Catch It

Purpose

The purpose of this game is to provide individuals with motor impairments an accessible game that will be entertaining, stimulating, and playable.

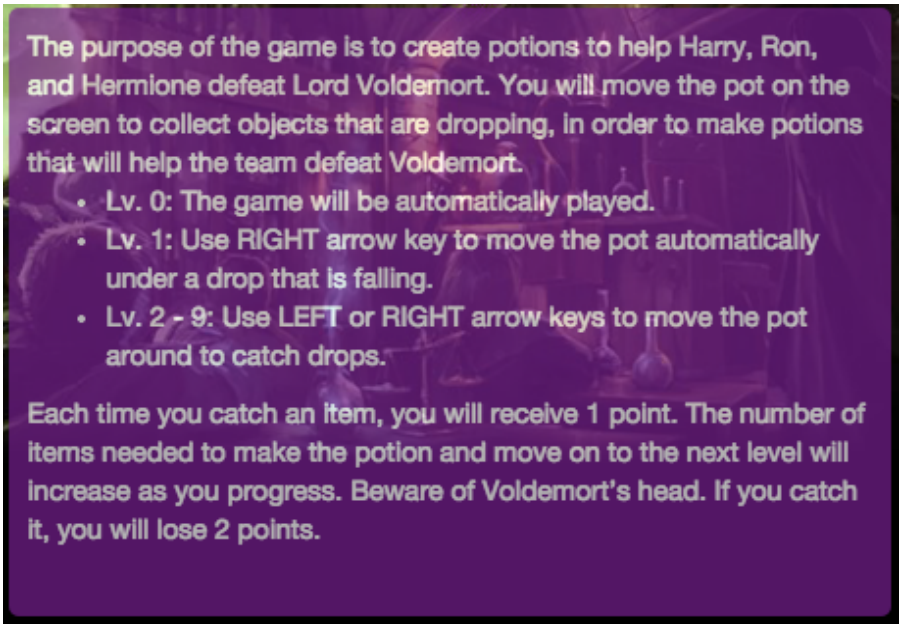
Motivation

Our game is inspired by the popular Disney Channel game "Lilo & Stitch Sandwich Stacker". This game was an integral part of our childhood, but throughout our time playing this game we noticed several places where the game was inaccessible to individuals with motor impairments. For instance, objects fell too fast and it was difficult to perfectly align oneself with the falling objects that needed to be caught. Due to our love of this game and desire to spread its joy to all people, we decided to create Catch It.

Navigation Instructions

Right Arrow: scroll through buttons
Left Arrow: make selections

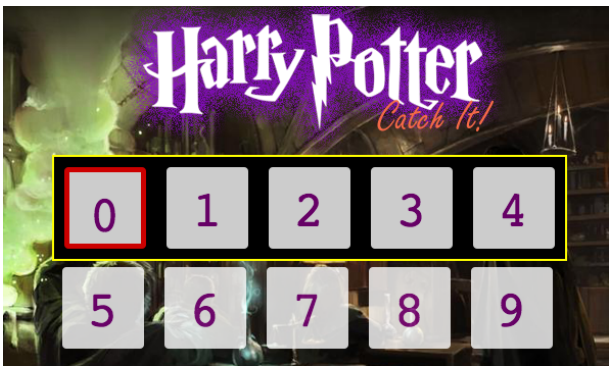
Game Play Instructions



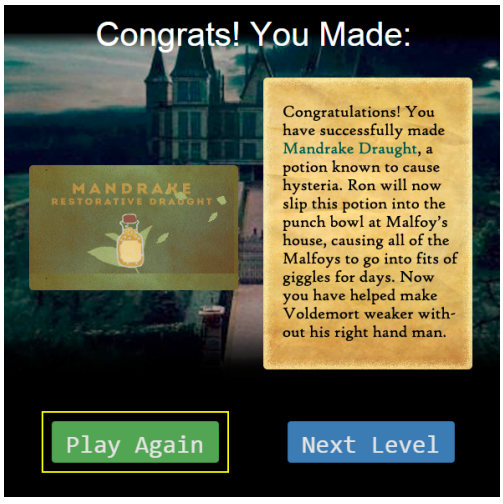
When the **right arrow** key is pressed a yellow box highlights the button that can be selected. If the **left arrow** key is pressed the button will be selected.

On the level selection page, when the **right arrow** key is pressed a yellow box will highlight the group of levels that can be select. For instance, the user can choose from levels 0-4 or 5-9. To select a group of levels press the **left arrow** key.

Once inside the list of levels the **right arrow** key can be pressed to scroll through levels. The current level that can be selected is highlighted in red. The **left arrow** key selects a level.



