



Introduction

The Pocket Quest is a portable gaming system that is designed for fun gaming experiences on the go. The system is powered by a Raspberry Pi 4, a versatile single-board computer, complemented by the Arduino microcontroller, providing input capabilities and interactivity. The Raspberry Pi is connected to an LCD which will display the game, a speaker, and is also connected to a rechargeable battery. The game that will be on the Pocket Quest was created using a software known as RPG Maker VX Ace.

Objectives

- Design and create a full RPG(Role Playing Game) using RPG Maker VX Ace
- Design and create a portable gaming system that will run the game
- Ensure that the game runs on a Raspberry Pi by emulating an x64 Windows system.
- Design and create a controller for the Pocket Quest

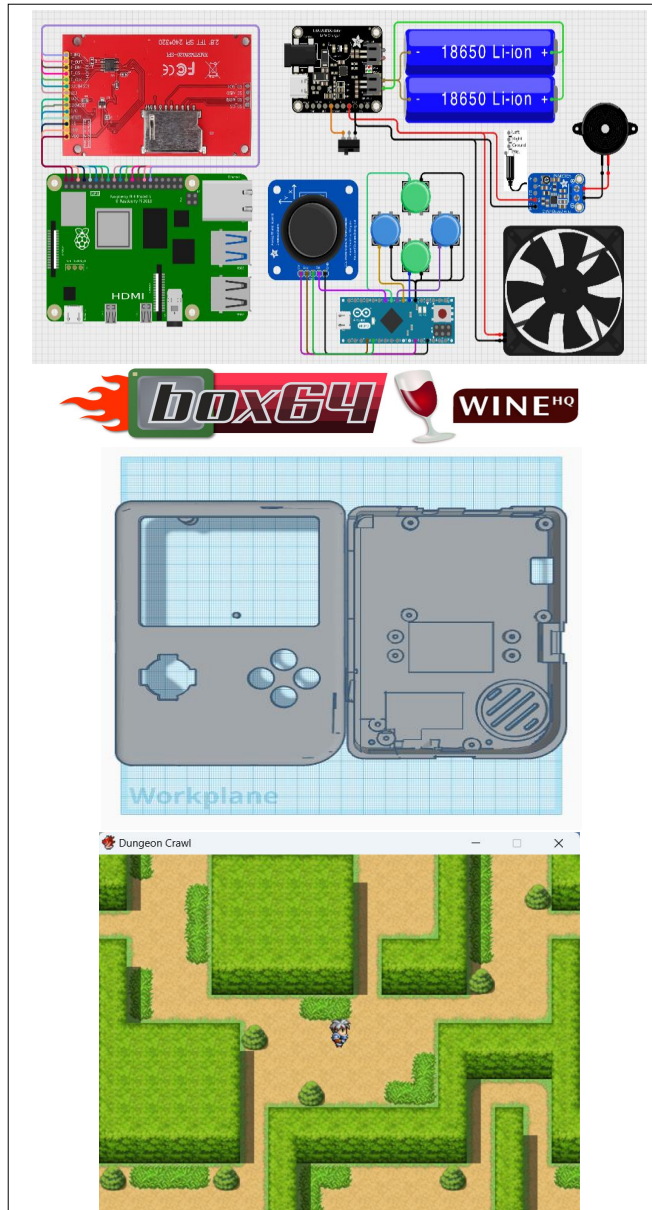
Benefits

- Fun gaming experiences on the go
- Compact and Portable Design
- Nostalgia for veteran gamers and enthusiasts

Game Development

The game, Dungeon Crawler, is made using a software known as RPG Maker VX Ace which uses a coding language called Ruby, often used in game development, as well as provides a large library of assets to develop the game.

- Uses conditionals, switches, loops to create events
- Allows developers to create their own unique items.
- Falls under the genre of Dungeon Crawler, traversing a dungeon to reach the final boss.
- Gameplay is that of a classic RPG top-down game.



Hardware and Software

- A Raspberry Pi 4 with a fan and a TFT LCD screen connected through the GPIO pins.
- A power supply with a 7.4V 2000mAh Battery with an estimated of 3-4 hours of usage.
- Battery powers a second fan and an amplifier board with a speaker. The device turns on/off with a switch that sets the enable pin on the power supply to ground.
- A controller coded in C++ to use four buttons and a joystick to simulate keys.

The software RPG Maker VX Ace is only capable of exporting games to Windows systems. So, in order for us to run the game on the Raspberry Pi, we needed to first simulate an x64 system with a Windows operating system.

- Box64 - works by taking an x64 instruction and converting that to an equivalent set of ARM64 instructions while also applying optimizations to the code.
- Wine - intercepts the Windows API calls requesting Dynamic-Link Libraries and instead loads its own versions of these libraries that work on the system.

Case Design

- Used various tools from Tinker CAD and Blender.
- The dimensions of the case are 3.6 cm thick, 9.6 cm wide and 13.6 cm long.
- We left cutouts for the controller, speaker, SD card, some USB ports, a power switch, and a charging port.

Conclusion

In conclusion, the Pocket Quest represents the possibilities of portable gaming innovation, seamlessly blending hardware components with captivating gaming experiences. With its compact design, powerful performance, and immersive gameplay. Pocket Quest opens a world of possibilities not just for gaming enthusiasts but also aspiring game developers. Pocket Quest delivers an unparalleled gaming experience that fits in the palm of your hand.