PACMAN PRO

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Starting The Game

Upon successfully executing the game, you will end up at the following menu.

Click on new game to move to the next screen

Selecting A Mode

Select **LOCAL** or **ONLINE** depending on how you wish to play the game.

NOTE: *You will need a server running to play in ONLINE mode.*

Online Waiting Queue

If you clicked ONLINE or want to do a rematch, you will be sent to the waiting list on the server. Once the server gets two clients, it automatically starts a match. If however there is no other player online and you decide to play local instead, you can just click on "back" button, and it will take you to the game menu.
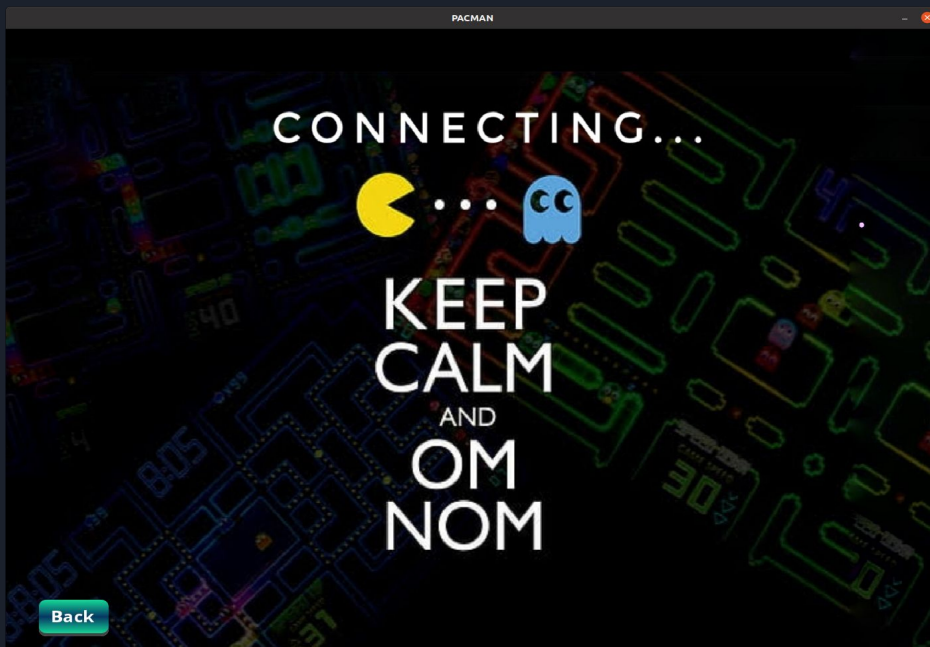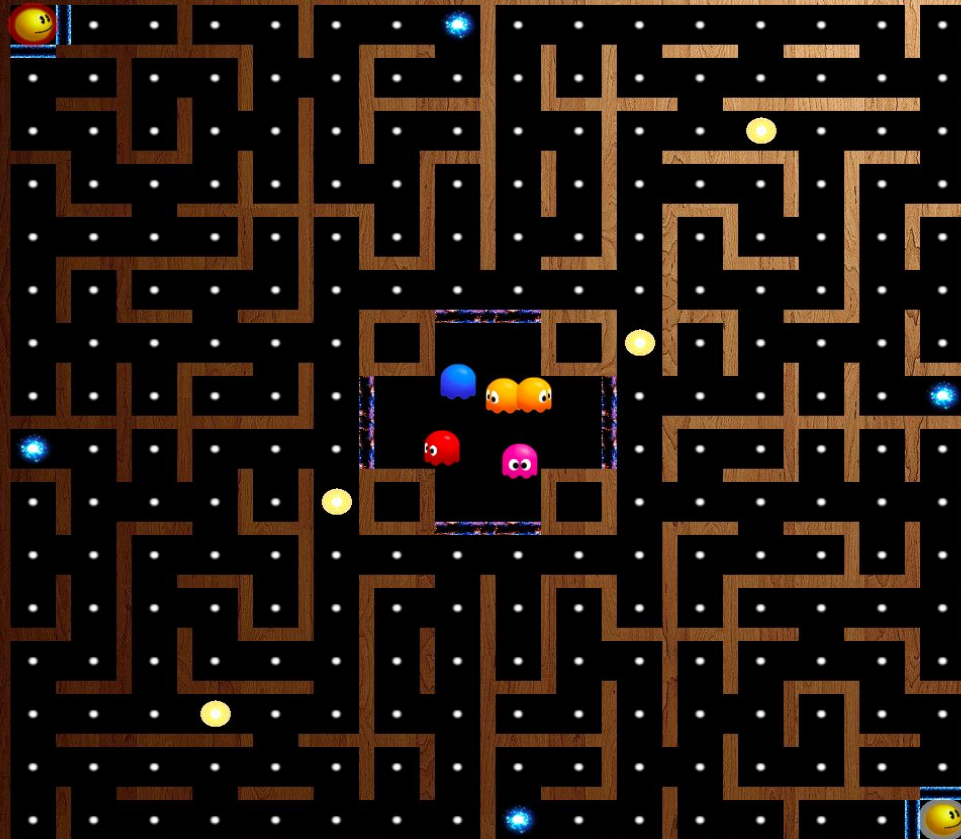
The Game

