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SP3 Team 5 TDD

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# **Project Overview**

## **Game Concept**

The game will be a 3D Horror Adventure FPS game. Its progression with be linear with transitions between each level. There is a main hub that players can visit to shop for items.  
  
In each level there is wandering / hidden ghosts that the player can catch. The player will have limited inventory space to keep the captured ghost. The spaces can be increase by purchasing upgrades in the shop. Ghosts can be turned into ectoplasm (money) at the main hub, each ghost worth different value. Players can only capture weaken / defeated ghosts.  
  
By capturing a set amount of ghosts, the player will encounter the boss, the boss will run away after reaching a HP threshold and will run away. It can only be truly defeated and captured at the last level.

The player will not have HP, but instead will have a “Fear” factor. As fear rises, the player will have decreased vision, slower move speed and if it rises too high the player will faint and be teleported back to the main hub.

## **System Requirements**

OS: Windows 7/8/10  
Minimum Hardware:

* 1050 MHz Processor
* 256MB RAM
* 32MB onboard video ram
* 100MB Hard-Drive space available.

Recommended Hardware:

* 1.8 GHz Processor
* 512MB RAM
* 96MB onboard video ram
* 100MB Hard-Drive space available.

## **Third Party Library**

The game will use external libraries such as **irrklang** to use as a sound engine

# **Game Play**

## **Game structure / Game objects**

## **Physic**

## **Projectiles**

There only projectile in the game is the player’s bullets. These will not be affected by physics and will simply travel along a straight line until they collide with something.

## **Collision**

## **Player actions**

The player will take on the body of a Ghost Hunter from the Church of Harambe. And the Ghost Hunter is capable of the following actions:

* Walking around in a 3D world
* Looking around his environment
* Sprinting at the cost of stamina
* Interaction with Special objects
* Use weapons (Shoot and reload)
* Capture ghosts
* Access and check inventory
* Use items

## **Victory conditions**

The player wins the game when the Ghost Boss is captured. Each level is repeatable but the Ghost Boss encounter is not.

# **User Interface**

## **Game Menus**

The startup menu will consist of a 2D menu with the following choices:

* “Start Game” – This starts up the game.
* “Instructions” – This opens up the instruction screen.
* “Quit” – This closes the game and application.

## **In-Game Controls**

### **Movement**

Movement will take place with a standard 4-command strafing setup. One command will walk forward, another backwards, one of strafing left, and the last will strafe right. These commands are bounded to:

* W / S / A / D
* UPARROW / DOWNARROW / LEFTARROW / RIGHTARROW

### **Looking around / Aiming**

Looking around and aiming with the weapon uses the mouse. Moving the mouse with pan the camera in the corresponding direction:

* Moving up the mouse will pan the camera upwards.
* Moving down the mouse will pan the camera downwards.
* Moving left with the mouse will pan the camera towards the left.
* Moving right with the mouse will pan the camera towards the right.

### **Weapon control**

The firing / shooting of the weapon will be controlled by the mouse’s left click while the reloading of the weapon will be bind to ‘R’.

### **Shop**

Navigation of the shop and purchasing of items will all be controlled by the mouse.  
Left clicking an item / weapon will select it while left clicking buttons will trigger the action stated on the buttons.

### **Interacting with objects**

Interactions with other objects will be bind to ‘E’.

# **Graphics**

## **Features**

## **Formats**

# **Audio**

irrKlang is a powerful high level API for playing back sound in 3D and 2D applications like games, scientific visualizations and multimedia applications. irrKlang is free for non-commercial use.

## **Features**

The following features are available through the API:

* 2D/3D sound effects
* 2D music with support for compressed file formats
* Control of volume
* Multiple sound effects simultaneously

## **Formats**

irrKlang supports these following formats:

* RIFF WAVE (\*.wav)
* Ogg Vorbis (\*.ogg)
* MPEG-1 Audio Layer 3(\*.mp3)
* Free Lossless Audio Codec (\*.flac)
* Amiga Modules (\*.mod)
* Impulse Tracker (\*.it)
* Scream Tracker 3 (\*.s3d)
* Fast Tracker 2 (\*.xm)

# **Task List**

**MAIN FEATURES**

Terrain Collision (Barycentric Collision) - GUANG ZHE

AABB tree Collision - GUANG ZHE  
Shooting ghost (laser[rope style], grenade, gun[bullet]) - JASON  
Capturing ghost (Vaccum or laser or vaccum laser?) - JASON  
Simple AI [static] - SRI SHAM  
Sound (BGM, SFX, 3D Sound) (IRRKLANG) - JIAHAO  
GUI & INVENTORY - JIAHAO  
Minimap - SRI SHAM  
Night Vision - SRI SHAM

**SIDE FEATURES**

Main Menu - JIAHAO

Options screen - JASON

Pause screen - SRI SHAM

Inventory interface - JIAHAO

Shadows (soft shadow [poisson 16-sample]) - GUANG ZHE

Third person camera (extra) - SRI SHAM

Reflections - GUANG ZHE  
Different Weapons - JASON  
Church of harambe (Shop) - JIAHAO

Day Night cycle (Different ghost at different time) - SRI SHAM

Cel shading - GUANG ZHE

Rope physics (extra)

FBX loader - Sham & GZ

Save and load game (extra)

Level layout

Skyplane : Day & Night;

Level 1 : Indoor - Jason indoor

Level 2 : Outdoor - Jiahao outdoor

Level 3 : Jungle/Forest - Guang Zhe

Level 4 : Graveyard - Sri Sham

# **Timeline / Milestones**

## **Milestone Schedule**

## **Timeline**

# **Appendices**

The following lists contains the names of all object, textures and sound files used.

## **OBJ**

* ghostBoss.obj
* lamp.obj
* desk.obj
* chair.obj
* grave1.obj

## **Texture**

* Ghost\_level1.tga
* Ghost\_level2.tga
* Ghost\_level3.tga
* Ghost\_level4.tga
* ghostBoss.tga
* lamp.tga
* desk.tga
* chair.tga
* tree1.tga
* tree2.tga
* grave1.tga
* grave2.tga

## **Sound files**