Hail Pizza

Hermie Baylon, Michael Chen, Marc Perez

University of Washington, Tacoma, Winter 2021

Professor Chris Marriot

Ver.	Date	Editor	Change Log
0.1	1-10-21	Marc Perez	Plan started
1.0	1-17-21	Marc Perez	First Iteration

This game was inspired by the author's (Marc Perez) first job in which he drove around through the night blasting heavy metal and delivering pizzas, likely breaking driving laws and speed limits while doing so. The game will be a GTA 2 clone in which the player controls the avatar from a top-down viewport to move freely omnidirectionally as well as be able to take control of vehicles that are limited to acceleration (forward and reverse), braking, and radial turning only when in motion. The game will feature a driver, the player character, collecting one to three orders from a central pizza shop hub and delivering them by foot or by car within the time limit. The player then returns to the shop to complete the round. The games first 2 rounds will be a tutorial.

Minimum required features include a goal assignment at the beginning of the round, enemy and neutral NPC's, a scorekeeper. Additional possible features include a score board, save/load features, and controller support, presented in order of importance. Additional plans for features will be added as needed.

Entities

We will use as much of the original GTA 2 sprite sheets as can be collected and will determine the rest as needed. It is expected that the player character (driver), vehicles, and pedestrians can be found, and the rest will need to be created or repurposed from other media sources

- Driver

- o Main character. Two states (on foot, driving) and the sprite will be hidden or deleted (TBD) when in vehicle. Player will have 6 actions in this state (Forward, Backward, Turn left, Turn right, Jump, Enter Vehicle).

- Vehicles
  - o Driver's Vehicle
    - ▪ Main character's alternate state. Controls will be notably different in this state and goals are not activatable unless leaving the vehicle. Player will have modified controls with the same keys when in this state (**Accelerate**, **Reverse**, Turn left, Turn right, **Brake**, **Exit** Vehicle) and cannot pivot when not in motion.
  - o NPC Vehicles
    - ▪ Actions will mimic the player when in the driver state but will be AI. They will follow a randomized route, taking turns at random at intersections and stopping at lights. They exist as moving obstacles and have no direct influence on the goals of the player.
  - o Police Vehicles
    - ▪ Possible extra feature. In passive state, will wander aimlessly like the NPC Vehicles. In Aggressive state, will chase player when triggered and will give up over time. On catching the player there will be a time and score penalty as the officer harangues the driver.

- Pedestrians
  - o NPCs
    - ▪ Walking pedestrians that slowing step down sidewalks. Die on collision with vehicles. If police feature is implemented, this will trigger a police chase. Undisturbed, they walk around blocks in circles.
  - o Dogs
    - ▪ Aggressive NPC. Will chase players when in range and return to center of range when player is out of range. On catching the player, there will be a score penalty and health damage.

- Buildings
  - o Pizza Shop

- Central hub for the player. Game begins adjacent to this building. When starting a mission, this is where to start.
  - Buildings
    - Map obstacles. Cannot be entered or interacted with in any unique way.
- Objects
  - Trees, Telephone Poles, Fences
    - All interact the same; stop vehicle motion and inhibit player movement.
  - Speed Pentagram
    - Speed booster. Non-directional, the pentagram accelerates the player past their max speed rapidly and over a short period the player will decelerate back to their normal max speed. Does not expend the object. Only usable when in vehicle.
- Goal Arrows
  - Float around driver, point towards the order destinations. Disappear when goal is completed.
- Score Counter
  - Running tally of score total. Saves to leaderboard at end of game if leaderboard is implemented.
- Radio Overlay
  - Displays current song.
- Pizza Counter
  - Displays how many more orders need to be delivered.
- Health Bar
  - 10 Hit points displayed at start of game. Decrements as damage is taken.

Control

The player character is the only unit controlled, but it should operate in two different states: on foot and in a vehicle. On foot, the character should be able to turn on an axis and jump and in vehicle it should only change the arc when moving forward. In both, there should be a forward and backward movement as well as a button to enter/exit a vehicle. For sake of comfort, we will base this on the common WASD directional control.

- Forward/Accelerate: 'W'. Static movement speed on foot, accelerating movement speed in vehicle. Vehicle can only accelerate to a static maximum speed.

- Backward/Reverse: 'S'. Same as above but negative values. Acceleration and maximum speed are halved for this movement.

- Turn Left: 'A' – same button operates based on state. Cannot turn on pivot in vehicle state.

- Turn Right: 'D' – same button operates based on state. Cannot turn on pivot in vehicle state.

- Jump/Brake: SPACE BAR. Propels on-foot driver forward a static distance. Braking on decelerates to 0, unlike reverse.

- Enter/exit vehicle: 'E'. Must be near the vehicle to enter. Exiting puts the driver next to the driver side door or as close to there as possible.

Game Interactions

The general theme is that the goal is to deliver pizzas and avoid being damaged.

- Collisions
  - Vehicle vs. Pedestrian, the pedestrian is killed.
  - Vehicle vs. Vehicle, both vehicles display damage and are knocked back/slowed down accordingly. Kinematics will need to be emulated here.
  - Vehicle vs. Object/Building, All objects will immediately halt a vehicle hitting them. Possible extra feature; certain objects are destroyed and animate being knocked over.
  - Driver vs. Pizza Shop, enter building, load text prompt, begin mission if not already on one.
  - Driver vs. Goal, completes order, rewards points.
- Collect Orders
  - Timer begins when orders are collected at the pizza shop. Mission 1 & 2 are pre-generated; Mission 1 gives one order that is nearby, Mission 2 gives two orders that are a driving distance away, one is on the street and the other is behind a fence. After that, they are randomly generated with 1-3 orders in various places.
- Deliver Order

- o Delivering an order will decrement the order counter until it is 0, at which point it will hide the counter and end the timer. A point reward is granted based on remaining time. Possible Extra Feature: more aggressive NPC's are spawned on the map after every order.
- Movement
  - o Two states for player movement; on-foot and in vehicle. The two different ways to be controlled are stated above are implemented. Collisions covers how interactions are handled.
- Enter/Exit Vehicle
  - o If near the driver's vehicle, the player token disappears and the vehicle is animated to reflect that the driver is in the vehicle. Exiting the vehicle will turn off vehicle lights and place the driver next to the driver side door.
- Get Attacked
  - o When attacked by a dog NPC, the player's HP meter is decremented. When the meter hits 0, the player dies and the game ends.
- Game End
  - o When the player is killed by taking too much damage or does not complete an order in time, the game ends and the player score is displayed on the screen. Possible extra feature: Leaderboards saved online.

Timeline

WEEK	GOALS
3	1st iteration Assets, level layout, Create stubs, on-foot controls, vehicle controls.
4	**Prototype**. Map panning, NPC animations, on-foot animations, vehicle animations.
5	Mission start and completion mechanic, goal tracking, Health bar & death.
6	Vehicle NPC AI, on-foot/vehicle collisions w/ objects, "" w/ Vehicle NPC.
7	**Minimum Deliverable**. Hard-code first mission, Scoreboard, enemy NPC's w/ AI.
8	Enhance AI of non-aggressive NPC's, hard-code second & third mission.
9	Enhance AI of aggressive NPC's, generate random missions.
10	**Project Completion**. Finishing touches, address extra features.