Recycling Wars

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Game design

The game consists of one scene where the gameplay takes place.There are two player sprites who battle each other in the recycling war. Player 1 sprite starts on the left side of the screen and Player 2 sprite starts on the left side of the screen when the game begins. Each player has an attack ability that throws different recyclable materials:

 -glass jar

-newspaper

 -laundry detergent container

 -drink cup

 -spray paint can

 -cardboard box

 -water bottle

 -paper bag.

The goal of the game is for either of the players to fill their bins and then throw a final piece of recyclable material at the other player to win the game.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	1	0	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1
2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	2	2	2	2
8	0	0	0	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1

The background is a tile map made of tiles that are sprites that have different interactions in the game. The tile map is stored in a file called Map.csv that can be edited for unique gameplay experiences. Each tile has an attribute for gameplay:

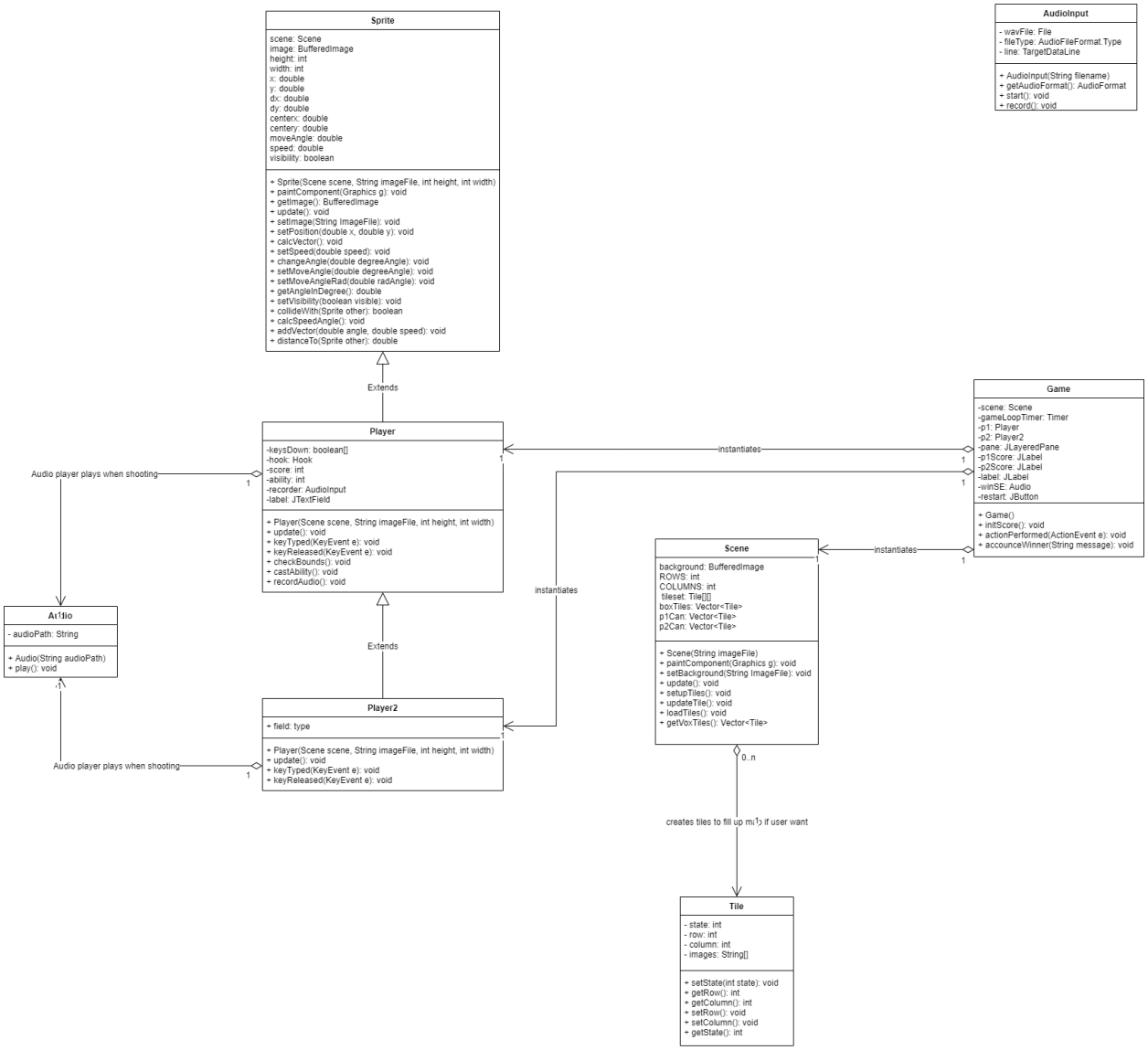
The grass tile (ID 0) is a walkable tile for the players to move around on. When there are grass tiles that match up on the borders of the screen such as left and right or top and bottom the players can wrap around the map for strategic gameplay.

