Product Backlog aka Priority List

Green = Done

Sprint 1: Planning & Research

Source Control

- **User Story:** As a developer, I want to use GitHub so that I can collaborate with my team without overwriting code.
  Acceptance Criteria:
  - All members push/pull code without merge conflicts.
  - Developers can leave comments on shared files.

Game Frame

- **User Story:** As a developer, I want a basic HTML/JS game frame so that the game can run in a browser.
  Acceptance Criteria:
  - Game loads and displays in a modern web browser.

Game Flow Design

- **User Story:** As a developer, I want a flow diagram showing screens and transitions so that we can plan game states.
  Acceptance Criteria:
  - Diagram includes transitions between menu, game, and end states.

UI Layout Design

- **User Story:** As a developer, I want a mockup of the UI layout so that I can align elements properly during development.
  Acceptance Criteria:
  - Layout includes placement of timer, buttons, score, and character.

Car & Obstacle Research

- **User Story:** As a team member, I want to collect car reference images so that we can design unique playable characters.
- **User Story:** As a team member, I want to collect obstacle reference images and types so that we can plan game challenges.
  Acceptance Criteria:
  - Sprites and references for cars and obstacles.
  - Possible obstacle difficulty levels listed.

Sprint 2: Basic Gameplay Implementation

Player Movement

- **User Story:** As a player, I want to switch between Five lanes so that I can dodge obstacles.
- **User Story:** As a player, I want to not be able to move off the screen so I am more immersed within the game.
  Acceptance Criteria:
  - Move car up across all the lanes until it enters the grass area. Attempt to continue moving up. The solution should prevent the car from leaving the screen. The car stays in the grass area instead of moving up.
  - Move car down across all the lanes until it enters the grass area. Attempt to continue moving down. The solution should prevent the car from leaving the screen. The car stays in the grass area
  - Movement is smooth and does not cut at all.

- Five distinct lanes exist including three road lanes and 2 grass areas on the edges.

Collision System

- **User Story:** As a player, I want the game to continue after a collision so that I can try to survive longer.
- **User Story:** As a player, I want the game to properly have correct collision detection so that I don't get frustrated.
  Acceptance Criteria:
  - Collision does not stop the game, the car continues to move even if it hits an obstacle.
  - The

Timer System

- **User Story:** As a player, I want a visible countdown timer so that I know how much time I have left.
  Acceptance Criteria:
  - Timer displays on the top right of the screen and decreases in real time.
  - If the timer goes to zero, the game continues.

Obstacle Mechanics

- **User Story:** As a player, I want obstacles to appear so that I have something to avoid.
- **User Story:** As a player, I want different kinds of obstacles so that the game feels varied.
- **User Story:** As a player, I want obstacle spawning to feel fair so that the game isn't too difficult.
  Acceptance Criteria:
  - Obstacles spawn within the 3 road lanes in a random pattern.

- Multiple obstacle models exist and all can spawn within the game.
- Spawning is randomized but not unfair.

UI Foundation

- **User Story: As a player, I want a Start button on the menu so that I can begin the game.**
- **User Story: As a player, I want a Quit button on the menu so that I can exit the game when I'm done.**
- **User Story: As a player, I want an Options button on the menu so that I can access game settings.**

  Acceptance Criteria:

  - The menu has a clearly visible Start button.
  - Clicking the Start button begins the game and transitions to gameplay.
  - The menu has a clearly visible Quit button.
  - Clicking the Quit button exits the game or closes the game tab/window.
  - The menu has a clearly visible Options button.
  - Clicking the Options button opens a settings or options menu.

Sprint 3: Interaction & Visuals

Animations

- **User Story:** As a player, I want a start animation so that the game feels exciting at launch.
- **User Story:** As a player, I want a collision animation so that I get visual feedback when I mess up.
- **User Story:** As a player, I want a lane-switch animation so that movement feels smooth.
- **User Story:** As a player, I want a finish animation so that the game has a satisfying end.
  Acceptance Criteria:
    - Each state change (start, lane switch, collision, finish) has a distinct animation.

Scoring System

- **User Story:** As a player, I want my score to be based on how much time I have left.
- **User Story:** As a player, I want to see my current score during the game.
- **User Story:** As a player, I want to view my top 5 scores in the menu.
  Acceptance Criteria:
    - Score is calculated based on remaining time.
    - Score is shown during and/or after the game.
    - Top 5 scores are saved and displayed in the main menu on the top left using local storage or database.

UI Feedback and Timer

- **User Story:** As a player, I want collisions to reduce my time so that the game becomes more challenging.
- **User Story:** As a player, I want going into the grass lane to double my time so that the game becomes more challenging.

- **User Story:** As a player, I want the timer to display during gameplay so I can keep track of time.
- **User Story:** As a player, I want the timer to pause with the game so that I don't lose time unfairly.
  Acceptance Criteria:
    - Timer is visible on the top right of the screen and counts down by 1 second per 1 second of playtime.
    - The timer reduces by 4 seconds on car/obstacle collision
    - The timer doubles in its speed while in the grass lane.
    - Timer pauses on game pause.
- **User Story:** As a player, I want buttons to react visually when hovered or clicked so that the interface feels responsive.
  Acceptance Criteria:
    - Buttons highlight on hover and press.

Game Name

- **User Story:** As a team, we want to name our game so that it can be branded.
  Acceptance Criteria:
    - A finalized game name is chosen and displayed in menus.

Game Controls

- **User Story:** As a mobile player, I want to swipe to change lanes so that I can control movement on my phone.
  Acceptance Criteria:
    - Swiping up/down while running on a mobile format changes lanes accurately.

Sprint 4: Polish & Optional Features

Visual Polish

- **User Story:** As a player, I want different car and obstacle designs so that the game has visual variety.
- **User Story:** As a player, I want background animations (e.g., scrolling) so that the game feels dynamic.
- **User Story:** As a player, I want smooth transitions between screens so that the game feels complete.
- **User Story:** As a developer, I want to remove all placeholder art so that the game looks finished.
  Acceptance Criteria:
  - No temporary/placeholder images remain.
  - All designs and transitions are finalized and smooth.

Bug Fixing & Performance

- **User Story:** As a developer, I want to test and fix bugs so that the game runs without issues.
- **User Story:** As a developer, I want to optimize performance so the game plays smoothly.
  Acceptance Criteria:
  - No major bugs during gameplay.
  - Game plays without noticeable lag or frame drops.

Tutorial System

- **User Story:** As a new player, I want a tutorial so that I can learn the game controls before playing.
- **User Story:** As a player, I want to skip the tutorial if I already know how to play.
  Acceptance Criteria:
    - A tutorial screen or guide exists.
    - Players can skip or close the tutorial.

Car Customization

- **User Story:** As a player, I want to choose a car style before playing so that I can personalize my experience.
  Acceptance Criteria:
    - Players can select from at least five different car designs.
    - Selected car appears in the game when running and playing.