The game builds up on the original PACMAN, but now with two players and more awesome features.

The game starts with two pacmans, one in the top left corner (P1) and one in the bottom right corner (P2).

The ghost house is in the middle of the maze and it consists of 5 ghosts in the beginning:

★ One Blinky
★ One Pinky
★ One Inky
★ Two Clydes

How To Play

Player controls are given as follows:

Player 1 (Top-Left corner)

Movement Controls:- Key W (up), Key A (left), Key S (down), Key D (right)

Parry Control:- Key G

Player 2 (Bottom-Right corner)

Movement Controls:- Key Up (up), Key Left (left), Key Down (down), Key Right (right)

Parry Control:- Key M

Note: To hit the other player, you just need to move your pacman towards the other pacman and a collision will take place.

Game Rules

- The game is played for a total duration of **100 seconds**. The game is further divided into <u>different modes</u> according to how *ghosts* attack *pacman*.
- Each player has **3 lives**. Whenever a player is caught by a ghost, the pacman dies (# of lives is reduced by 1) and respawns at the starting block (top-left corner for player 1, and bottom right corner for player 2). If a player's life count reaches **zero**, the game is over and the other player wins by default.
- In case, both the players are alive (Lives > 0) when the 100 second mark is reached (indicated by the countdown followed by a buzzer), the winner of the game is decided by the **score** that each player was able to accumulate in the given game. The one with the higher score is declared the winner!
- In case the two players have the same score (somehow) and even managed to stay alive till the end, the result of the match is declared to be a **DRAW**.

Scoring System

To win the game fair and square, you will have to score high. The list below indicates different activities that can help you score more in your adventure:

- Small-sized eatables (small white circle) are spread out throughout the maze. These can be eaten up by pacman. Each small-sized eatable adds **10 points** to the player's score.
- Large-sized eatables (large whitish circle) are also spread out throughout the maze randomly, with 2% probability of spawning upto a maximum of 8 of them. These can be eaten up by pacman. Each large-sized eatable adds **50 points** to the player's score.
- Whenever a player eats a Large-sized eatable, ghosts enter the scare mode. In this mode, players can also eat ghosts forcing them to respawn inside ghost house. Eating a ghost adds **15 points** to the player's score.
- Players can also **parry** ghosts even when they are not scared. Each parry adds **40 points** to the player's score
- In case, two players eat the same eatable at the same time (very low chances!), the score is divided evenly among the two players.

