

Prototype 2 - Design Document

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05 August 2019

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1 Game Overview

1.1 Game Concept

The plan is to bring back that old school arcade game feel in the form of *Pinball*. We plan on keeping the same basic level design as the original game but the level is looked at, analysed and justified as if the game was our own creation and we were designing it from scratch. The game will only be played with one ball to minimise the allowance for mistakes made by players and to force players to challenge themselves at the game to build skill. The plan is to put more emphasis on the game being skill based. The skill comes in the player pushing themselves to see how far they can go through prediction and the manipulation of the game system.

1.2 Game Flow Summary

The player is limited to controlling two little paddles at the bottom of the screen. These paddles are separated by a gap just big enough for the ball to fit through. The player can move each of the paddles individually on button input in order to try to prevent the ball from falling through the game between the paddles and keep it in play. The ball is manipulated by both the player and the levels layout.

1.3 Look and Feel

1.3.1 Basic Layout Structure

The structure of the game is consistent with that of *Space Pinball*. See *figure 1* for reference to the following:

- Score and time found on the top corners of the screen.
- Black Outlines: solid areas ball does not pass through.
- Orange Arrows: indicate passages the ball may travel through.
- Red: Barriers
- Purple: Player paddles
- Yellow: Barriers that bounce the ball in an erratic manner.
- Dark Blue: Objects that provide score when the ball bounces off them. Have little affect on the movement of the ball.
- Light Blue: Provide more points on hit than the dark blue objects. Affect the ball movement much more.
- Green: An area that slows the ball down slightly when it passes through the passage.
- Pink: Passage that speeds the ball up.



Figure 1: Basic Layout Structure

1.3.2 Basic Art Layout

The theme of the game is a horror and as such the aesthetic consists of severed body parts and organs. The art and particle effects were designed to add juice to the game and align with the theme, but not distract from the game and over power the ball. That is why the ball is silver as opposed to the rest of the game that is in shades of red. The sound of the game is also to communicate to the player the impact they are making on the game and that the game is alive. See *figure 2* for reference to the following:

- Dark Blue: Eyeballs
- Red: small finger bones
- Light Blue: Heart
- Yellow: Kidney or lung
- Purple: Severed fingers
- Textured background in the colour pallet. Created using four shades for depth
- Trails of guts for the background set outside of the games playing area.
- Font for time and score sticks out from the background and are easily visible to the player throughout the game.
- Ball: Metallic finish on the pinball.
- Subtle arrows so as not to draw too much attention and distract the player.



Figure 2: Basic Art Layout

1.3.3 Animations

All animations are to be done using 2D sprites.

- Rolling ball animations.
- Heartbeat. Small pulse due to the size it takes up in the game space.
- Eyes looking around randomly and at the ball on certain occasions.
- Lungs and kidneys pulsing a little.

1.3.4 Colour Pallet for Background

The background is to be less saturated so the colours dont conflice with the actual game. Keeping paddel shape as is and creating fingers to fit the mold of the paddles. Assets sized appropriately (not too big or too small) so that they are easy to implement in the game environment and do not look awkward. See *figure 3* for colour pallet.



Figure 3: Basic Layout Structure

2 Gameplay and Mechanics

2.1 Gameplay

2.1.1 Game Progression

While the structure of the game remains the same the game progresses as the speed of the ball increases and the player is required to increase their skill and reaction time to keep up with the progression of gameplay.

2.1.2 Challenge Structure

The environmental objects such as boundaries and obstacles are strategically placed to increase unpredictability in the game offering challenge to the player. Two environmental obstacles that bounce the ball unpredictably are placed above the paddles the player uses to hit the ball to increase the focus the player has when the ball is falling down towards the paddles because there is a high chance the ball might hit these obstacles. The game elements the player has to hit with the ball to gain points are also strategically placed to challenge the player to try and aim the ball when hitting it. Certain ramps and tunnels also aid in guiding the player to points and challenging them to try and aim to get the ball into those tunnels and ramps. Certain ramps increase and decrease the speed of the ball challenging the player to keep adjusting their game play and reaction time according to this change in speed. As the ball naturally increases speed over time the ramp that decreases the speed of the ball gives the player an advantage and the option to decrease the challenge of the game, however they need to successfully aim for that specific ramp which is a challenge in itself.

2.1.3 Objective

The objective of pinball is to keep the ball from falling out of bounds by hitting it with the paddles when it reaches the bottom and acquiring points by hitting certain elements in the game with the ball. The player should aim to keep the ball from falling all the way down and acquire the most points.

