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Game Systems

Ms. Pacman Write up

**Background**

Pac-Man was first created and released in the 1980s by a Japanese company known as Namco. After the Japanese release the United States company, Midway brought Pacman to the US markets. At the time of Pacman's release there were 100,000 games of Pacman being played in the United States every week[2]. Pac-man was created to counteract the many violent games that were on the market at the time. The nonviolent aspect of Pac-man set it aside from many games released at the time. Pac-man's violence free nature led to Pac-man fever in 1982, where thirty million Americans spent 8 million dollars playing Pacman[2].

Pac-man’s success resulted in the demand for more games like it. The demand gave rise to Ms. Pac-man, which was Pacman's sequel. Originally, Ms. Pac-man was created without the knowledge of Namco[3]. Ms. Pacman was created by MIT students from New England. Doug Macrae and Kevin Curran are the original creators of the game. Macrae ad Curran began a pinball machine business for their dorm[3]. The two would allow people to play the games on the machines for a fee. Macrae and Curran noticed that they could make more money if the games on the machine were harder to beat and took a shorter amount of time. The first game Macrae and Curran created was Super Missile attack which was an enhanced kit to the Missile Command game[3]. Seeing the popularity of Pac-Man they decided to create a hack for it that increased the number of mazes making players less likely to memorize the patterns.

Ms.Pacman was released in the United States in 1981[2]. The release was a joint effort between Midway and General Computer Corporation. Prior to General Computer Corporation(GCC) and Midway collaborating, GCC had been working on the creation of conversion kits known as Crazy Otto with Namco. However, after a ban on conversion kits the collaboration quickly stopped. Midway saw Crazy Otto and decided to collaborate with GCC. Their collaboration was the first step into the creation of Ms. Pac-man. Midway bought the game rights to Ms. Pac-man from Namco. Midway said the main reason for the release of Ms. Pacman was to pay homage to the female players that made Pacman a success[2]. Thus, Ms. Pac-man was the first main character of a video game that was a woman.

**Layout**

In the original Pac-Man game, Pacman is a yellow character that wins by eating fruit and white tablets in its path. The ghosts then decrease Pac-Man's lives by crossing paths with him.The original Ms. Pacman is bright yellow and has a bow and a beauty mark. Ms. Pac-man is inside a maze and must traverse the whole maze in search of tokens. While going through the maze, ghosts follow Ms. Pac-Man and try to attack her[2]. There are a total of 4 ghosts in the game . Sometimes, the ghosts can be eaten by Ms.Pac-Man whenever she has a power pill. Ms. Pac-Man has 4 maze layouts that change whenever she has reached a new level. After each level, a short story plays and shows how Ms. Pac-Man is connected to the Pac-Man universe. Ms. Pac-Man features a pin k maze that changes or stays the same depending on the level of the game the user is on.

**Tokens**

Ms. Pacman has seven fruit icons that were not in Pac-Man. Cherries, strawberries and oranges are all examples of additional fruits found on the Ms. Pacman game. Each fruit has its own point value in the Pacman game. Ms. Pac-Man also has four lives which are reflected at the bottom of the left of the screen. If all of Ms. Pac-man's lives are gone before she is able to eat all the tokens then the game ends.

**Movement**

The movements Ms. Pac-Man can do are left, right, up and down. When the first game was released, the movements were controlled by a joystick. However, Ms. Pac-Man's movements are now controlled by the arrow keys of a keyboard. The ghosts move on their own in predetermined movement directions.

**My game**

Much of the information I used for my functions is from Tamara O’Malley’s Tic-80 tutorials[1]. I tweaked my functions to customize it to Ms. Pacman but a lot the foundation comes from the YouTube channel.

