

GAME DESIGN DOCUMENT: CYBER KROMA

Game Name: Cyber Kroma: The Scam Hunter

Team Name: Kroma Code

Date: November 24, 2025

Engine: Unity 2022.3.47f1 (LTS)

Platform: Android (Mobile)

1. Game Overview

- **Genre:** 3D Multiplayer First-Person Shooter (Co-op Survivor).
- **Target Audience:** Cambodian teenagers and students (Mobile users).
- **Game Goal:** Cooperate with up to 4 players to survive 5 waves of malware attacks, protect the "Data Core," and rescue the "New User" NPC.
- **Core Concept:** A digital defense game set in a neon "Cyber Phnom Penh" where players use "Digital Literacy" skills (Fact-Checking, Firewalls) to defeat enemies representing real-world scams (Phishing, DeepFakes).

2. Story & Setting

- **Setting:** The "**Khmer Digital Network**"—a futuristic, neon-lit virtual city.
 - *Visual Style:* **Cyberpunk Phnom Penh**. Iconic landmarks like the **Independence Monument** and **Wat Phnom** are constructed from glowing blue circuits and floating binary code.
- **Story:** In 2025, a massive wave of "Dark Data" attacks the Cambodian internet. Players are elite members of **Cyber Kroma**, a digital defense squad. Their mission is to purge the infection and teach the "New User" (a confused civilian NPC) how to stay safe online.

3. Core Gameplay

Player Mechanics (The Agents)

- **Mobile Controls:**
 - **Left Virtual Joystick:** Movement (WASD equivalent).
 - **Touch Screen Swipe:** Aiming (Camera Look).
 - **Shoot Button:** Shoot "Report Blaster."
 - **Skill Button:** Skill "e.g. 2FA Shield."
 - **Additional Button:** Interact (Revive/Shop).
- **Customization :**
 - Players can select their **Headgear** (Kroma Scarf, Apsara Visor) in the lobby.
 - *Network Sync:* Visuals are synchronized so teammates see unique avatars.

Interactions & NPC (AI Feature)

- **"Lok Ta Digital" (AI Shopkeeper):**
 - Between waves, a holographic Khmer Elder appears.
 - **Logic:** Uses game data to recommend items (e.g., *If player HP is low -> "Chau, buy an Antivirus Potion!"*).
 - **AI Asset:** Voice lines generated via AI Text-to-Speech; Dialogue variations generated via LLM.

Enemies (Educational Metaphors)

1. **The Phisher (Ranged):** Shoots "Fake Link" projectiles. **Effect:** If hit, the mobile screen is covered in a "Pop-up Ad" UI overlay. Player must tap "X" to close it.
2. **The Ghost Account (Stealth):** Invisible enemies that ignore players and attack the Data Core. Visible only via the "Scanner" class.
3. **The DeepFake (Boss):** A powerful AI that copies the mesh and name of a teammate. Players must communicate to identify the impostor.

Win/Lose Conditions

- **Win:** Defeat the Wave 5 Boss and keep Data Core health > 0%.
- **Lose:** Data Core reaches 0% or all players are "Disconnected" (HP 0).

4. Gameplay Flow

1. **Main Menu:** Start Game, Customization Lobby, Settings (Language: Khmer/English).
2. **Lobby:** Host/Join via LAN or IP. Select Class (Firewall, Debugger, Scanner).
3. **Gameplay Loop:**
 - **Combat Phase (2 mins):** Defend Core from Waves.
 - **Shop Phase (30s):** Interact with NPC "Lok Ta" to upgrade stats.
 - **Educational Popup:** A "Scam Alert" card explains the enemy just fought (e.g., *Telegram Phishing Tactics*).
4. **End Screen:** Scoreboard + Digital Safety Rating.

5. Art Direction & UI

- **Style: Low-Poly Synthwave.**
 - *Why:* Best for mobile performance. Uses simple shapes with high-contrast colors (Cyan, Magenta, Gold).
- **UI Design:**
 - **Language:** Supports **Khmer Unicode** (using TextMeshPro) for all menus and tips.
 - **Mobile Layout:** Large, thumb-friendly buttons. Semi-transparent HUD to maximize visibility.
 - **Glitch Effects:** UI flickers when the player takes damage.

6. Audio

- **Music:** Upbeat Synthwave mixed with traditional Khmer instruments (Tro/Roneat).
- **Voice Over: AI-Generated** Khmer voice lines for the NPC and system alerts (e.g., *"Som Proyat!"*).
- **SFX:** Digital "Zaps," "Modem Dial-up" noises for enemy spawns.

7. Technical Requirements & Graphics Optimization

- **Engine:** Unity 2022.3.47f1 (LTS) with Android Build Support.
- **Pipeline: Universal Render Pipeline (URP)** (Required for performant mobile glow effects).
- **Networking:** Netcode for GameObjects (NGO).
- **Target Platform:** Android (Minimum API Level 24 / Android 7.0 Nougat).
- **Input Handling:** Unity **New Input System Package** (handling Multi-touch).
- **On-Screen Controls:**
 - **Left Stick:** Virtual Joystick for Player Movement (Vector2).
 - **Right Region:** Touch & Drag for Camera Rotation (Delta).
 - **Action Buttons:** UI Buttons mapped to functions (Shoot, Jump, Skill).

To ensure the game runs on Android while looking good:

No.	Requirement	Implementation Strategy (Best Practice)
1	Graphics Optimization	Object Pooling: Bullets and Enemies are recycled, never destroyed/instantiated, to prevent mobile lag spikes (Garbage Collection). Texture Atlasing: Combining UI and Environment textures into single sheets to reduce Draw Calls.
2	PBR (Physically Based Rendering)	Using URP Lit Shaders . We will use Metallic/Roughness maps on the "Robot" characters so they reflect the neon city lights realistically.
3	LOD (Level of Detail)	LOD Groups applied to city buildings. <i>Close:</i> High detail mesh. <i>Far:</i> Simple box mesh. Saves vertex processing on the phone.
4	Camera Culling	Occlusion Culling is baked into the map. Objects hidden behind large buildings will not be rendered by the mobile GPU.
5	Advanced Lighting	Baked Lightmaps: Static city lights are pre-calculated (Baked) into textures. Light Probes: Used so moving players still "catch" the light/shadows from the baked city without expensive real-time calculations.

8. Scope & Team Roles

Timeline: 5 Weeks (Submission Dec 23)

Role	Member	Responsibilities
Team Leader / Network Engineer	Kimhour	GitHub setup, Netcode (Syncing players/enemies), Android .APK Build & Deployment.
Gameplay Programmer	Pranha	Mobile Touch Controls (Input System), Shooting mechanics, Health/Revive system.
AI & Logic Programmer	An	Enemy behavior (NavMesh), "Lok Ta" Shop Logic, Wave Spawning system.
Level Designer / 3D Artist	Homey	Map creation (ProBuilder), Lighting (Baking Lightmaps/Probes), Neon Shaders.
UI/UX & Audio	Longboren	Main Menu, Touch UI Layout, Khmer Text Integration, AI Audio Generation.