The crate tile (ID 1) is a boundary tile that the player may collide with that is not walkable. This tile can be used to make the wrapping ability and certain parts of the map inaccessible.

The player 1 bin tile (ID 2) is a gameplay element that must be filled before player 1 can potentially win the game. When a recyclable projectile collides with a bin it is filled and picked up for recycling leaving a grass tile behind.

The player 2 bin tile (ID 3) is a gameplay element that must be filled before player 2 can potentially win the game. When a recyclable projectile collides with a bin it is filled and picked up for recycling leaving a grass tile behind.

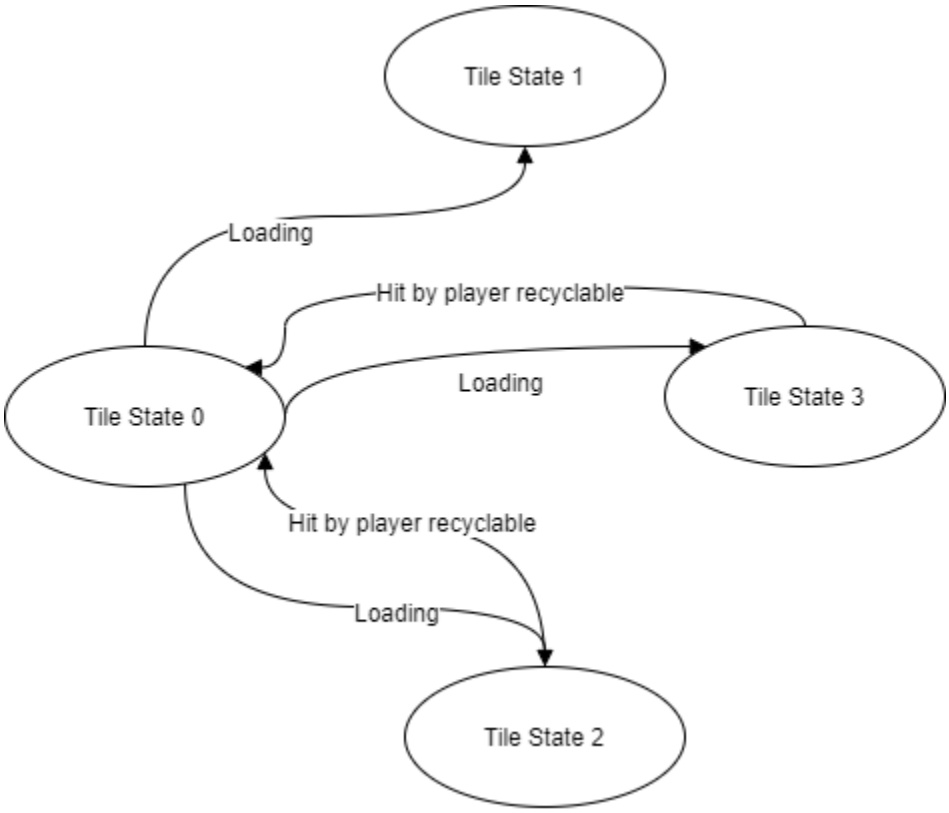
Software Engineering Plan



We collaborated on the game over fall break using zoom and github. Wei created the custom java game engine based on the ADT we created in class. Wei created the player classes, the scene, the projectile class, implemented sound, and the tile map. Josh designed the layout of the tiles, selected and managed the art/sound, edited the projectile class to handle multiple items, and added the score and restart button UI elements.

