**Evaluation**

Objective Check

General Objectives

My general objectives involve making sure that the game functions correctly, displays a “game over message” and returns you to the menu screen, allowing you to play the game again.

* **“Create a menu with a single player, local multiplayer, leader board and settings options”. “When a player clicks on one of the buttons, the game state will change from ‘menu’ to ‘playing’”.**
  + I have successfully created a menu with buttons that are interactive and load different parts of the program in.
  + I have only yet to make the “Leaderboard” button interactive, even though it is there, because the online aspect of my game is missing due to time constraints. However, co-op mode was introduced instead of local/online multiplayer.
* **“Create two game modes:” “First game mode will be similar to the original Pacman, but slightly adapted to my style. The algorithms for the ghost AI will be created by me” “The second game mode will be an only local multiplayer game mode, where the player who wins has to survive the longest or get to a specific score. Lava tiles will spawn temporarily to kill the players, and then eventually the lava tiles will turn into rock tiles.”**
  + I have successfully done this, by creating two different game modes. The only difference is, my second game mode is made for (two player) co-op, not local multiplayer. That aspect of the game changed.
* **“Progression System:” “The game will be able to store the high score of the player” “Players will be able to level up and unlock new Pacman colours or Pacman upgrades”**
  + I have been partially successful with this. I have had a sense of progression to the game by adding a high score option in the settings. However, even though I added in a high score part to the game, I have no added levels that allow for unlockable items/upgrades.
* **“I will be creating various power ups” “These will include ones that affect the player badly or in a good way”**
  + I have been partially successful with this. I have created two different power ups, but both of which are beneficial and are good for the player. I have crated good power ups, but no bad ones.
* **“I will be using arrow keys as the controls. I may also give the player an option to use WASD instead.”**
  + I have successfully assigned arrow keys as the way to control Pacman. In addition, in gamemode two, which is the co-op part of my game, the second player uses the WASD keys.
* **“Difficulty:” “The user will be able to choose a difficulty in the settings menu. The difficulty chosen will either increase or decrease the pace of the game.” “I will develop a cost function to increase the pace of the ghosts as time goes on. Cost function increase rate will change depending on the difficulty.”**
  + I have successfully done this. The cost function I used was a inverse logarithmic function.

Specific Objectives

**Gameplay:**

* **“Assign each tile/cell a value, such as ‘1’, ‘0’ and ‘2’. ‘1’ being the walls, ‘0’ being the free cells and ‘2’ being the enemy spawn point.”**
  + I have successfully done this. This is how I coded my collision detection.
* **“Creating Pacman and allowing him to move UP, DOWN, LEFT AND RIGHT”**
  + This was successfully achieved.
* **“Create a collision detection for Pacman to only be able to interact with free cells/spaces. In addition, the collision detection should allow the ghosts to also only interact with free cells/spaces once they leave the spawn location.”**
  + I have successfully achieved this.
* **“A scoring system will also be put in place. Every game each player will have their individual score being displayed on the screen.”**
  + I have successfully achieved this in both the single-player and co-op gamemode. In the single-player gamemode, the score and lives of the player appears on the left. In the co-op gamemode, player one’s score and lives are on the left side of the screen, whereas player two’s score and lives are on the right side of the screen.
* **“Creating an algorithm/search method for each individual ghost. Most of those algorithms will be complex”**
  + I have successfully done this. I created the Dijkstra algorithm for Inky, Breadth-First Search for Pinky, intersection to intersection movement for Clyde, and random movement for Blinky. Inky, Pinky and Blinky all use the line of sight algorithm also.
* **“Music and animations will occur.”**
  + I have been successful with this. The music I have played throughout the game. This includes, Pacman eating dots, Pacman dying, a ghost dying, Pacman collecting a power up and just the original Pacman music played in the main menu and settings. The animations in my game are basic, but they are still animations. Some of these include, the lava changing to rocks and the colour of the buttons change to a darker shade when a mouse hovers over it.