2.1.4 Play Flow

As pinball is a game about predicting the ball, angle to hit the ball, with some unpredictability added by environmental objects the ball can bounce off of, the game starts with the ball at a speed the player is able to predict easily and get use to the controls and environmental elements of the game. With a slower speed the player is able to understand the level and placement of tunnels, ramps and score areas allowing them to practice aiming for those areas. The player will notice the speed of the ball gradually increase and will have to increase their reflex's. Because there are elements within the game that causes the ball to bounce unpredictably the flow of the game and predictability of the ball is sometimes disrupted sending it flying around, the player's rhythm and calm is disrupted requiring them to act fast and be alert. This further aids to the immersion of the player into the game and possibly sets up epic moments within the game by letting the player feel excitement from hitting the ball when it is in this frenzy and bouncing around.

2.2 Mechanics

Player moves the paddles to hit the ball. If the ball drops below the paddles the game is reset. The player scores points when their ball hits interactable objects. The balls movement is based on real

world ideal physics with conservation of momentum when the ball hits objects.

2.2.1 Physics

The game is based off real world physics with the plane of play being a tilted table, whereby the ball will roll down due to gravity because of the slope. Each of objects the ball can hit or roll on has no friction. Each of the objects the ball can hit has an ideal conservation of moment whereby they will bounce off the object with the same velocity as before.

2.2.2 Objects

Within the environment there are several objects for the player to interact with. The objects are a heart, eyes, lungs and fingers. The ball does move these objects but does interact with them.

2.2.3 Actions

The players main actions are using A and D to move their finger paddles. The paddles are used to knock the ball around the map and to stop the ball from falling. The ball interacts with the heart, eyes and lungs by adding a score whenever the ball hits these objects. As a rule, interactable objects play and idle animation and play a sound effect when they are hit.

2.2.4 Economy

There is no true economy to the game, however the player can score points, which determines how well the player has done. The player scores points when they hit the interactable objects, the scoring goes as follows with the lungs being the easiest to hit they give the least points with 5. The eyeballs being the next easiest to hit give you 10 points. The heart being the hardest gives the player 20 points.

2.2.5 Replaying and Saving

The game restarts when the players ball drops below the paddles.

3 Levels

At the start of the game the ball shoots from the bottom right and out the top right of the game. The ball has to fall down right to the bottom of the paddles before the player has to interact with it. This allows the player time to anticipate the ball before it reaches them. The level is set up so the ball will interact with at least two different environmental aspects before the player has to interact with the ball. The player also gets to see how the ball interacts with the environment as it falls down to the paddles to understand how they accumulate score and what causes the ball to move certain ways.

There are two environmental elements close to the paddles that causes them to bounce erratically creates suspense when the ball is falling towards the paddles because of the unpredictable manner the ball might be bounced. The two elements are also positioned where they can play off each other bouncing from one side to the next, testing the players ability to keep track of the ball and their reaction time. This increases the players immersion and concentration in the game.

There are a possible 5 paths for players to shoot the ball. Two paths are placed at almost perfect

angles that the player is able to aim and strategize for. Players successfully hitting the ball into these paths gives the player the feeling of control and direction. Two other paths the player can hit the ball in are more difficult to aim for. This gives the player a challenge to manipulate both the ball and paddle and aim for. Successfully doing this is a potential set up for an epic moment. Arrows in the game guide new players as to where the ball can go and the direction it is to go in when it enters certain paths.

The distance between each paddle when held horizontal should have a space just a little bigger than the size of the ball so the ball can potentially fall through but the player has a chance to save the ball if quick enough.

The game is designed to focus on the skill of the player and therefore the environmental objects that the ball can bounce off are limited and strategically chosen so the predictability of the game is not lowered. With too many environmental factors on the ball it would bounce around a lot more, requiring less input from the player, either making the game too difficult or breaking the immersion of the player. There needs to be a balance between predictability for the player and unpredictability due to the environment.

4 Interface

4.1 Visual System

There is a menu upon launch of the game that provides players with instructions on how to play the game and gives hints as to the aesthetic of the game. During the game the score can be seen at the bottom right of the screen so players are more inclined to notice it as it's close to the player paddles.

4.2 Audio, music, sound effects

The game has an upbeat soundtrack to enhance the player immersion and to compliment the fast pace of the game. There are multiple auditory cues to tell the player what objects the ball has hit and what score corresponds to that object/sound. The sound of the objects is also muffled by the background music so as to prevent it from becoming too annoying and put the player off.

5 Technical

5.1 Technical Hardware

The game is created for computer/PC operation solely and is created to use up much less processing power allowing even lower performance laptops and computers to run the game.

5.2 Development hardware and software

The game was developed on *Dell Inspiron 15 7000 Gaming laptops* using the *Unity* game engine. Art assets were developed using *Krita* and 3D models were created using *Blender*.