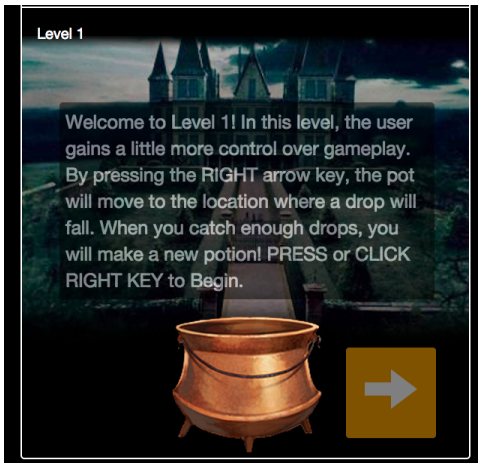
When a player wins a game, use the **right arrow** to scroll through the options and **left arrow** to select.



Game Play Instructions

Level 0:

This is our zero degrees of freedom version of the game. The user does not control gameplay in this level. The game automatically plays itself and rewards the user with the first piece of the story line. The purpose of this level is to acquaint the user with how the game works as well as give them something enjoyable to do if using the switch accessible levels are too difficult right now.

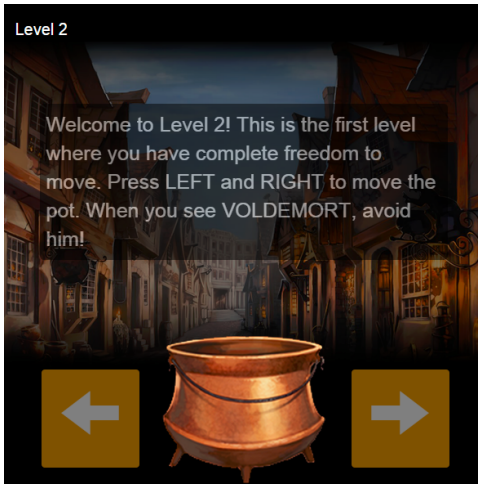


Level 1:

This level is one switch accessible. The user will press the **right arrow key** to play this level. When the user presses the right arrow key, the pot will move to where the object is falling and catch the falling object. This action will repeat until the level is won.

Levels 2 - 9:

These levels introduce two switches for accessibility. The user will use the **right and left arrow keys** to move the pot across the screen. The user will avoid Voldemort's head when trying to catch the falling objects to win the game.



Implementation

We used HTML, CSS, Javascript, JQuery, and Bootstrap to implement this game.

In terms of structuring and formatting, we used HTML and CSS to define all of the parameters within the game window that has the id “game_matrx”. Bootstrap was used specifically to efficiently build a simple web page and render buttons.

JS and JQuery were used for game logic and transitions. Besides the main catchit.js file that defined fields and methods for game-play, there were two separate js files: Drop.js and

DropPile.js. Drop.js defines coordinates of the drop and contains functions to randomize the x coordinate according to strict bounds and the image source of the drops. DropPile.js modeled a drop pile and contains methods to add drops, randomized danger of the drop based on the target probability of bad drops, update positions, assign image source and the animate function for falling drops called “rain()”.

Most of the animations were handled through the JQuery animate() method. (This was not the optimal implementation of the game but given the time constraint, we decided to keep the framework.) The game was also implemented with various event handlers that dealt with clicks and keyboard presses.

In terms of accessibility, additional keyboard handlers were added for buttons on the menu so that users can use two switches to navigate through the game as well as clicking. Sound cues were also added for these clicks and presses.

Team Member Roles

Whitney was responsible for creating the HTML and CSS for the website that is being used to display the game we created. She was also responsible for hashing out some of the algorithms implemented in our game such as how to display the storyline throughout our game, accessible features such as maximum number of moves, determining where objects will fall, and making an object fall only after a button is pressed. She also helped with debugging and usability testing.

Yuman researched similar implementations of the game, logistics of accessibility and coded mostly the JS/JQuery portion of the project. This process involved making an initial simplified version of the game, testing basic functionalities such as falling drops, pot movements and drop collision detection. She was also responsible for editing and combining the visual contents of the game with the game logic itself.

Pranavi was responsible for content and theme development, and played a role in determining how the game could be made more accessible to people with motor impairments. She came up with a story relevant to Harry Potter, in which potions were made. Additionally, she found the images of the potions, backgrounds, pot, as well as the sound effects. She also assisted with testing the game.

Contact Information

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Game Link
http://www.cs.unc.edu/Courses/comp426-f14/yumanw/catchit_final/catchit.html
All Game Files can also be found at:
http://www.cs.unc.edu/Courses/comp426-f14/yumanw/catchit_final/