



GAME DESIGN DOCUMENT

“Pandemonium”

2D Platformer

Elena Makarenko
G00341964

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Section 1 - Research

1. Single Screen

As it is obvious from the name each game level takes place on just one screen. Another common feature is that the game gets progressively harder with each level just by adding more features to the same scene. Examples: Dig Dug, Frogger, and Pac-Man.

One of the subtypes of single screen games are [Board Games](#).

They are traditional games like chess, checkers and backgammon that are taken directly from the board and recreated on the screen.

2. Side Scroller

A more advanced version of a single screen game where the background scene moves from side to side, either from right to left or from left to right. The player character generally stays in just one place during the whole game. The game is generally viewed from a side camera angle and they are often used in platform game genres. These games generally feature the main character running, climbing, and jumping through various levels. Super Mario Bros is the most common and famous type of side-scroller game.

This type of 2D game can generally be put into one of two categories: walker games and [Shooter Games](#). Walker side scrollers, such as the popular Pitfall, involve the main characters simply traveling through the levels. They must jump, run, or crouch in order to avoid dangers and to try to make it through the level without being killed.

Shooter side-scroller games usually begin with the players in charge of a ship that will fly in one direction but that can move up and down on the screen. They must face a growing number of enemies as they try to defend their land and shoot down enemy ships.

3. Scrollers

In comparison to the previous type where the background moves horizontally, these games tend to scroll vertically up and down, and the player has an aerial view of the level. Racing game tends to be one of the earliest and most popular examples of this game type. The vehicle is stationary on the road while the road moves. It tests player's reaction to collect bonuses and avoid crashing into other elements. Other common scroller game themes would be skiing and climbing skyscrapers.

4. Platform Games

In platform games the player can move the character in any direction while the background stays still. It provides more control over the character which can make this type of game more exciting for the player.

These games have suspended platforms that players can reach by jumping up or falling back down but they must do so while still trying to avoid obstacles and enemies, which makes this type of game a little more difficult. The platforms generally are not at the same height and make very uneven terrain that can be difficult for some players to easily traverse. Players have control not only over the direction in which their characters will move and jump but also the distance and height of their jumps, which helps them to try to land on the platform instead of falling, possibly to their death.

Examples: Donkey Kong Jump Bug and Super Mario Bros.

Section 2 - Game Design

1. Game Description

Pandemonium is a 2D platformer with elements of shooting developed using Unity game engine. The idea was evoked by memories of Super Mario, but it needs to be done in a new design. The playable character moves in a 2D plane, exploring the city, the capital of Hell. The goal of the game is to make your way out of hell and back to real life. Throughout the game the character will have to jump over and avoid obstacles, collect health points and fight enemies.

The *target platforms* are Android and UWP.

The *target audience* are mobile and/or desktop gamers, aged over 16.

2. Game Levels







This game is supposed to have 9 levels representing 9 Circles of Hell (according to Dante's Inferno) but for the sake of simplicity should be made into 4 (but could be expanded).

Levels are based on the same layout, more assets are introduced in the game with each level increase, which adds complexity to the game, without changing the overall layout of the level. After each completed level a message "Level Completed" is displayed.

Levels:

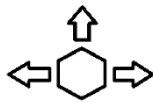
1. Gluttony
When the game starts the character is dead, so the goal of the first level is to collect health points.
2. Greed
This level adds lightning and fire that needs to be avoided by the player, otherwise health points will be lost.
3. Violence
This level adds demons (enemies) which the player will also need to fight.
4. Heresy
This level will change the control scheme for the player. For example, when the player hits the left arrow button the character moves to the right.

3. Assets (are subject to change)

1. Player (idle, run left/right, jump, attack, die)	skeleton	
2. Damage	fire	
	lightning	
3. Enemy	flying demon	
4. Health items	hearts	
5. Health bar		

4. Game mechanics

- Desktop
 1. Player is controlled by arrow keys: run to the left - left arrow key/A, run to the right - right arrow key/D
 2. Up arrow key/W - jump up
 3. Space key - shooting
- Mobile
 1. Player is controlled by arrow keys: run to the left - left arrow, run to the right - right arrow (buttons at the bottom right corner of the screen, see picture below).
 2. Tap once – jump up
 3. Hexagon - shooting