Eating Ghosts!
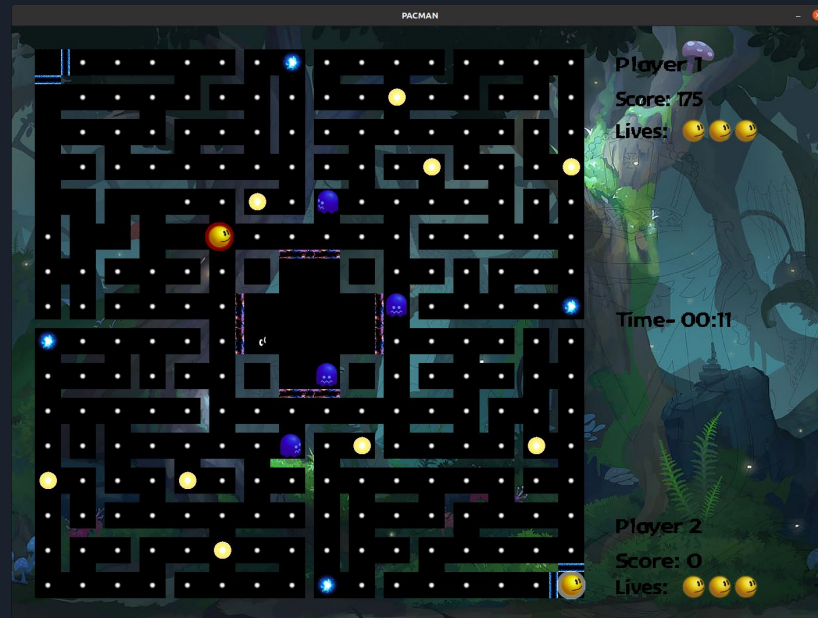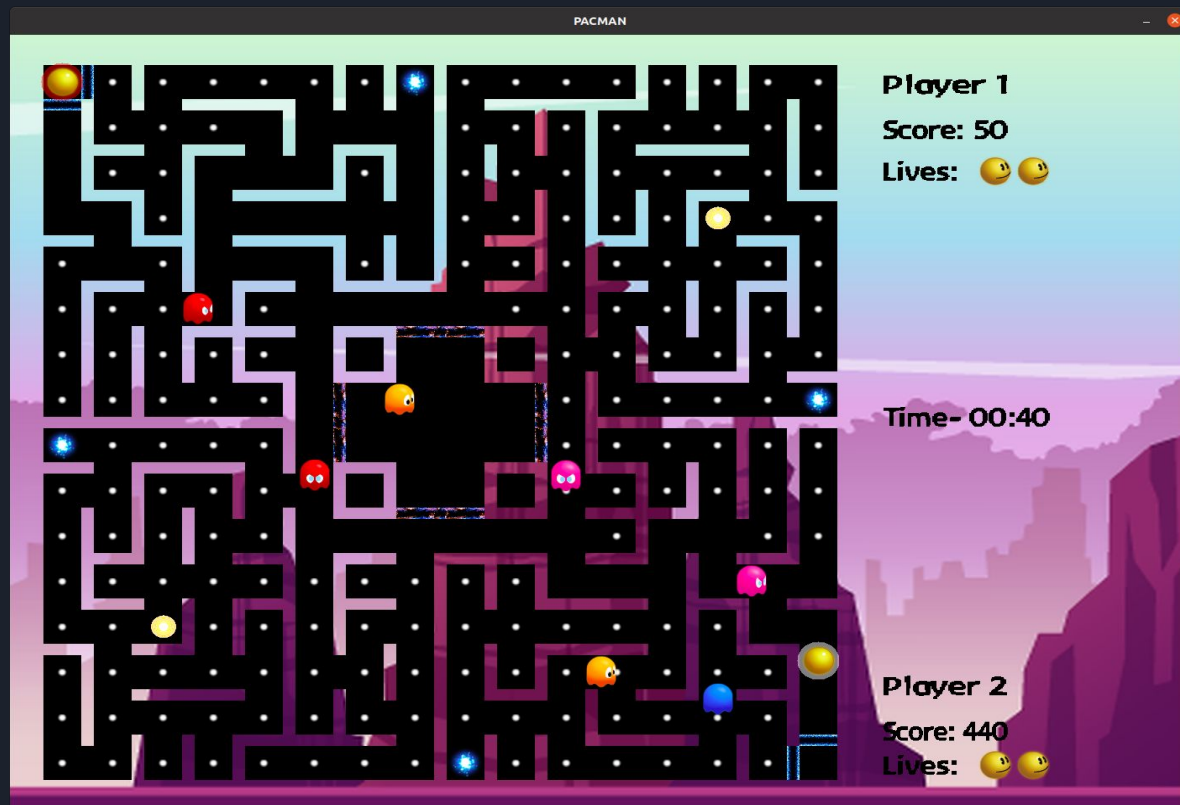
Game Modes

The total duration of the game (100 seconds) is divided into **4** stages:

- <u>Scatter Mode</u> - This is the first stage in the game. Ghosts roam about randomly in this mode and do not target the players. However, they can still kill pacman if caught. This mode lasts for first **30 seconds**, after which ghosts enter the Target Mode.
- <u>Target Mode</u> - This is the second stage in the game. Ghosts target the player's pacman in this mode according to their own specific **AI**. The ghosts are of 4 types:- *Blinky* (red), *Pinky* (pink), *Inky* (blue) and *Clyde* (orange). Also, *Blinky* and *Pinky* divide into two in this mode, so that both the players are targeted equally! This stage lasts for another **30 seconds**.
- <u>Scatter Mode</u> - This is similar to the first mode and acts like a **cooldown**. This stage lasts for **10 seconds**.
- <u>Dark Mode</u> - This is the fourth and the final stage of the game and it lasts for a total of **30 seconds**. Both players have **limited visibility** in this mode (3 blocks of visibility), and are also being targeted by the ghosts (according to their AI). To make it even more challenging, *Inky* also splits up into two in this mode.
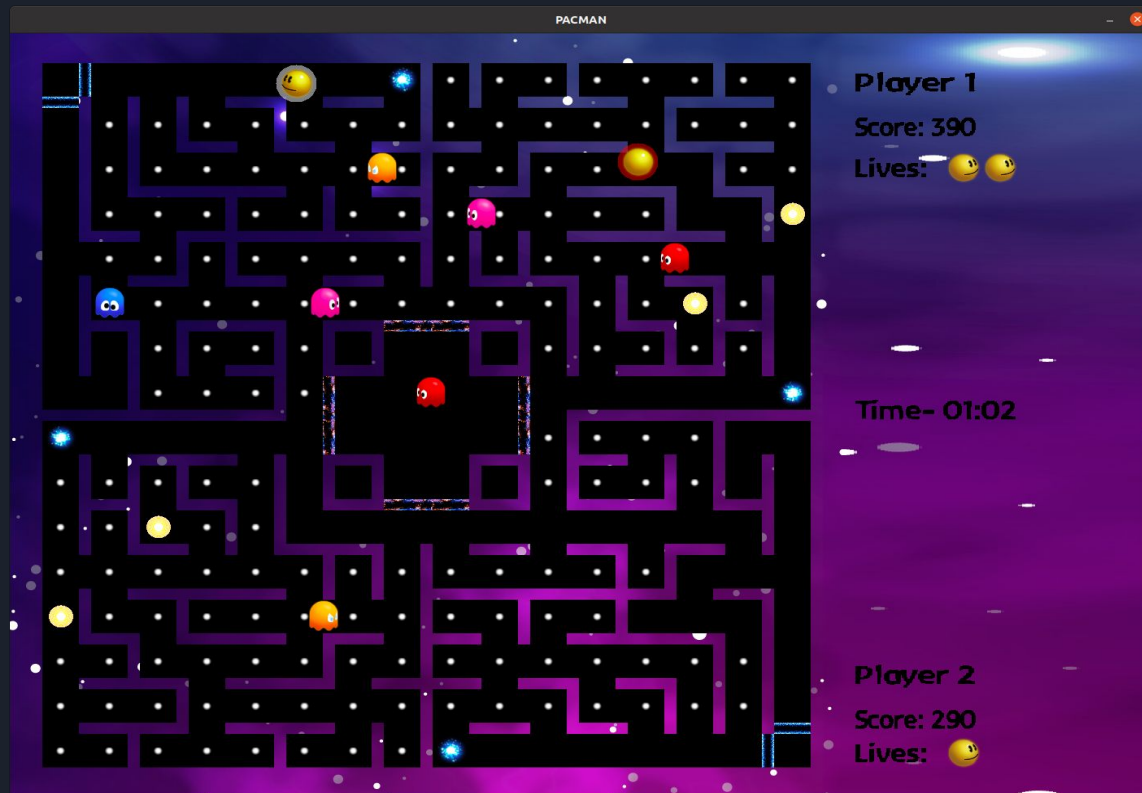
Scatter Mode (Stage I)
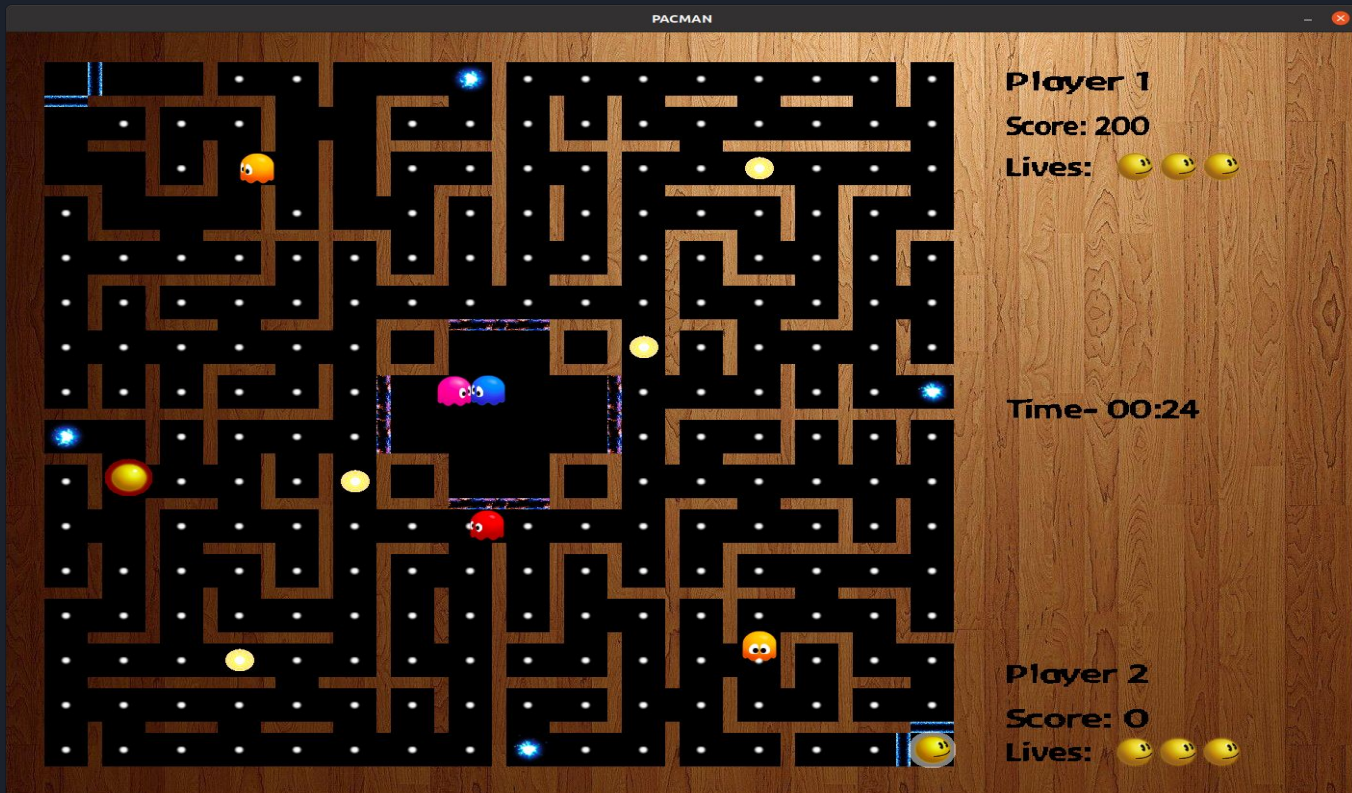
Target Mode (Stage II)

