Handheld Game Console

FINAL YEAR PROJECT -

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Introduction

- Console created using a Raspberry Pi and integrated into a case
- Intended to be an open development platform
- Market is lacking in handhelds of this type

Goals

- Create a battery powered Raspberry Pi
- Create a case to hold the Raspberry Pi, touch screen and controller together
- Create a set of drivers to manage communications between the controller and the console
- Create a game to test the system

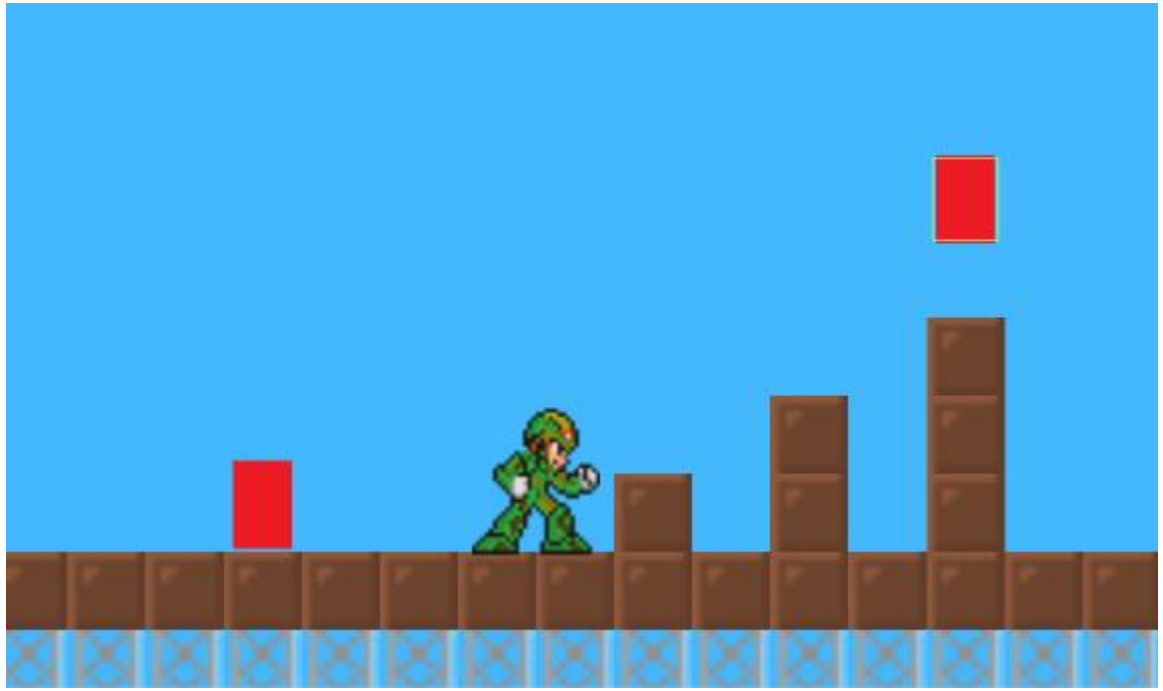
Requirements

- **Hardware**
  1. Usable without a keyboard and mouse
  2. Safe for prolonged use

