**Technical Design Document**

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**Project Overview**

* **Game Concept**
  + The player wants to defeat all the evil enemies, who are destroying the world. He will have to slay or capture the bosses of the evil enemy to save the world.
* **System Requirement**

OS Windows Vista and above

* + Minimum Hardware
    - Intel HD Graphics
    - 512MB RAM
    - GeForce 400 series or Radeon HD 5000 series and above
    - 300MB Hard-Drive space available
  + Recommended Hardware
    - Intel i5 – 4470
    - 1GB RAM
    - GeForce 500 series or Radeon HD 7000 series and above
    - 300MB Hard-Drive space available
* **Technical Risks**
  + The game may not be able to work with the third-party programs.
* **Third Party tool**
  + irrKlang
    - irrKlang is a high level 2D/3D cross platform sound engine and audio library which is usable in C++, C# and all .NET languages

**Gameplay**

* **Game Structures / Game Objects**
  + Normal Stage
    - Platforms
    - Main Character
    - Enemies
    - Portals
  + Mini-Boss Stage
  + Boss Stage
    - Panels
    - Bosses
* **Physics**
  + Simple Velocity based for player/monsters movement
  + Friction(optional)
  + Simple Collision on Wall, Platform, Enemies
* **Projectiles**
  + Main Character’s basic attack
  + Main Character’s skill
  + Boss’s skills
* **Collision**
  + Wall
  + Enemies
  + Ground/Platform
* **Player actions**
  + The player will be capable of
    - Walking Left Right
    - Falling
    - Jumping
    - Walking into Portals
    - Shooting
* **Victory Conditions**
  + To defeat/capture all evil beings
* **Enemy Movement (A.I.)**
  + Monsters
    - Idle
    - Dying
  + Mini-Boss
    - Idle
    - Attacking
    - Captured
  + Bosses
    - Dying
    - Attacking
* **Source Control**
  + Framework will be saved in GitHub at the end of the day. Everyone will keep a backup copy of the framework after compilation.
* **File Format**
  + .dll
  + .exe – Release mode for framework
  + .tga – Loading textures
  + .obj – Loading objects
  + .ogg - Sound Effects and Background Music
* **User Interface**
  + Start-up Menu
    - “Play Game” - This is start the gameplay section
    - “Quit” - This will quit the program
  + Gameplay Section
    - Normal Stage
      * Health Bar - Both Player and Monster health bar
      * Charge Bar - To unleash a powerful charge attack
    - Mini-Boss Stage
      * Health Bar - Both Player and Mini-Boss health bar
      * Charge Bar - To unleash a powerful charge attack
    - Boss Stage
      * Health Bar - Both Player and Boss health bar
  + In-Game Controls
    - Keyboard Controls
      * Fixed key binds for general controls
    - Movement
      * Normal Stage
      * ‘A’ - Move left
      * ‘D’ - Move right
      * Spacebar - Jump
    - Shooting
      * ‘J’ - Normal Projectile
        + Normal and MiniBoss Map
      * ‘K’ - Charge Projectile
        + All Map
      * ‘L’ - Net Projectile
        + Normal and MiniBoss Map
  + Death Screen
    - “Restart” - Restart whole game
    - “Quit to Main Menu” – Quit to Main Menu

* + Win Screen
    - “Quit to Main Menu” – Quit to Main Menu
    - “Quit Game” – Quit the program

* **Graphics**
  + 2D sprites for Characters, Monsters, Bosses
  + 2D textures
  + Particles Effects

* **View Mode**
  + Static 2D Camera view
* **Audio**

o irrKlang is a high level 2D/3D cross platform sound engine and audio library which is usable in C++, C# and all .NET languages

* **Task List**
  + Game Objects
    - Main Characters
      * Player controls
        + Left walk
        + Right walk
        + Jump
        + Using portals
      * Sprite Animations
        + Walking
        + Jumping
        + Shooting
        + Using skills
      * Death Conditions
        + Lose all health points
      * Sound effects
        + Jumping
        + Shooting
        + Death
    - Multiple Monsters
      * Simple AI movements
      * Visual
        + Textures
    - Mini Bosses
      * Simple AI movements
      * Visual
        + Textures
    - Boss
      * Simple AI Movements
      * Visual
        + Textures
    - Portals
      * Transition
        + To next stage/level
      * Visual
        + Textures
      * Sound Effect
        + Using portal
    - Score System
  + Game Level
    - Level 1
      * Normal Stage
        + Win Condition

Process through portal

* + - Level 2
      * Normal Stage
        + Win Condition

Process through portal

* + - Level 3
      * Normal Stage
        + Win Condition

Process through portal

* + - Level 4
      * Mini-Boss Stage
        + Win Condition

Defeat/Capture Mini-Boss

* + - Final Stage
      * Boss Stage
        + Win Condition

Defeat Boss

* + User interface
    - Main menu
      * Play game
      * Help
      * Quit
    - Pause screen
      * Resume
      * Quit to main menu
      * Quit game
    - In-Game
      * HP bar
      * Action Bar
    - Death Screen
      * Restart
      * Quit to main menu
    - Win Screen
      * Quit to main menu
      * Quit game
  + Audio
    - Sound effects
      * Attacks
    - Background music

* **Timeline / Milestones**
  + 15/08/16 – Preparations of sprites/objects/frameworks
  + 18/08/16 – Creation of Levels/ Character controls/ Monster & Boss AI
  + 19/08/16 – All stages & levels is able to transition with one another. Character, monsters function properly (Start debugging)
  + 24/08/16 – Functions of character, monsters and bosses able to work properly in game (Start play testing)
  + 26/08/16 – Game is playable and functioning properly.
  + 01/09/16 – Finish polishing of Game.

**Team Sign-Off**

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