

1.2 THE GAME

1.2.1 Game title:

- Pizza Time™

1.2.2 Game Description:

- The game is a modified version of Pac-Man(1980) with a customized UI design and additional gameplay features.

1.2.3 Game Objectives:

- The player will control a car, the objective of the game is to deliver pizzas around the game map. The player wins as soon as he drops the pizza off in all the N houses.
- The barriers on the map will be disconnected roads, meaning the player can not travel between cells since there is no road.
- The player will go around the map collecting pizzas from the source restaurant and taking them to specific locations. Once a pizza is picked up, a delivery point will spawn and the player must deliver it within a time limit.
- There will be a police car that will try to stop the player. The police car will move whenever the player moves.
- The map will be made with nodes and vertices as the cells. We plan to make a NxN map. The map will be randomly generated, and each map will always be fully connected. We plan on using some sort of search algorithm to make sure each map will be connected. Nodes will be houses and vertices will be roads. Each time the map is generated some roads will not be created but there will always be the same amount of nodes/houses.
- The player will control a car and will start with 3 health. The only thing that will reduce the health of the player is the punishment, running into the police car will end the game. The player will spawn at least N cells away from the police car. (note N cell must not be at Car Character Cell and $N > 10$ cell radius from start node)

- The police car will use a greedy algorithm on each tick to find the shortest path between it and the player. It will move towards the first node on that path. Each time the player moves, the police car will search and move. This continues until the player finishes all the deliveries, loses all its health, or is caught by the police car.
- There will be 5 different difficulties, each time the difficulty is increased the number of deliveries required to complete the game gets increased by n.
- 3 Types of Collectibles will be added to the game. Regular Rewards, Special Rewards, and Punishments (Bad rewards)
- Pizzas are picked up from the Restaurant (starting node 0:0) and will then start a timer.
- Timer will give the Player n ticks and every NWES move is a -1 tick.

1.2.4 Rewards:

1.2.4.1 Regular Rewards

- When the pizza is collected the player is given a regular reward, this includes a basic improvement and added time on the player's total timer.
- Once the first pizza node is picked up the delivery location node will spawn and a timer will start.
- If the pizza is delivered within the countdown, the player will receive cash in dollars, total cash will be computed as the final score of the player.

1.2.4.2 Special Rewards

- There will be special rewards that will grant the player with power ups to make the gameplay easier.
- The special reward pops up in n ticks and disappears in m ticks.
- There will be three kinds of special rewards.
- The three special rewards are the following:
 - **Wrench** - will allow the player to gain 1 health
 - **Clock** - will stop the police as well as the countdown for delivering pizza for a given time
 - **Shield** - will grant the player with temporary invincibility from police and negative rewards. Note: it will not protect from penalties for late deliveries and it will break after running into police or a negative reward.

1.2.4.2 Negative Rewards

- Negative rewards are rewards that do damage or slow down the player.
- There will be three Negative Rewards in the game.
- The negative rewards are the following:
 - **Spike Strip**- will reduce the health of the player by 1
 - **Speed Bump** - will temporarily stop the car n ticks.
 - **Walking Man** - very rare ticks there will be a walking man that if the player hits the game will automatically end and will send the person to a splash screen of “you are going to jail”.

1.2.5 How to Play:

- Once spawned the player will make their way to collect a pizza.
 - There is a running timer, so the player must collect the pizza.
 - After picking the pizza up, time will be added to the timer.
- The player must deliver the pizza within that time, after picking the pizza up.
- If delivered on time a player will gain score and 1 health.
- At the same time the player is spawned, a police car will spawn N cells away from the player.
 - If caught by the police car the game is over.
 - The player must avoid the police car while delivering and collecting pizzas.
- If they do not, they will lose a life and will not gain any extra score and a new pizza will spawn and the player will repeat the previous steps.
- There will be different difficulties, each will determine how many pizzas a player will have to deliver to finish the game.
 - Higher difficulties will give the player less time and more deliveries.