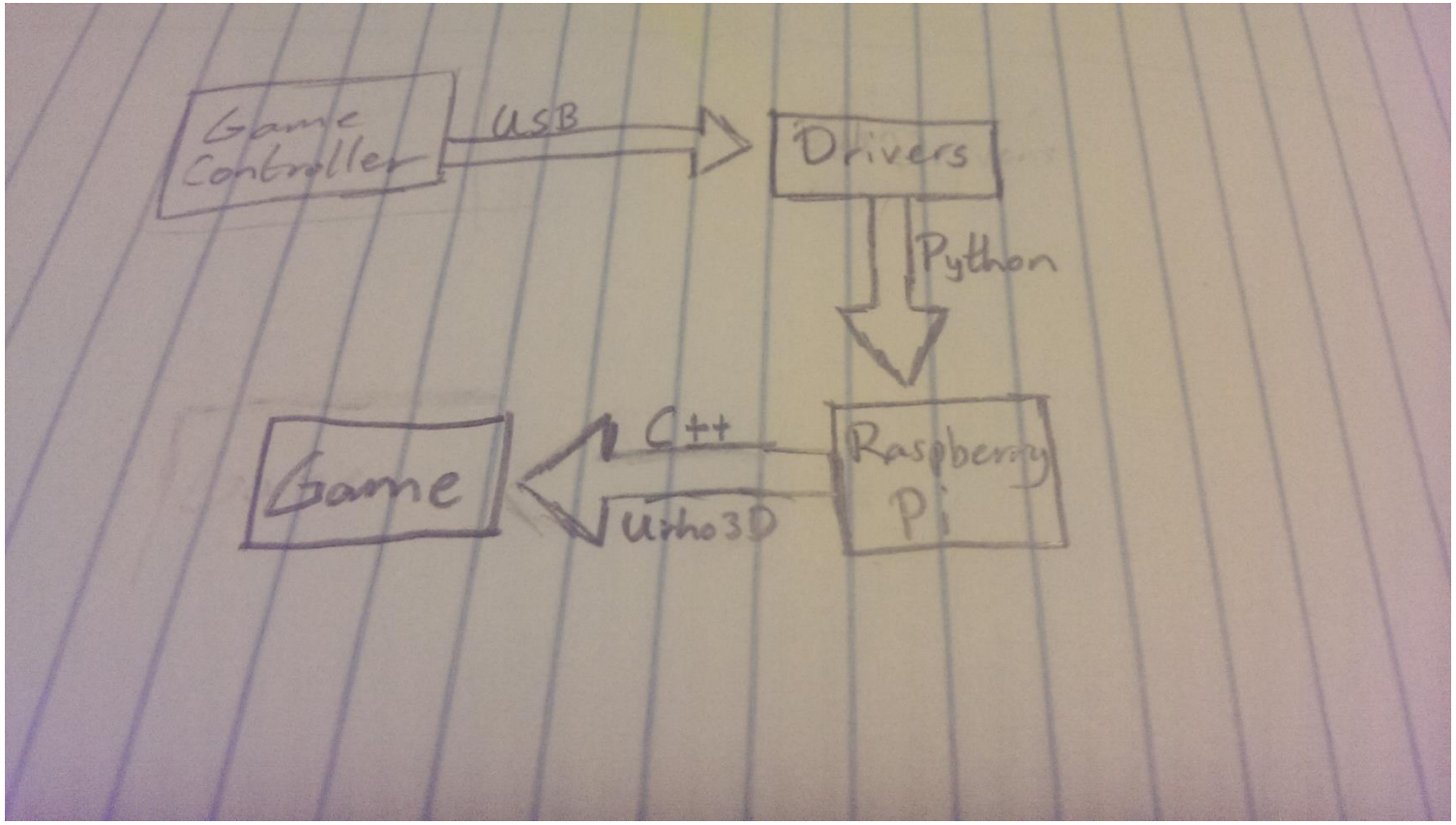
- **Software**
  1. Speed
  2. Accurate

Game Requirements

- Platformer
- Controllable using as few buttons as possible
- Predictable AI



Relational Diagram



Architecture and Technologies

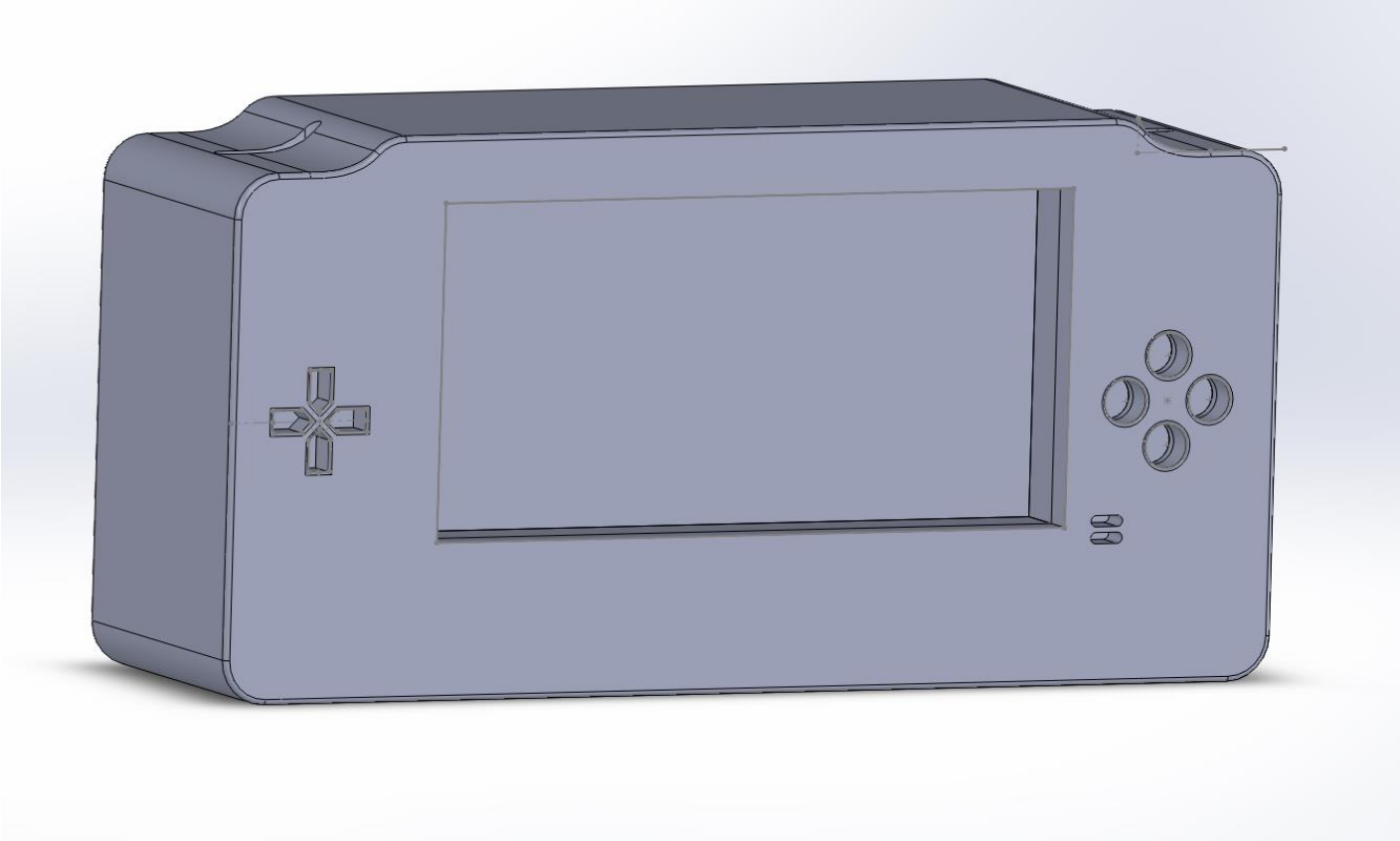
- Controller Drivers
  - Python
  - PyUSB

- Game
  - C++
  - Urho3D

Hardware Design Considerations

- Injury risks
- Comfortable Holding
- Lightweight design

Initial Case Design



Game Design

- 3 Key Components
  - Define Game Rules
  - Define Game Mechanics
  - Define Game AI

