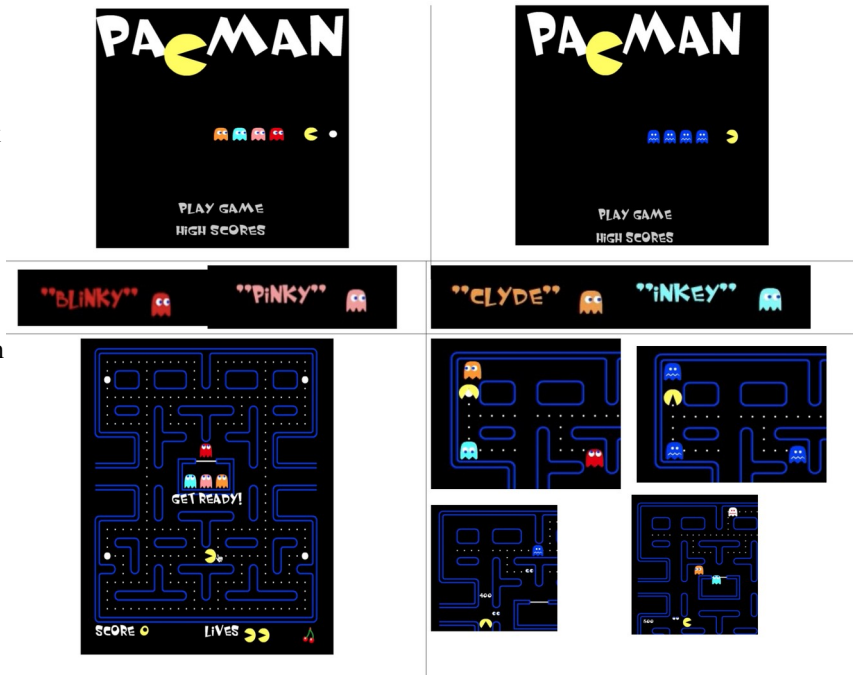
CPSC 386: Intro to Game Design: Fall 2023
**Pacman Portal**




In this assignment, you will create the Pacman Portal game, based on the classic Pacman game, and the classic Portal (3d) game. You may work in groups of up to three students for this game but may work solo if you wish.

Implement the maze, as laid out in the classic Pacman game, including points and power pills, and the spawn locations of the ghosts, Pacman, and the fruit: the maze is implemented either as a collection of Sprites, or an undirected graph with a maze background.

Implement Pacman, who eats points, power pills, and (when ghosts are in running away mode), by eating ghosts. If Pacman eats a running-away ghost he gains 200 points, then 400, then 800, then 1,600 points. If he collides with a chasing ghost, he dies. Pacman's movement is implemented by changing his velocity according to up/down/ left/right keystrokes. If he is moving between corridors, and a change direction key is pressed, he will change direction at the next corridor. Implement the ability for Pacman to create temporary Portals in the walls of the maze; only Pacman can pass them. Pressing the 'B'/ 'O' key will fire a blue or orange portal in the direction he is looking. Only Pacman can pass through; the portal closes when he does.

Implement the four types of enemy ghosts, Blinky (Red), Pinky (Pink), Inkey (Light blue), and Clyde (Orange), that chase Pacman and try to eat him, and their movement AI (simplest case, they take the shortest path to Pacman; challenge: different AI for each, Blinky/Clyde go directly for Pacman, but Clyde runs if close. The ghosts have three states: chasing, running away, and circling their corners (which they do to give Pacman time to escape). You do not have to implement the circling state for this program. The ghosts' behavior to running mode when Pacman when eats one of the four power pills, and the change back to chase mode after a short time. When about to change back, the ghosts flicker from blue (with small red eyes) to white (with small blue eyes). They flicker every 500 ms but animate every 100 ms..

Implement the animations of the ghosts and Pacman moving/dying. The ghosts' eyes look where they are going. Ghosts who are killed have their eyes run back to their spawn location. Implemented fruit spawning every 10-20 seconds, at the same location at Pacman. The fruit will last for 10 s or until Pacman eats it.

