

Technical Design Document

Section 1 – List of Features Captured from GDD

List of Features Based on the Game Design Document:

- 3rd Person Camera
- Game world, including:
 - 3D objects
 - Characters
 - Tools that enhance players ability.
 - Buildings with walls corridors, doors, stairs, rooms and merely platforms
- Windows platform with Full-HD resolution
- Background story
- Different levels:
 - Varying difficulty
 - Varying challenge
 - Platform variation change
- Multiplayer
- Different tools for player that add variety to gameplay
- Audio and sound effects
- Chasing enemy – agent
- Realistic AI with appropriate animations
- Scoring system
- Informative HUD
- Menus
- Particle/Lighting effects
- Interactive objects / Pick Ups
 - Coins
 - Boosters

Choice of Game Engine

Unity game engine will provide all necessary functionality mentioned in GDD such as:

- Animations,
- AI
- C# scripting
- Rigidbody and kinematics.
- Tools for game environment setting and editing.
- Robust rendering
- UI – canvases.

- Particle system
- Player Prefs

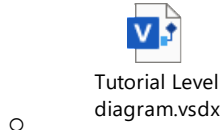
Section 3 – Schedule



Section 4- High-level Diagram to Illustrate Software Design

Layout diagrams:

- The layout diagrams demonstrate the layout of different levels in the game
- There is planned , at first, to implement 2 levels in the game
- Tutorial Level is shown in Figure 1 below



- Main Level is shown in Figure 2 below



Technology Diagram:

- The technology diagram indicates the technology that is going to be used for different aspects of the game and is displayed in Figure 3



Implementation Diagram:

- The implementation diagram illustrates the flow of the different stages of the creation of the game
- This diagram is displayed in Figure 5



Gameplay Diagram:

- This gameplay diagram is a simple flow chart of how to play the game, which is shown in Figure 6

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Gameplay
diagram.vsdX

Section 5 – Art Tools

- Blender
 - Version
 - 2.93
 - Features
 - Shaders
 - UV
 - Hard Surface modelling
 - Sculpting
 - Lighting
 - Texturing
- Sounds.org
 - Features
 - Sound effects for pick-ups and UI interaction

Section 6 – 3D Object, Terrain & Scene Management

3D Objects:

- Basic uniform platforms
- Coin
- Red Bull drink
- Potion Flask
- Player character
- Enemy character
- Small house
- Medium house
- Large house
- Plank as a bridge between house for player to cross.
- Small box
- Medium box
- Large box
- Tutorial Level Base platform
- Exploding particle

Specific textures (decals):

- Finish flag textures
- Obstruction Warning texture
- Hint texture

Scene management:

- HDRIs
 - Dark sky
 - Daylight sky

Section 7 – Collision Detection Physics & Interaction

- Collision
 - This is where there will need to be detection of the intersection of two or more objects within the game
 - Character cannot walk through objects – except kinematic objects like collectables
 - Characters will need to jump over items or walk round items as characters cannot walk through the items
 - Collision detection will be needed for when:
 - Jumping from one platform to another, as the collider would act as trigger for new platform to spawn.
 - Collectables, when collision is triggered coin is going to suicide.
 - Player jumps, ground detection
 - When doing projectiles
 - To enforce collision detection in the game:
 - Sphere, box colliders provided by game engine could be used
- Physics
 - This is the component that makes the game real,
 - objects and players must react to player input and player decision, platform spawning
 - Friction and gravity
 - Physics will be used to:
 - Pick up items
 - Locomotion,
 - Interaction between chaser and player
- Interaction
 - This is how characters interact with the game world
 - Interaction with object/item
 - Game over detection, when player falls
 - Collecting coins
 - Picking up tools/weapons
 - Interaction between chases and player
 - Platforms in order to trigger new platform spawn.
 - Chaser Interaction:
 - Interacts with player, can catch him if he gets with in the player's collider zone.

- Follows player

Section 8 – Artificial Intelligence

- Chasing agent will use AI
 - Chasing agent will loop until he catches the player

Section 9 – Audio & Visual Effects

Audio Effects:

- Free sounds from the internet
- Download background theme music from the internet.

Visual Effects:

- Free visual effects from asset store (particles)

Section 10 – Delivery Platform & Hardware/Software Requirements

Delivery platform

- PC Windows platform

Minimal Hardware Requirements:

- Dual core processor
- 1 GB RAM
- Keyboard
- Mouse (optional, as game can be played only with keyboard)
- Monitor
- Speakers
- Hard drive
- Graphics

Software Requirements:

- Windows 7,8,10
- Direct X version 9, 10, 11 ,12