**(LAN) Network System:**

*Due to time constraints, rather than a local-multiplayer gamemode, I created a co-op offline gamemode. This still involves more than one player (two players), but rather than the players playing from different computer systems, they will have to play from the same computer system. Hence co-op and not local multiplayer.*

* **“If the user is new, they will create a username and password, which will get stored in the database. The user will have to log in with their username and password. This will carry over their player level to local multiplayer and single player.”**
  + This was not fulfilled as I had no time. The online aspects of my game were not completed due to time constraints. However, the main aspect of my game was the single-player part.
* **“A user may decide to host a game. Players will then be able to see this lobby and click on it to join. When the game finishes, the players wins/losses will be updated in the database and the winner(s) will be shown on the screen.”**
  + I am partially successful with fulfilling this objective. The online aspect objectives, such as hosting a lobby and updating the players wins/losses in the database I have not completed. However, in my co-op gamemode I still display the winner at the end of the game.

**Settings:**

* **“Ability for users to change their Pacman colour. Users will be able to unlock new colours by levelling up.”**
  + I did not create a level system in my game, so I did not implement this.
* **“Users will be able to increase or decrease the volume in the settings.”**
  + I was partially successful with this. The user is able to turn the music on and off, but they are not able to increase or decrease the volume in intervals.
* **“Users will be able to adjust the difficulty of the single-player gamemode in the settings”**
  + I have fulfilled this successfully. Users can change the difficulty, to easy, medium, or hard, in the settings.
* **“Users can get help and advice about the game, in the settings.”**
  + I have successfully created a help button in the settings part of the game.
* **“Users can view their highscore in the settings.”**
  + I have successfully created a button, when clicked on, displays the users high score.
* **“Users will be able to unlock power up upgrades for single player (possibly multiplayer).”**
  + I did not implement power up upgrades, but if I did, the upgrades would increase the time the power up lasts for.

Additional Objectives

* **“A feature which I will implement is making the game from local multiplayer to online multiplayer”**
  + This additional objective was not met. The online multiplayer and local multiplayer were not met. Instead a co-op gamemode was created.
* **“Allow the user to change controls to WASD”**
  + This feature was not implemented.
* **“Pacman will change colour when a power up is activated”**
  + This feature was successfully implemented. Pacman changes to the colour red when a power up is activated.
* **“Create particle affects when Pacman eats dots”**
  + This feature was not implemented.
* **“I will aim to provide a third gamemode where there are two teams. Each consisting of a Pacman and a ghost. The aim would be for the Pac-men to avoid the other teams’ ghost, and for the ghosts to try consume the other teams Pacman.”**
  + This is the least important additional objective as it is very time consuming, and does not add extra complexity to the game. I currently have not implemented this feature.
* **“Allow for map creation/generation”**
  + This feature is not implemented, but it would allow for various levels, and it would add a great amount of creativity and uncertainty to the game.

User Feedback

Users of all ages tested my game. In addition, a lot of the users that tested it, were people I do not know, or have met once. This creates objectivity rather than subjectivity.

* The game was very easy to setup and launch.
* The main menu was very easy to interact with, as the mouse movement was smooth, and when the mouse was hovering over a button, it would highlight it by making it a shade darker. This especially helped people of old or young age, interact with my game in the main menu screen.
* The mood (including music and graphics) made it feel like an authentic classic Pacman/Arcade game.
* The controls were very easy to use when playing the game, or when navigating around.
* The graphics could need improvement. This includes the ghosts, Pacman, lava tiles and rock tiles.
* More advanced animations are needed, such as particle effects or Pacman as a sprite munching on the dots rather than Pacman just being a yellow dot.
* Player movement does not feel smooth when transitioning between tiles.
* The power ups are very responsive when activating.
* The current power ups are good, but a bigger variety would be better.
* The pace of the game increasing (using my cost function) really makes the game more intense and fun to play.