

Penta Design Document

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Inspiration

The inspiration for Penta was relatively original. Honestly I can't think of many game examples or similar projects that have been done in the past. It's basically a top-down sidescroller with a geometry theme. The player controls the green pentagon, Penta, with the mouse (goal is to add touch interaction at a later date) while other pentagons fly across the screen. The player must avoid touching the black shapes, while also collecting the colored shapes. Some colored pentagons increase the player's score, others increase its size. In some ways it is similar to a bullet hell game like *Raiden 2*, or *Vulgus*. The idea is to have many continuous waves of enemies with a single character (the pentagon, or Penta) being controlled by the player to dodge these enemies. However, I wasn't planning on incorporating weapons or bullets into the game. The enemies, will be different shapes, and they will serve as the bullets themselves.

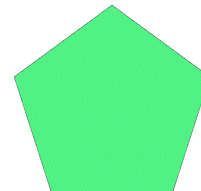
High Concept/Abstract

A top-down side scrolling adventure where the goal is to escape the forced corruption of other geometric entities by avoiding contact with them. To succeed the player must progress through wave after wave of shapes without allowing his shape (Penta) to come in contact with the other shapes. The goal of the experience is to create a fast, enjoyable, level-progressing game that is simple and easily approachable. There isn't a deep story or plot behind the experience; it is merely supposed to be simple and easy to play.

Characters

Penta

This is the main character throughout the experience. Penta doesn't exhibit much emotion; he is a mere pentagon being controlled by a higher being ("the user"). Even if he doesn't express much feeling there is one thing he doesn't like. That is touching other shapes. The main goal throughout the experience is to control Penta by mouse, or hopefully by touch



interaction, to avoid the black evil shapes known as Geoms. These shapes want to do evil things to Penta. He must avoid contact with them at all costs.

Geoms

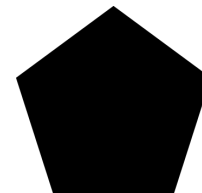
These are the enemies of the experience, and the bane of Penta's existence.

They are usually black or dark and ominous colors. Penta's goal is to avoid touching these shapes. They are evil creatures, and sometimes their paths are random and

spontaneous. They are evil beings and Penta wants to avoid them. Throughout the journey

through "Shapeful", the world that I'm referring to as the space where Penta lives, these Geoms will

take different colors and have different abilities. This will add to the gameplay and overall different experience for the player.



Story and Game World

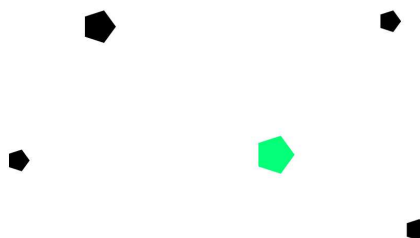
The majority of the game world takes place on a blank and lifeless slate devoid of any natural organic life. I've been referring to the space as "Shapeful."

Essentially the only creatures inhabiting the world are various geometric objects not necessarily tied to any physical relation. The world is composed of these simple shapes and that's about it.

SCORE:

Level 1

LIVES:



Gameplay

Camera

The camera will stay in a fixed position for the entire experience. I chose this design element because I wanted Penta to feel like he was being surrounded by shapes, as opposed to running or fleeing from them.

Genre

This game is somewhat unique in that it doesn't fall into a pre-established genre tightly. It has side-scrolling elements, as well as "shape-dodging" elements.

Levels

My goal is to have at least 3 different levels. Each level will have a different aspect of enemies. This may be a higher number of enemies, enemies that follow a different path, etc. A new level will appear whenever the number of geoms has decreased to zero for that certain level.

Player Capabilities

The player's main job is to drag Penta around the screen and avoid the other shapes. There will not be much other to control aside from navigating the shape. I might incorporate powerups later into the development, depending on time restraints.