Scatter Mode (Stage III)

Dark Mode (Stage IV)
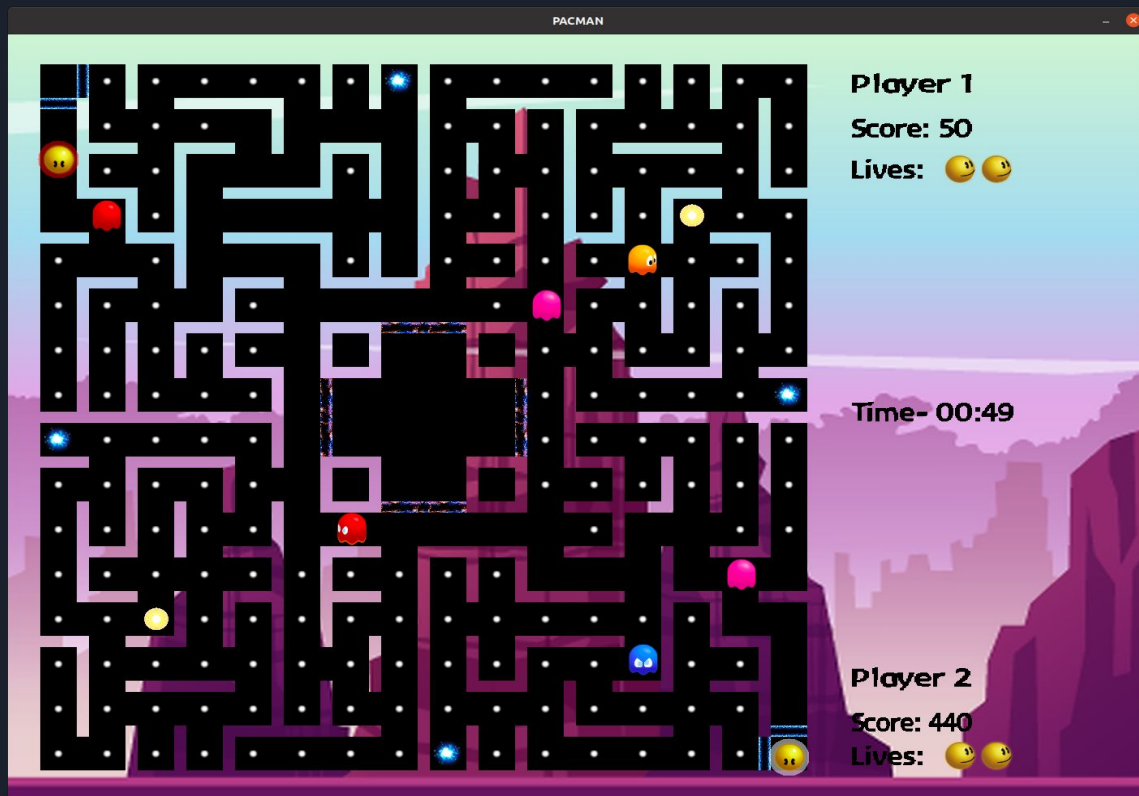
Game Mechanic: PARRY

Players can additionally **parry** (defend and kill) the ghost if needed or for points. Parry acts like a second chance to save yourself in case you are stuck in a dead end, and have nowhere to run. However, it has a **cooldown** of **10** seconds, which means that you cannot parry another ghost within the next 10 seconds (no third chances!). This cooldown is indicated by a flashing animation and sound effect.

Parry is however, a high skill move and requires some practice to actually pull it off efficiently in-game. Rules/conditions to do a successful parry are listed below:

- <u>Rule 1:</u> The pacman must **face the ghost** in order to do a successful parry. In other words, a parry cannot be successful if either the pacman or the ghost is facing away from the other.
- <u>Rule 2:</u> The player must press the parry key [key G (P1) or key M (P2)], as and when the ghost enters pacman's **parry zone** (their halo). This zone is **red** for P1 and **white** for P2. Pressing too early won't kill the ghost and pressing too late may lead to your death!

Note: You can also **parry a scared ghost** for additional points (40 instead of the usual 15). However, ghosts will try to move away from you when scared, and hence parrying ghost may not be that easy (refer Rule 1)

P1 (Red Halo), trying to Parry Blinky

Parry Successful! Score up by 40!!

Game Mechanic: TELEPORT

Players can also teleport from one location in maze to another, using the four designated portals present in the maze. These can be easily identified by wiggly-shiny blue texture of these portals. Some points related to portals:

- Portals **randomly** teleport the player to one of the remaining three portal locations. This queer mechanism of portal activation may be attributed to the fact that portals are themselves queer entities which have no physical explanation of their existence yet.
- Once, a portal is used, it becomes inactive for a duration of **5 seconds**. Hence, the two portals (entry and exit) cannot be used for the next 5 seconds after use. (by any player)

