**Game Design Document (GDD) for "Go Safe"**

**Version: 2.2  
Date: April 2025**

**Title Page**

* **Game Name: Go Safe**
* **Game Catch Phrase: "Hop, Dodge, Survive!"**
* **Document Type: Game Design Document**
* **Document Version: 2.2**

**Credit Page**

* **Document Purpose:  
  Provide a comprehensive and updated design blueprint for "Go Safe." This document now reflects the transition from an endless runner to a two-level arcade game with increasing traffic density and additional mechanics.**
* **Working Title: Go Safe**
* **Game Concept:  
  Guide your character through hazardous roads and rivers while facing dynamic obstacles including vehicles, automated traffic signals, and drones. Level 1 offers a more forgiving experience, and Level 2 intensifies the challenge with denser, faster traffic.**
* **Target Audience:  
  Casual gamers and fans of classic arcade-style games reimagined with modern systems.**
* **Technical Platform:  
  Developed in C++ using SFML, targeted for PC.**
* **Key Contributors:**
  + **Lead Designer: [Name]**
  + **Lead Programmer: [Name]**
  + **Lead Artist: [Name]**
  + **Lead Producer: [Name]**

**Sign-Off**

**GAME CONCEPT SIGN-OFF:**

* **Lead Designer: [Name]**
* **Lead Programmer: [Name]**
* **Lead Producer: [Name]**
* **Date: [Insert Date]**

**Introduction**

**Go Safe is an arcade game that challenges players to traverse a series of hazardous, procedurally designed environments. Unlike an endless runner, "Go Safe" now presents two distinct levels—each with its own difficulty and traffic density—requiring players to master precise movements and strategically utilize power-ups.**

* **Genre: Arcade (Two-Level Challenge)**
* **Player Mode: Single Player**
* **Art & Technical Style:  
  Bright, colorful 2D art with dynamic pixel animations; built using C++ and SFML.**
* **History & Inspiration:  
  Inspired by classic Frogger and Crossy Road titles, updated with a modern two-level structure.**
* **Theme: Adventure, Survival, Reflex Challenge**
* **Design Intentions:  
  Create a visually engaging and mechanically tight experience where players navigate through levels of escalating difficulty.**

**Game Analysis**

**Game Description**

**Core Concept:**

* **Players guide a character across roads and rivers with an increasing level of challenge.**
* **The game is now structured in two levels:**
  + **Level 1: Lower traffic density, more forgiving pacing.**
  + **Level 2: Denser and faster-moving traffic, increased enemy density.**

**Key Mechanics:**

* **Movement and Navigation:**
  + **Use keyboard controls (W/A/S/D or arrow keys) for directional movement and Space for jumping.**
* **Hazards and Obstacles:**
  + **Vehicles: Multiple lanes of enemy cars that change behavior based on automated traffic signals.**
  + **Rivers: Logs and river enemies require careful timing; safe river power-ups enable a sliding mechanic to cross safely.**
  + **Drones: Enemies that pursue the player with an offset and fire lasers, forcing quick evasion.**
* **Automated Traffic Signals:**
  + **Signals automatically change state using a cycle:**
    - **Green (6 seconds): Vehicles run at full speed.**
    - **Yellow (4 seconds): Vehicles slow down (50% speed).**
    - **Red (3 seconds): Vehicles stop.**
  + **The signals use portions of gosafe.png (with defined texture rectangles) and affect vehicle behavior globally.**
* **Power-Ups:**
  + **Safe river power-ups, among others, that provide special abilities (e.g., enabling a sliding animation to bypass dangerous river sections).**

**Progression:**

* **Level 1:**
  + **Focuses on learning the mechanics with fewer hazards and lower enemy density.**
* **Level 2:**
  + **Increases spawn rates, enemy speeds, and overall traffic density to challenge advanced players.**

**Strengths and Areas for Improvement**

**Strengths:**

* **Clear Gameplay Concept: Simple navigation through hazards with distinct levels of difficulty.**
* **Well-Defined Mechanics: Incorporates movement, automatic traffic signal behavior, and unique safe river sliding.**
* **Technical Implementation: Developed in C++ with SFML, leveraging modern 2D graphics and sound systems.**

**Areas for Improvement (Addressed in This Version):**

* **Level Variety: Two levels now offer a tangible escalation in difficulty.**
* **Enemy AI and Interaction: Enhanced behavior (e.g., drones with offset pursuit, vehicles affected by signals).**
* **Visuals and Audio: Improved asset usage with gosafe.png for animations and automated signal cycles, plus distinct background music and sound effects.**
* **Detailed Obstacles: Precise timing for traffic signals and defined safe river mechanics elevate the gameplay.**

