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Tetris Design Document

The Game

Tetris is a 2D game in which the player must change the shape of certain blocks so that they may fit into certain shapes on the bottom of the screen. The blocks are constantly moving downward and the player must change the shape as it is moving down before the block reaches the intersection. This mechanic works much like solving a jigsaw puzzle with pieces slotting into each other.

Reason

This assignment is about recreating an existing game and I wanted to create a game where I could learn new programming skills and show some of the skills that I have already gained and I think that tetris is the perfect game for me to do that. Also tetris has always been a favourite game to play for my mother and father so this will be a real pleasure to re-develop.

Setting

The game will be set underwater and the blocks will act like sinking cargo, I want to go with this setting because it feels more real with the blocks slowly moving down. There will be sand and lost treasure on the bottom of the screen with the waves on the top of the screen and the blocks will be wooden boxes. This will all be in 2D and will be drawn using the in built shapes. The background will be a light blue colour with various bubbles rising up from the bottom showing some nice particle effects, which gives more of a feeling of being underwater.

Character

There will be a small character on screen which will walk from right to left constantly and will fall down if there is a drop. If this character reaches the top of the water the character dies and the game ends but if the character reaches the bottom the player wins and the next level is loaded.

Objective

The main objective of tetris is to slot various blocks into other certain blocks that are beneath them and in this game the player will be doing that but will also be conscious of the character and try to destroy blocks and allow the character to reach the bottom.

Feature Set

General Features

Grid
Blocks
Sea
Gravity
Jigsaw
Helpless character
2D Graphics
Scenes - Start, Main, Win, Lose

Gameplay

Movement - The player will be able to move the blocks left and right using the A,S,D keys to line up the block so that it will slot into place. The player will also be able to move the blocks down making them slot in faster.

Rotate blocks - The player will use the spacebar key to rotate the blocks at 90 degrees so that they can fit them into the spaces needed.

Blocks - The blocks will be spawned at the top of the screen out of view and will come down from the top in the center of the screen. These blocks will be randomly generated but will be certain predetermined shapes.

Destroy blocks - When there is a perfect lines of blocks filled up across the screen, all the blocks that fill up that space from the top of the blocks to 4 grid points below will be destroyed, this will allow the character to move down and get closer to the bottom.

Points - points will be given for each block being slot in correctly and if a section of blocks is destroyed a good amount of points will be given.

Levels - Each level will be procedurally generated and the blocks will be set up in a grid system, this grid however will not be visible to the player but will work as a guide for the blocks and level generation.

Water - The water level will drop over time and if the character is above the water, they will die.

Collision - All the collisions will be created using coordinates and if statements.

<u>The World</u>

Key Locations

The character will be spawned on top of the blocks positioned on screen and will start moving left or right. The blocks will fall down from the top of the screen in the center.

Screen size

1280 x 720

Objects

Blocks - wooden rectangular shaped
character - fish
waves - triangles at the top of the screen
set blocks - different coloured blocks
treasure chests - various chests to give off environmental effect
bubble particle effect - represent underwater

Difficulty
The water will start dropping overtime which will increase the difficulty the longer the level is being played. When a new level is started the water level will be back to normal and once again start dropping over time.

Game Engine

This game will be developed using Processing 2.0 and will be coded in Java. Everything in the game will be coded excluding the music but functions for playing music etc will be coded.

Graphical User Interface

Start Screen - The start menu will consist of:

- Player instructions and controls
- “Play” button
- “Quit” button

Lose Screen - The losing screen will consist of:

- “Restart” button
- “Quit” button
- Text Box - You killed the fish!!
- Score
- Picture of fish dead

Player View - There will be a score screen on the left side of the window and this will hold the player’s current score and will also have a spiral shape that gets more colours attached and grows bigger each time the score goes up.

Controls - The controls for the game are as follows:

- Move block down - The player must press the **S** key
- Move block left- The player must press the **A** key
- Move block right - The player must press the **D** key
- Rotate block- The player must press the **Spacebar** key

Music

SoundTrack - There will a calm ambient soundtrack playing in the background, as this game is under the sea, I want to give a relaxing mood to the music.

Sound effects - There will be sound effects for the blocks moving, rotating, slotting into place, hitting off other blocks, the character moving, falling and dieing. There will also be sound effects for getting points, buttons and background sound effects such as waves and bubbles.

Single Player Game

Tactics - This game is all about spatial awareness and matching up blocks so the player will have to concentrate on where the place the block and which angle to rotate the blocks at.

Hours of gameplay - This game can go on for as long as the player is willing to play. As the levels will procedurally generated, the game will be never ending.

Victory Conditions -

- Win - The player will win a level if the character reaches the bottom of the screen
- Lose - The player will lose if the character reaches the top of the screen