction and repetition.

The core concept of the game is to simulate farming activities where players plant, grow, and harvest crops in an interactive and enjoyable way.

3. Story and Setting

Players build and manage their own peaceful countryside farm where the main focus is planting, watching them grow, and harvesting.

4. Gameplay Mechanics

The game features mobile-optimized first-person shooter controls, including virtual joysticks and touch-based aiming. Players must cooperate to survive multiple waves of enemies while managing health, points, and strategic upgrades from an in-game shop NPC.

Key gameplay systems include:

- Player movement and shooting mechanics
- Enemy AI with NavMesh pathfinding
- Wave-based enemy spawning
- Health and damage systems
- Point-based economy and shop system
- Win and lose conditions based on player survival and Data Core health

5. Technical Implementation

The project was developed using Unity 2022.3 LTS with the Universal Render Pipeline (URP) for mobile performance optimization. AI behavior was implemented using Unity's NavMesh system, while networking functionality was partially implemented using Netcode for GameObjects and Unity Relay.

GitHub was used for version control, and a "one person, one scene" workflow strategy was applied to minimize merge conflicts. Extensive documentation was created to guide setup, integration, and future development.

6. Challenges and Limitations

Several challenges were encountered during development, including performance optimization for mobile devices, multiplayer synchronization issues, and limited development time. Some features such as sound design, full multiplayer testing, and advanced UI polish were not fully completed.

Due to these constraints, the project achieved approximately 85% completion. However, all core gameplay systems required for demonstration were successfully implemented.

7. Learning Outcomes

Through this project, the team gained practical experience in:

- Unity game development and mobile optimization
- AI implementation and gameplay system design
- Multiplayer networking fundamentals
- Team collaboration using Git and structured workflows
- Integrating educational content into interactive systems

8. Conclusion

Cyber Kroma: The Scam Hunter successfully meets its core objectives by delivering a functional, educational, and culturally relevant mobile game. Despite time limitations and some unfinished features, the project demonstrates strong technical foundations, effective teamwork, and the potential of games as tools for cybersecurity education in Cambodia. The codebase and design are well-documented and suitable for further development and future improvements.

Github Link:

https://github.com/LK-Hour/Cyber-Kroma.git