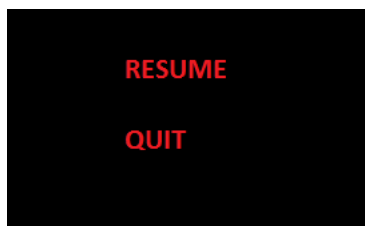


5. User Interface

- Main menu



- In-game menu



Section 3 – Links

<https://amazinggameroom.com/video-games/types-of-2d-games/>

<https://itstillworks.com/12342409/types-of-fun-2d-games>

http://marceltau.com/files/Arcana_Project_GDD.pdf

<https://assetstore.unity.com/packages/3d/characters/humanoids/rpg-skeleton-35463>

https://www.youtube.com/channel/UCYbK_tjZ2OrIZFBvU6CCMiA

Section 4 – BDD Test Cases

1. Feature: control buttons

1.1 Scenario: pressing up arrow key/W key

GIVEN game is in a play mode

WHEN up arrow key/W key is pressed in levels 1-3

THEN the playable character jumps

1.2 Scenario: pressing left arrow key/A key

GIVEN game is in a play mode

WHEN left arrow key/A is pressed in levels 1-3

THEN the playable character runs to the left

1.3 Scenario: pressing right arrow key/D key

GIVEN game is in a play mode

WHEN right arrow key/D is pressed in levels 1-3

THEN the playable character runs to the right

1.4 Scenario: pressing space key/hexagon

GIVEN game is in a play mode

WHEN space key/hexagon is pressed in levels 1-3

THEN the playable character shoots

1.5 Scenario: pressing up arrow key/W key

GIVEN game is in a play mode

WHEN up arrow key/W key is pressed in the 4th level

THEN the playable character runs to the left

1.6 Scenario: pressing left arrow key/A key

GIVEN game is in a play mode

WHEN left arrow key/A key is pressed in the 4th level

THEN the playable character shoots

1.7 Scenario: pressing right arrow key/D

GIVEN game is in a play mode

WHEN right arrow key/D is pressed in the 4th level

THEN the playable character jumps

1.8 Scenario: pressing space key/hexagon

GIVEN game is in a play mode

WHEN space key/hexagon is pressed in the 4th level

THEN the playable character runs to the right

2. Feature: collision

2.1 Scenario: decrease of health points

GIVEN game is in a play mode

WHEN the playable character object collides with fire and/or lightning object

THEN it loses health points

2.2 Scenario: increase of health points

GIVEN game is in a play mode

WHEN the playable character object collides with a heart object

THEN it gets health points

2.3 Scenario: death of the enemy object

GIVEN game is in a play mode

WHEN the playable character object shoots the enemy object

THEN the enemy object dies

2.3 Scenario: decrease of health points

GIVEN game is in a play mode

WHEN the enemy object shoots the playable character object
THEN the playable character loses health points

2.4 Scenario: defining limits of the game space
GIVEN game is in a play mode
WHEN any dynamic object reaches the limits of the platform
THEN character should not move out of the screen/specified area

3. Feature: menu

3.1 Scenario: loading new game
GIVEN game is in a main menu
WHEN start new game button is clicked
THEN a new game is loaded

3.2 Scenario: resuming game process
GIVEN game is in a main menu
WHEN continue button is clicked
THEN the last saved game is loaded

3.3 Scenario: exiting application
GIVEN game is in a main menu
WHEN exit button is clicked
THEN the game is saved, and the application is shut down

3.4 Scenario: in-game menu loading
GIVEN game is in in-game menu
WHEN resume button is clicked
THEN the played game is loaded

3.5 Scenario: main menu loading
GIVEN game is in in-game menu
WHEN quit button is clicked
THEN main menu is loaded

3.6 Scenario: pausing the game and display of in-game menu
GIVEN game is in in-game menu
WHEN esc button is pressed on desktop/back button is pressed on mobile in-game menu
THEN game pauses and in-game menu is displayed

4. Feature: levels

4.1 Scenario: end point of the game
GIVEN game is in a play mode
WHEN all health points are spent
THEN the playable character dies and the same level loads from the start again

4.2 Scenario: end point of the level
GIVEN game is in a play mode
WHEN the playable character finishes the level
THEN a message "level is completed" is displayed and new level is loaded