**Gameplay**

**Objectives**

* **Primary Goal:  
  Safely guide the character through increasingly hazardous environments to complete Level 1 or Level 2.**
* **Secondary Goals:  
  Collect power-ups, master safe river sliding, and achieve the highest score possible.**

**Game Flow & Structure**

1. **Main Menu:**
   * **Options: Level 1, Level 2, and How To Play.**
2. **Gameplay:**
   * **Level 1 begins in a relatively forgiving environment.**
   * **After completing Level 1 or when opting for Level 2, challenges increase via denser traffic and faster-moving hazards.**
3. **End Screens:**
   * **Game Over or Victory screens display with selectable options (“Play Again” and “Back To Menu”), using polished visual cues.**

**Core Mechanics**

* **Movement:**
  + **The character can move in all four directions and jump.**
  + **A sliding mechanic (activated by safe river power-up) allows safe river traversal.**
* **Traffic Signals (Automated):**
  + **Cycle automatically (Green for 3 sec, Yellow for 2 sec, Red for 2 sec) using predetermined texture regions from gosafe.png.**
  + **Global effect: all vehicles run full speed during green, slow to 50% during yellow, and stop on red.**
* **Enemy Vehicles:**
  + **Adjust their behavior based on signal states; in Level 2, spawn rates and speeds are increased.**
* **Drones:**
  + **Actively follow the player (with an offset so they don’t fully cover the character) and fire lasers.**
* **Safe River Mechanic:**
  + **Enables a sliding animation to cross the river when activated.**

**Game Modes & Levels**

* **Level 1:**
  + **Less traffic, slower vehicle speeds.**
* **Level 2:**
  + **Increased traffic density and enemy speed, offering a more challenging experience.**

**Game World**

**Visual Style & Art Direction**

* **Style:**
  + **Bright, colorful 2D pixel art with modern animation techniques.**
* **Asset Usage:**
  + **The primary texture atlas is gosafe.png, used for character animations (walking, jumping, sliding, dying) and environmental elements such as traffic signals.**
* **Environmental Elements:**
  + **Roads: Multi-lane with alternating vehicle directions.**
  + **Rivers: Contain floating logs and river enemies, and safe river power-ups for sliding.**
  + **Drones: Designed to add a futuristic challenge with laser attacks.**

**Level Design**

* **Procedural Elements:**
  + **Even though the game now has two distinct levels, procedural generation is still used to randomly spawn vehicles, logs, and enemies.**
* **Difficulty Curve:**
  + **Level 1 teaches the player with a more relaxed pace.**
  + **Level 2 increases both spawn frequency and hazard speed.**
* **Traffic Signals:**
  + **Positioned at key points (including an extra signal in upper lanes) to challenge the player via their impact on enemy vehicle speed.**

**User Interface**

**Menu & In-Game UI**

* **Main Menu:**
  + **A visually engaging menu with background effects (e.g., falling leaves).**
  + **Options include Level 1, Level 2, and How To Play.**
* **In-Game HUD:**
  + **Minimalistic design—no score is shown on screen.**
  + **Background music plays continuously.**
* **End Screens:**
  + **Clear “Game Over” (red) or “You Won!” (yellow) messages in large fonts, with selectable options (“Play Again” and “Back To Menu”) and instructions (using keys W/S, Enter, and Esc).**

**Audio**

**Music and Sound Effects**

* **Background Music:**
  + **A dedicated looping track plays from game start until exit, handled by a dedicated sf::Music channel.**
* **Sound Effects:**
  + **Actions such as jumping, running, and collision have distinct one-shot sounds (loaded and managed separately from the background music).**
* **Audio Integration:**
  + **Background music is continuous, whereas sound effects are triggered by specific events.**

**Feedback for the Player**

* **Visual Feedback:**
  + **Animated characters and hazards provide clear indications of actions (e.g., sliding on safe river, drone attacks, traffic signal color changes).**
  + **Automated signals and dynamic vehicle behavior give players cues about when to cross safely.**
* **Auditory Feedback:**
  + **Responsive sound effects enhance action, and background music maintains the game’s pace.**

**Data Collection & Deployment**

**Data Collection**

* **Metrics:**
  + **Player high scores, session duration, and level selections are tracked for balancing and engagement analysis.**
* **Usage:**
  + **Data is used internally for performance tuning and enhancing player experience.**

**Deployment**

* **Platforms:**
  + **PC**
* **System Requirements:**
  + **Minimal – optimized for broad compatibility with SFML.**

**Development & Production**

* **Development Environment:**
  + **Developed in C++ using SFML.**
* **Source Control:**
  + **Managed via Git (or another version control system), with this document representing Version 2.2.**
* **Future Enhancements:**
  + **Additional levels, enemy types, and refined enemy AI.**
  + **Expanded power-up types and increased customization in level design.**