* Variables
  + tabs**={ }** ghosts**={}** 
    - These arrays carry the information needed to implement both the ghosts and the tablets. The tablets are the objects swallowed by Ms. Pacman while the ghosts chase Ms. Pacman.
  + Init
    - Used to initialize items so that they only appear once at a constant point on the screen. It stops the position of objects from changing each time Tic runs.
* Functions
  + **function** Pac**()**
    - Pac() sets up all the parameters needed for Ms.Pac to move. It carries the x, y variables that store the location. The speed variables that increment the speed depending on the direction MsPac is moving in.
  + **function** PacMove**()** 
    - PacMove() controls the movement of Ms. Pacman when the buttons are placed. Ms. Pacman can only move in 4 directions [up, down, left and right]. The change in direction with the press of a button changes the costume Ms. Pacman has. The function also contains a collision checker that makes sure that Ms. Pacman does not collide with any of the walls around as she moves. Also, update’s location.
  + **function** CheckLimit**()**
    - Makes sure that Ms. Pacman does not move outside the border of the maze.
  + **function** tileAt**(**x**,**y**)**
    - Checks if there is a tile at a specific point. Returns a true or false value depending on whether the tile is a wall on the maze. Walls are the parts of the maze that Ms. Pacman cannot go through.
  + **function** randomLocal**()**
    - Sets up a tabs[white tokens] at the location where there is no solid tile such as a wall or where Ms. Pacman is not present. Following that, it creates a location for the tab out of specific set of random numbers. I tried decrementing the location of the tabs by three so that they would not display on the wall.
  + **function** tabnumber**(**count**)**
    - The function looks for an uninhabited location to put tabs[white tokens] using randomLocal(). There is a for loop that goes through each of the tabs and assigns them and x and y component. It then creates an object tab{} to save the values of x,y , active[determines whether tab has been collected] , and costume [tracks what the tab looks like]. Sets all the tab objects equal to the tabs array so that each of the tabs have a location, can be active and have a costume variable.
  + **function** initialize**()** 
    - Used to control the number of tabs that display. It also allows you to make a concrete location of whatever you put in it so that the location does not change each time Tic runs. I added the ghosts using initialize instead of directly putting them in the Tic function.
  + **function** drawTab**()**
    - Draw tab goes through each of the tabs [white tokens] present using a for loop. Only draws the tab if it is active[has not been collected by Ms. Pac.
  + **function** collide**(**px**,**py**,**ox**,**oy**)** 
    - The function takes in the x and y value of a player and compares it to that of an object. If they are the same, then the object and the player collided. If the collision is a top collision the object, the player collided with dissapears. If it is a full-on collision, then the player is taken to the start position of (0,0).
  + **function** collectTab**()** 
    - Checks if there is a collision. The tabs are made inactive if there is a collision.
  + **function** addGhost**(**Gcostume**,** Gx**,** Gy**,**move**)** 
    - Takes in the parameters of costume, location and movement. Adds the ghost to the screen. The number of ghosts is not specified so you can add as many as you want.
  + **function** collGhost**()**
    - Is responsible for checking the ghost collisions.
  + **function** drawGhost**()**
    - Is responsible for displaying the ghosts on the screen.
  + **function** TIC**()** 
    - Clears the screen and calls all the functions created.

**So far**

I have a game that displays the maze, displays Ms. Pacman, the ghosts, and the tokens. The display of the tokens is not linear as it is in the original version of Ms. Pacman. I changed the colors of the original maze to blue and green. My game currently displays two ghosts with no movement which I would like to improve upon.

**Improvements**

I am still struggling to make sure Ms. Pacman does not collide with the wall during the upward movement. I currently do not know what is causing Ms. Pacman to go through part of the green wall when moving upwards. Also, my tabs are not displaying in a straight-line formation and I would like to figure out how I can make them do that. I want to work on the ghost movement so that they don't stay still the whole time. Eventually I would like to add a tally that shows how many lives the person has left and the points they have acquired. I need a game over statement to display to the user that they have lost or won. I also hope that I will get the chance to keep designing more levels. I also want to add sound.

Bibliography

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#### 3."The MIT Dropouts Who Created Ms. Pac-Man: A 35Th-Anniversary Oral History". *Fast Company*, 2017, https://www.fastcompany.com/3067296/the-mit-dropouts-who-created-ms-pac-man-a-35th-anniversary-oral-history.