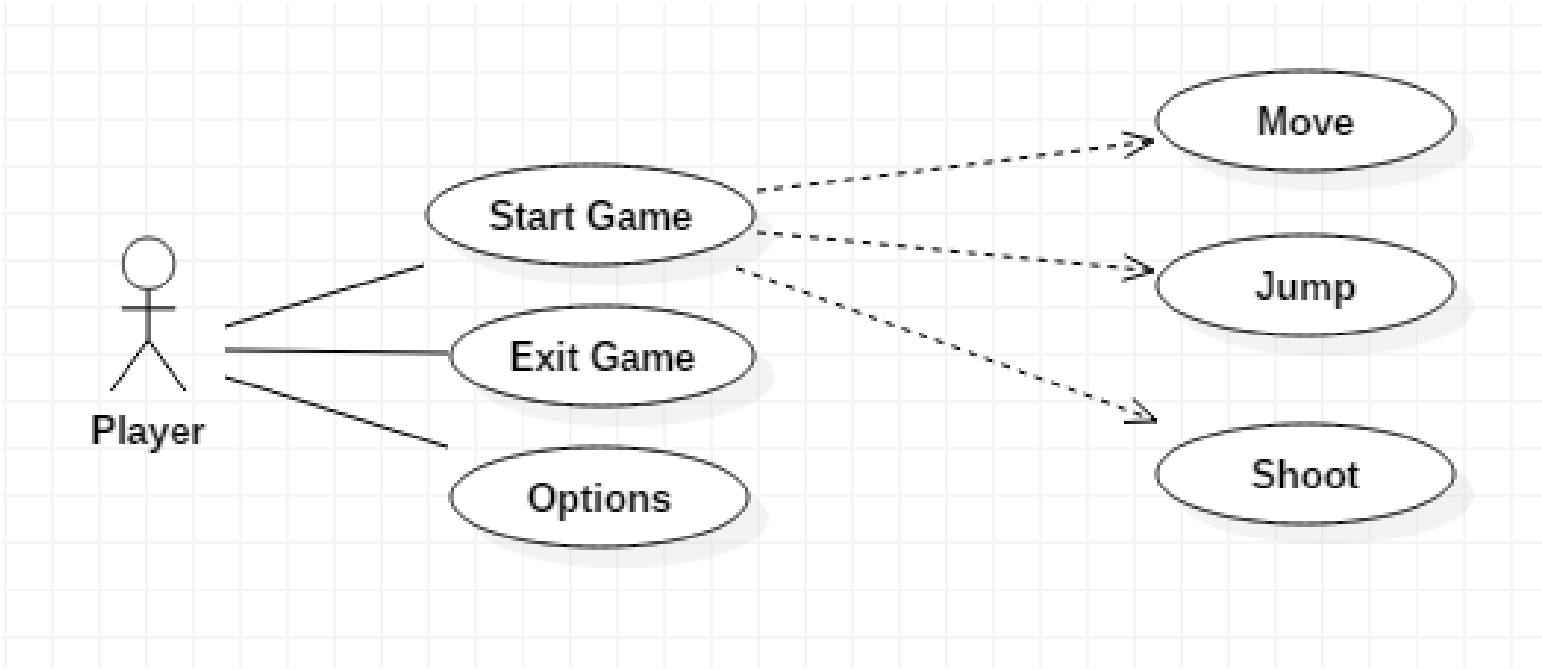
- Level Design
  - Dynamic Environments
  - Checkpoints
  - Bosses at the end of each level

Methodologies

- 2 Methodologies used in tandem
  - Scrum
  - Earnest Adams Design Methodology

- Implemented the Earnest Adams Methodology during the Design sprints within Scrum

Game Use Case Diagram



Testing

- White Box & Black Box testing
- Game for Testing
- Test cases
- User Based Testing
- Observational Testing
- Recorded Game Play

Prototype

- Game Prototype
  - Movement
  - Basic combat
  - Enemy AI

- Hardware Prototype
  - Touch screen connected to Raspberry Pi
  - Basic circuit for the battery is in testing

Thanks for Listening

Any Questions?