Game Design Document

Title: Forest Road Rush
Version: 1.0

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GAME OVERVIEW

Project Title: Forest Road Rush – Version 1.0

Genre: Endless Driving / Survival

Engine: Unity 6

Platform: PC,

Team: Solo / Indie

Current Stage: Prototype to Version 1.0 (Core Mechanics)

Next Version (v2.0) Preview: Dynamic weather, skidding mechanics, opposite-traffic cars as obstacles.

1.1 High Concept

Forest Road Rush is a fast-paced **endless driving game** where players control a car speeding down a forest road. The goal is simple: **collect as many coins as possible** while avoiding obstacles and hazards. Over time, the game increases in difficulty by speeding up, reducing spawn intervals, and adding environmental hazards.

1.2 Core Gameplay Pillars

- Simple Controls: Left / Right movement on a continuous forward-driving car.
- Immersive Environment: Forest-themed track with trees, coins, and falling obstacles.

- Replayability: Increasing difficulty curve, coin collection, and a persistent high-score system.
- Atmosphere: Smooth skybox lighting with ambient forest sounds.

1.3 Vision Statement

A casual yet thrilling endless driving game set on a scenic forest road — visually immersive, easy to play, and rewarding to master.

2. VERSION HISTORY

Version	Features	Status
v1.0	Core gameplay: driving, coins, obstacles, trees, difficulty scaling, high score UI	Current
v2.0 (Planned)	Weather system (rain, fog, day/night), car skidding physics, oncoming traffic cars as moving obstacles	In Design

3. GAMEPLAY MECHANICS

3.1 Player Controls

Inputs	Actions
A / Left Arrow	Move car left
D / Right Arrow	Move car right

1. The car moves forward automatically.
2. Movement is clamped within the road boundaries.

3.2 Objectives

1. **Primary Goal**: Survive as long as possible while collecting coins.
2. **Secondary Goal:** Beat your previous high score.

3.3 Obstacles

- Static Obstacles: Fallen logs, rocks, cones, barrels, etc.
- Dynamic Obstacles: Falling trees or debris.

- *(v2.0)* Oncoming Cars: Spawned in the opposite lane, move toward the player.

3.4 Collectibles

Coins:

- Increase score by +1 per coin.
- Play pickup sound.
- Update coin count and high score if applicable.

3.5 Difficulty Scaling

- Every X seconds, the forward speed increases slightly.
- Spawn intervals for obstacles decrease.
- This continues indefinitely until Game Over.

3.6 Game Over Conditions

- Collision with an obstacle or snake (hazard).
- (Future) Collision with an oncoming vehicle.

When Game Over occurs:

- The car stops moving.
- GameOver UI shows Final Score, Time, and High Score.
- Buttons appear for PlayAgain! Or Main Menu.

3.7 Scoring System

Event	Coins
Collect Coin	+2
Survive 10s	nil
Beat Previous High Score	Saves new record via PlayerPrefs

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4. GAME WORLD

4.1 Setting

- Theme: Dense forest with road stretching infinitely forward.
- Environment: Trees line both sides, slight variations in scale and rotation for realism.
- Skybox: Clear blue sky (URP skybox material).
- *(Future)* Dynamic clouds, fog, rain.

4.2 Environment Assets

Element	Description
Road	Long repeating mesh or tiled prefab
Trees	Static prefabs randomly placed along the sides
Coins	Floating collectibles (trigger colliders)
Obstacles	Prefabs dropped/spawned periodically
Background	Skybox (material)

5. USER INTERFACE (UI)

5.1 HUD (In-Game)

- Coins: "Coins: X"
- Time Survived: "Time: s"
- High Score: "High Score: Y"

5.2 Game Over Screen
- Final Score
- Final Time
- High Score
- Buttons: Restart, Main Menu

5.3 Main Menu
- Title "Forest Road Rush"
- Buttons: Play, Quit

6. AUDIO DESIGN

Event	Sound
Coin Pickup	coin_pickup.wav
Background Music	forest_drive_theme.mp3

(Future versions will include ambient rain, thunder, and skidding tire SFX.)

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7. VISUAL STYLE & ART DIRECTION

- **Art Style**: Semi-realistic or low-poly forest aesthetics.
- **Lighting:** Directional sunlight, soft shadows, natural tones.
- **Camera:** Third-person follow behind car (slightly elevated angle).

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8. SYSTEM DESIGN

8.1 Technical Specs

System	Description
Engine	Unity 6
Physics	Rigidbody (with freeze rotation)
Input	Legacy Input or Unity Input System
Build Target	PC
FPS Target	60 FPS

8.2 Object Management

Spawners:

- ObstacleSpawner for hazards.
- CoinSpawner for collectible coins.
- TreeSpawner for environment decoration.
- Pooling (future optimization): Reuse prefabs instead of destroying.

8.3 Save System

- Uses PlayerPrefs to store:
- Retrieves and displays high scores every game start

9. DIFFICULTY PROGRESSION

Time (s)	Forward Speed	Spawn Interval	Comment
0	15	2.5s	Base Speed
30	18	2.0s	Medium challenge
60	22	1.5s	Fast pace
90	25	1.0s	Hard mode
120+	28+	0.7s	Extreme

(All adjustable in Inspector for fine-tuning.)

10. FUTURE VERSION PLAN (v2.0 & Beyond)

v2.0 – "Weather & Traffic Update"

Feature	Description
Dynamic Weather	Random weather changes — rain, fog, day/night cycle
Skidding Mechanic	Reduced traction on wet roads (inertia effect)
Opposite Cars	AI cars driving toward the player, serve as moving obstacles
Road Conditions	Wet surface visuals + rain particle effects

Performance Optimization	Object pooling for cars and trees

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11. DEVELOPMENT MILESTONES

Milestone	Task	Deliverable
1	Setup project + road + camera follow	Functional prototype
2	Add car movement and controls	Smooth drive feel
3	Add coin and obstacle spawning	Core gameplay
4	UI & GameOver screen	Playable loop
5	Add sound & high score saving	Polished gameplay
6	Add environment (trees, skybox)	Visual completeness
7	QA testing & balancing	v1.0 release

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12. ASSET LIST

Category	Asset	Source
Car Model	Sports car prefab	Unity Asset Store / TurboSquid
Trees	ForestPack	Unity Asset Store
Obstacles	Box	Custom
Coins	Coin prefab	Custom
Music	Theme,coin	Freesounds.com

13 .APPENDIX

13.1 Tags Setup (in Unity)

Object	Tag
Coin	Coin
Obstacle	Obstacle
Snake	Snake
Player	Player

13.2 Required Components

- Player: Rigidbody (use gravity), Collider (box), PlayerController.cs
- Coins: Collider (IsTrigger = true)
- Obstacles: Collider + Rigidbody
- Spawners: Scripts for each spawn type
- UI: Canvas + TMP elements

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14. RELEASE DETAILS

Build Type	Platform	Version	Distribution
Prototype	PC	v1.0	Local

Project Submission

On

Forest Road Rush

(Capstone Project - WEARE1 Game Development cohort 2025)

Submitted by

ARAVINDRAJ KASILINGAM

WEARE1 Game Development course

Guided By

Mr. Nikhil Malankar Founder & CEO, GameEon Studios Instructor – WEARE1 Game Development Course

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Submitted To

WEARE1 (We Are Gamers) In Collaboration with GameEon Studios Mumbai, Maharashtra, India

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