Red Team Hardware Simulator - Academic Report

1. Introduction

The Red Team Hardware Simulator is an educational 3D simulation game designed to introduce users to the process of building hardware-based cybersecurity tools. This report presents an overview of the game concept, core mechanics, components, and its role in cybersecurity education.

2. Literature Review

Cybersecurity education has increasingly adopted interactive tools such as simulations and serious games to provide hands-on learning experiences. Studies suggest that hands-on training significantly improves comprehension and retention in security-related topics. The Red Team Hardware Simulator aligns with these findings by offering a structured yet interactive approach to understanding red team hardware assembly.

3. Game Concept

The game provides an interactive desktop workspace where users assemble various red team IoT devices using drag-and-drop mechanics. It does not include step-by-step instructions but confirms correct component placements through pop-up notifications. Upon successful assembly, an explanatory animation describes the tool's functionality and potential use cases.

4. Devices Available for Assembly

1. **RadioStation** - Inspired by HackRF, this device can be used for radio frequency transmission and reception.
2. **BadUSB** - Based on Rubber Ducky, with an added Ethernet sniffing port for network-based attacks.
3. **Signals Jammer** - Capable of disrupting Wi-Fi, Bluetooth, and radio signals.

5. Components & Assembly Process

To maintain simplicity, the game features a set of abstracted hardware components, ensuring accessibility for all users. These components include:

- Board (Universal for all devices)
- Battery
- Antenna
- USB Port
- Ethernet Port

- Screen (if applicable)

6. Visual & UI Design

- **3D Environment**: The only visible scene is a desktop workspace where players assemble devices.
- **Minimalist Aesthetic**: Focuses on clarity and ease of understanding.
- **UI Elements**: Includes a start menu, device selection screen, assembly workspace, confirmation pop-ups, and explanatory animations.

7. Target Audience

This game is designed to be accessible for all skill levels, from beginners interested in cybersecurity to enthusiasts and professionals looking for hands-on DIY experience. It does not require prior technical knowledge, making it suitable for a broad audience.

8. Initial Features for Version 1.0

[x] Start Menu - Allows players to select a device to assemble.
[x] Device Assembly - Drag-and-drop components to construct the tool.
[x] Confirmation Pop-ups - Displays messages when components are placed correctly.
[x] Completion Animation & Explanation - Shows text explaining the tool's function after assembly.

9. Conclusion

The Red Team Hardware Simulator serves as an accessible entry point for individuals interested in cybersecurity hardware tools. By offering an interactive, hands-on approach to assembly, it enhances learning experiences and fosters a deeper understanding of red team hardware. Future iterations of the game will include expanded features, additional device options, and more complex interactions.