Enemies

The enemies of this game are black shapes called Geoms. These will fly through the screen each level. Every time that Penta comes in contact with a Geom, Penta will lose a certain amount of health, determined by the type of Geom that she comes in contact with. There will be different Geoms that will have certain properties and abilities that make them unique to each other and hazardous/dangerous in different ways.

Hazards/Powerups

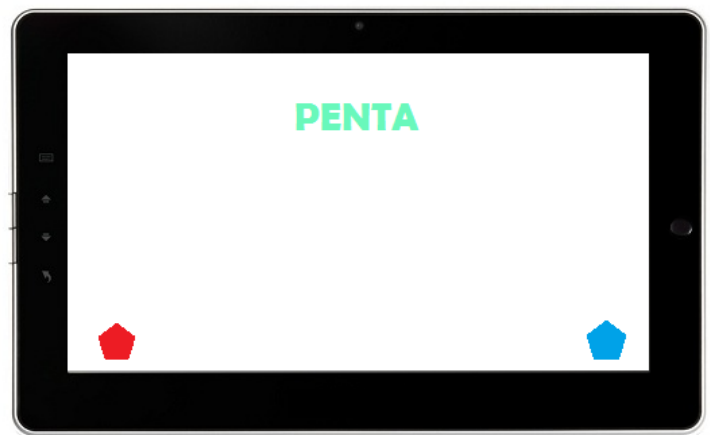
Depending on the development rate of the project, I want to include powerups that Penta can pick up. These might slow the speed at which enemies come in, add an extra life, etc. I also want to add random hazards that aren't necessarily enemies but may have an undesired effect on Penta.

Victory Conditions

The game is won by avoiding all the black pentagons, collecting all the colored pentagons, and still surviving with a certain number of lives by the end of the game.

Controls and UI

On a PC the player will be able to grab Penta, and drag her around the screen, trying to avoid the other shapes. The mouse will be used entirely for this functionality. The keyboard will not be used at all.



At a later date I hope to incorporate touch interaction into the game. I imagined this game could be ported to mobile relatively easily, and I could easily see Penta being dragged around the screen with a finger. The HUD will display the level number, the number of lives Penta has, and the current amount of health she has as well.

Art

The art style for Penta is simple and clean. Bright solid colors will be shooting around the space probably over a white background. There will be very few colors. Basically the entire experience will be composed of simple bright shapes. There will not be any realism tied to the game, nor will there be any objects or elements tied to the real world (i.e. Humans, Natural Resources, Buildings, etc).

Sound and Music

I intended for the game to be played in an electronic, tech-sounding world. With blips and bleeps of chip-tunes and other electronic music. I intend to find this music from freemusicarchive.org.

Technical Issues

Throughout the project development I encountered various technical problems. I had to make a choice what to do, and figure out a solution to overcome the obstacle.

1. One issue I faced was whether or not I wanted to procedurally generate the enemies for the game, or create separate movieclips and instance them within my code. I decided to avoid the generation, and just have a couple separate enemies on screen with timeline functionality. This fit for Penta, because I only wanted to have a couple enemies within the game anyway.
2. I needed the background music to play once, and not continually playing over itself throughout the game. To remedy this problem I used a boolean flag, to check to see if the song had started playing. This solved my problem perfectly and now the background music will just play in the background once.
3. My final problem, and probably the biggest as well, was how I could use hit tests to manage the removal of objects from the stage. The snippet of code that Professor Jefferson released was exactly what I needed to manage the collision of objects with Penta. Now when I touch a pickup it's removed from the display list, and the game doesn't break.

Code Snippets

The only external code that I used in this project is from Professor Jefferson. He released a function that handles removing pickups from the screen. The functions are located in the Document class and are titled levelCheck, and nextLevel, and doLoop. This was exactly what I needed to manage the collision of my objects.

Above and Beyond

I put a lot of thought into designing the visual and aesthetic elements of Penta, while also trying to keep it fun and game like. I created an experience that can easily be expanded with new features and levels.

Class Diagram