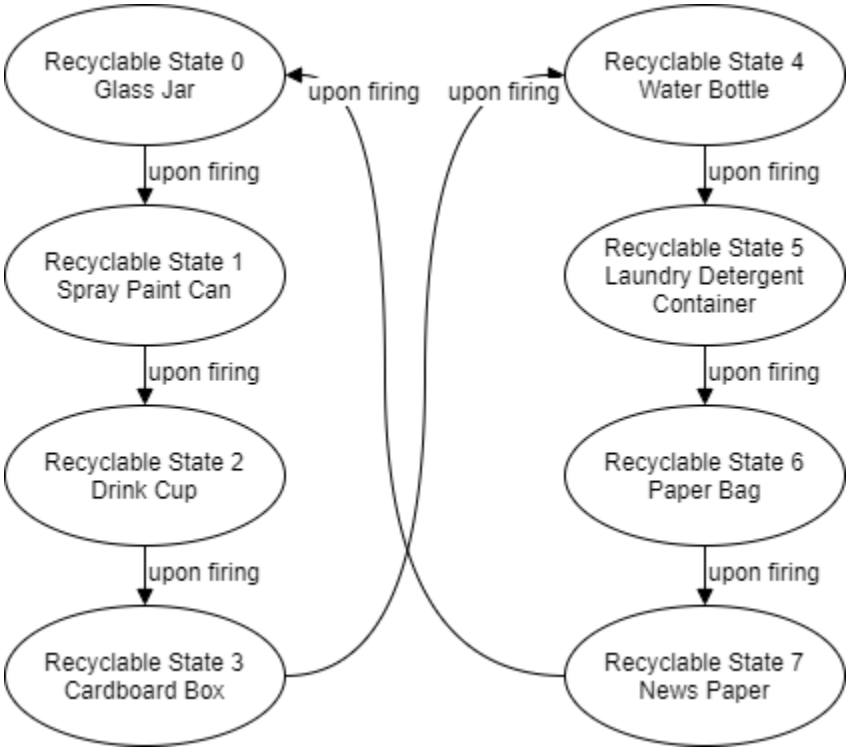
One aspect of the game that we attempted to implement was using audio input for game interactions. This proved to be too difficult and we abandoned the idea. We used musicg-api to try and distinguish the audio between both players. Get bytes was used along with this approach but we could not get reliable accuracy for our implementation. We tried using sphinx4, an audio model for speech to text, but this was unreliable and resource intensive. Simple english words were fed into the system but we would often get incorrect responses. We considered using audio decibels as a control, but we decided to ultimately abandon this idea because it limited interaction between both players.

State Transition Diagram



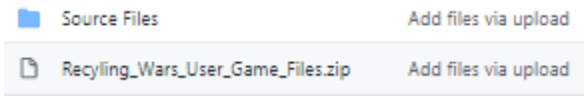
Tile States:
When the setupTiles() function is called, all the tiles will start at state 0 (the grass tile). In this state, it can transition to any other state by loading a csv file that contains the state information.
In state 1 (the crate tile), this state can not make transitions to any other states. It is meant to be an obstacle that is non removable.
In state 2 (Player 1 bin), this state can transition back to state 0 once it is hit by player 1's projectile.
In state 3 (Player 2 bin), this state can transition back to state 0 once it is hit by player 2's projectile.

Recyclable States:

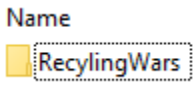


Recyclable states increase by 1 each time it fires. If it recheas state 7, it goes back to state 0.

User Instructions (Only Tested on Windows)



Download the Recycling_Wars_User_Game_Files.zip



Extracted the RecyclingWars directory to a location of your choosing.

Run RecylcingWars.jar

Player 1 Controls:

W - Forward

S - Backward

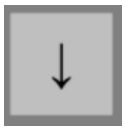
A - Left Rotate

D -Right Rotate

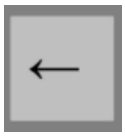
Space - Recycle Ability

Player 2 Controls:

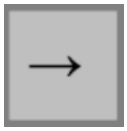
-Forward



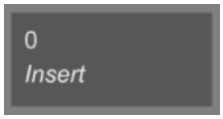
-Backward



-Left Rotate



-Right Rotate



- Recycle Ability