P1 (Red Halo) Teleports from Left to Bottom
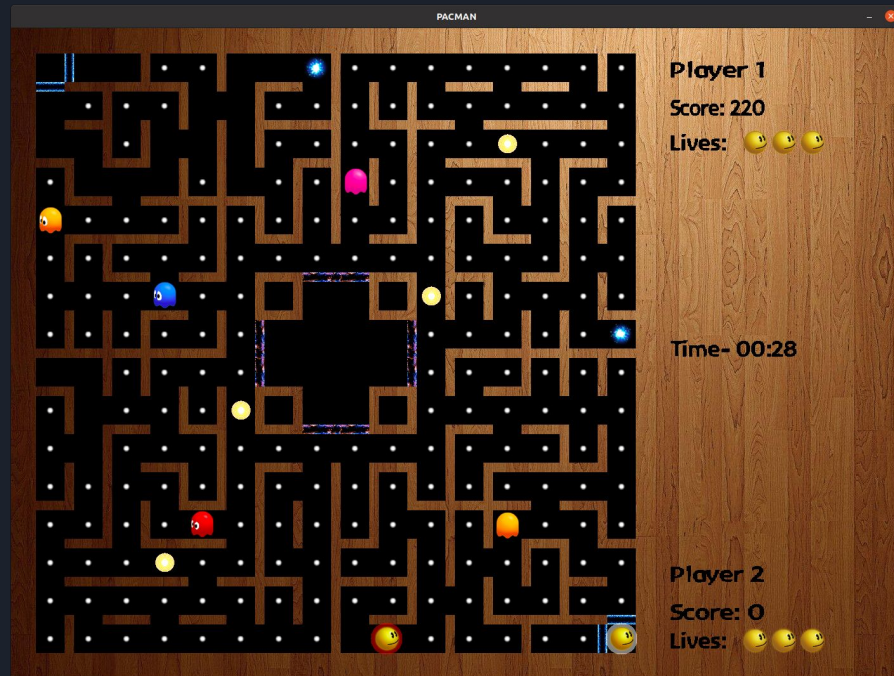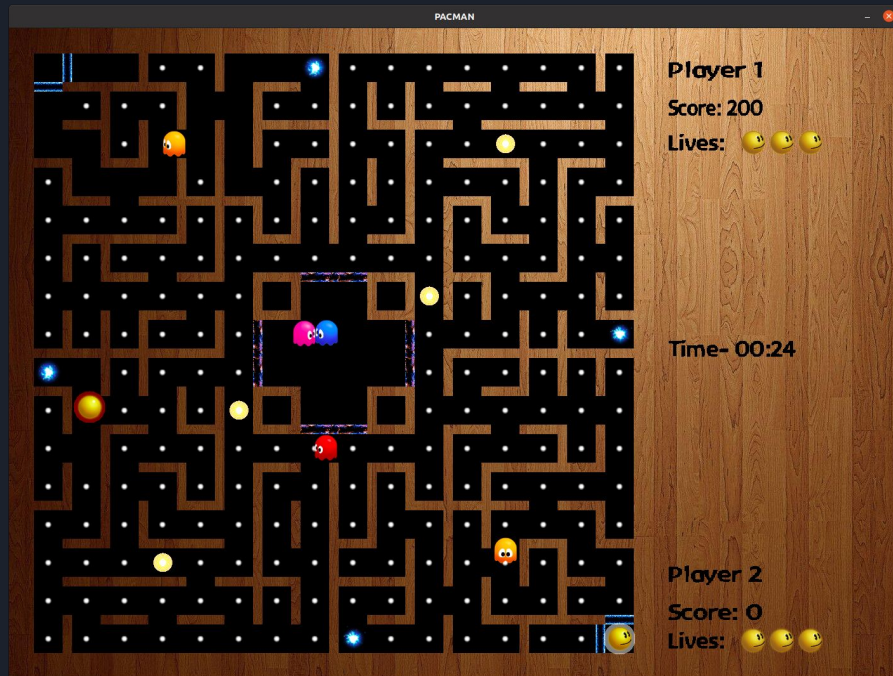
Game Over