Use a sound editor to record the music (Start screen, Level up, Ghost running away, Game over), Pacman eating sounds (eating points, eating Power pills, eating ghosts), and Ghosts eating Pacman sounds. Have the game play this music and sounds when appropriate.

Create a startup page for the game that will play an animation of the ghosts chasing Pacman in their normal colors, then Pacman chasing their ghosts in their blue/red eye colors. Have a Start game button on the launch page. High scores are stored on disk, and shown if the Launch page's high score button is clicked.

## Submission

Turn in the code for this project by uploading all of the Python source files you created, the completed rubric indicating the requirements you completed (or did not complete), the images directory, and the sounds directory to Canvas. EACH student must submit the COMPLETE project to Canvas for the group to get credit. The name of all (up to three) MUST be on all submissions. Students saying their team forgot to include them will receive no credit for this assignment.

While you may discuss this homework assignment with other students. Work you submit must have been completed on your own. To complete your submission, print the following sheet, fill out the spaces below, and submit it to the professor in class by the deadline. Failure to follow the instructions exactly will incur a 10% penalty on the grade for this assignment.

## CPSC 386 --- Pacman Portal

**Recreate Pacman game with the ability of Pacman to create portals to escape as needed.** **Due 15 Oct 2023**

Verify each of the following items and place a checkmark in the correct column. Entries incorrectly marked will incur a 5% penalty on the grade for this assignment

| **Name(s) and section:** (do not leave the checkboxes unmarked) | Completed | Not Completed |
|---|---|---|
| Implemented Pacman, who eats points, power pills, and (when ghosts are in running away mode), by eating ghosts. If Pacman eats a running-away ghost he gains 200 then 400 then 800 then 1,600 points. If he collides with a chasing ghost, he dies. | ☐ | ☐ |
| Implements Pacman movement, who changes velocity by moving according to up/down/ left/right keystrokes. If he is moving between corridors, and a change direction key is pressed, he will change direction at the next corridor. | ☐ | ☐ |
| Implemented the maze, as laid out in the classic Pacman game, including points and power pills, and the spawn locations of the ghosts, Pacman, and the fruit: the maze is implemented either as a collection of Sprites, or an undirected graph with a maze background. | ☐ | ☐ |
| Implementing the ability for Pacman to create temporary Portals in the walls of the maze; only Pacman can pass them. Pressing the 'B'/ 'O' key will fire a blue or orange portal in the direction he is looking. Only Pacman can pass through; the portal closes when he does. | ☐ | ☐ |
| Implemented four types of enemy ghosts, Blinky (Red), Pinky (Pink), Inkey (Light blue), and Clyde (Orange), that chase Pacman and try to eat him. Consider inheritance. | ☐ | ☐ |
| Implemented the ghosts 'movement AI (simplest case, they take the shortest path to Pacman; challenge: different AI for each, Blinky/Clyde go directly for Pacman, but Clyde runs if close. | ☐ | ☐ |
| Implement the change in ghosts' behavior to running mode when Pacman when eats one of the four power pills, and the change back to chase mode after a short time. When about to change back, the ghosts flicker from blue (with small red eyes) to white (with small blue eyes). They flicker every 500 ms but animate every 100 ms. | ☐ | ☐ |
| Implemented the animations of the ghosts and Pacman moving/dying. The ghosts' eyes look where they are going. Ghosts who are killed have their eyes run back to their spawn location. | ☐ | ☐ |
| Implemented fruit spawning every 10-20 seconds, at the same location at Pacman. The fruit will last for 10 s or until Pacman eats it. | ☐ | ☐ |
| Used a sound editor to record the music (Start screen, Level up, Ghost running away, Game over), Pacman eating sounds (eating points, eating Power pills, eating ghosts), and Ghosts eating Pacman sounds. Have the game play this music and sounds when appropriate. | ☐ | ☐ |
| Create a startup page for the game that will play an animation of the ghosts chasing Pacman in their normal colors, then Pacman chasing their ghosts in their blue/red eye colors. Have a Start game button on the launch page. | ☐ | ☐ |
| High scores are stored on disk and shown if the Launch page's high score button is clicked. | ☐ | ☐ |