Once the game is over, either by timeout, or out of lives, **GAME OVER** menu screen is displayed. The winner of the match is shown (in case there is one, otherwise DRAW is displayed). Players can opt for rematch if they want to, or they can go back to main menu. Note that for an online play, both the players must opt for a rematch for the rematch to actually take place.
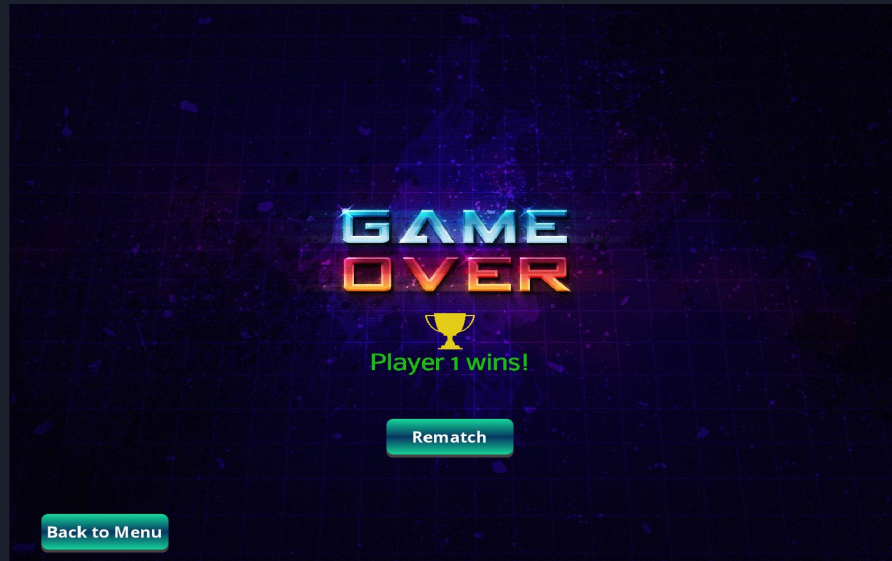
Appendix I: Installation

PACMAN PRO: INSTALLATION INSTRUCTIONS (on Ubuntu 20.04 LTS)

- INSTALLING SDL:
  - sudo apt-get install libsdl2-dev
- INSTALLING SDL_image:
  - sudo apt-get install libsdl2-image-dev
- INSTALLING SDL_ttf:
  - sudo apt-get install libsdl2-ttf-dev
- INSTALLING SDL_mixer:
  - sudo apt-get install libsdl2-mixer-dev
- INSTALLING SDL_net:
  - sudo apt-get install libsdl2-net-dev

Appendix II: Run our Game

PACMAN PRO: RUNNING THE GAME

- Clone the repo https://github.com/ArnavT005/Maze_Game
- Change to "src" directory
- Open terminal
- LOCAL:
  - run "make" or "make game"
  - execute game by running the command "./game"
- ONLINE:
  - run "make" to compile both server-client executables together
  - run "make server" (to only compile server executable)
  - run "make game" (to only compile client executable)
  - run server on a machine using "./server"
  - run game (client) on two different machines/terminals using "./game"
    (Note that the server disconnects when either of the clients disconnect (closes game).
    The servers needs to be restarted in case the client disconnects, for reconnection.)
- ENJOY!

Appendix IIIA: Features

PACMAN PRO: FEATURES

We have added some really awesome *pro* features for you :

- GENERAL:
    - Add 2 player game modes (Local/Online)
    - Add networking. Players can now play together even when on different machines. Only LAN supported as of now.
    - Add "safe" areas for players (GHOSTS DENIED!)
    - Background theme is chosen at random from 5 predefined backgrounds.
    This can act as a breath of fresh air, when playing multiple times.
    - New maze is generated every time the game is started.
    (Note that it is ensured that there are no closed areas)
    - "Rematch" option is now available at the end of the match.
    (Now you can play for hours ;))
    - Players can enjoy all the game modes (local/online) as long as they are connected to the server.
    - A message is printed on terminal when the connection between client and server is slow. Slow connection may lead to lag and/or loss of information.
    - New game mode: DARK MODE (scary!).
    (Players have limited visibility and are haunted by ghosts, a real challenge!)
    - Various new sound effects have been added for different in-game activities

Appendix IIIB: Features

PACMAN PRO: FEATURES

- PLAYER:
  - Players can now teleport using any of the 4 portals present.
    Destination portal is picked up at random (surprise!)
  - Added a new "zone" around the players, a.k.a Parry Zone.
    Players can now parry ghosts even when they are not scared.
    (Can be useful when you are at a dead end. It has a cooldown though!)
  - Players can now collide with one another, which can lead to unpleasant encounters!
    (It is a fight to survive and win!)
- GHOST:
  - Ghosts can now split up at a specific time leading to more number of them.
  - Add new mode: DARK MODE
  - Improved Ghost AI. Inky now speeds up when going crazy! Be wary of him.

Disclaimer: Our two player pacman (local/online) builds up on the original single player pacman.

Many of the original pacman mechanics have been recreated, and hence are omitted from this section.