**Design Document for:**

# OVERDRIVE

**ANYTHING GOES**

All work Copyright ©2018 by Wheelspin Games

Written by Luke Bruni

Version # 1.1

Wednesday, March 13, 2019Table of Contents

OVERDRIVE 1

1. Document Revisions 3

2. Game Overview 4

2.1 Philosophy 4

2.1.1 Revival of Awesome Features 4

2.1.2 Pure Arcade Handling 4

2.2 Common Questions 4

2.2.1 What is the game? 4

2.2.2 Why create this game? 4

2.2.3 Where does the game take place? 4

2.2.4 What do I control? 4

2.2.5 What is the main focus? 4

2.2.6 What’s different? 4

3. Features in Overdrive 5

3.1 Gameplay Overview 5

3.2 Customization 5

3.3 Race Types 5

3.3.1 Circuit Racing 5

3.3.2 Sprint Race 5

3.3.3 Drag Race 5

3.3.4 Drift 6

4. The Tournament 7

4.1 Overview 7

4.1.2 Setting 7

4.2 Massively Worldwide 7

4.3 The World Locations 7

4.3.1 Overview 7

4.3.2 Race Locations 7

4.3.3 Day and Night 7

5. Plan for Development and Testing 8

5.1 Development 8

5.2 Testing 8

5.3 Feedback of Testing 8

5.3.1 Peer Feedback 8

5.3.2 Feedback Interpretation 8

# 1. Document Revisions

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Name** | **Date** | **Notes** |
| **1.00** | Luke Bruni | 18/10/2018 | Initial Document |
| **1.1** | Luke Bruni | 09/03/2019 | Game Rename, testing and development plan and feedback |

# 2. Game Overview

## 2.1 Philosophy

### 2.1.1 Revival of Awesome Features

The game is going to revive a particular part of the genre that has not seen in most racing games, which is unlimited customizations on the cars; being able to choose whatever parts to go on whatever car. Limitless customization hasn’t been seen for a long time, the closest to this sort of customization being Ubisoft’s “The Crew 2”.

### 2.1.2 Pure Arcade Handling

Most modern racers have to rely on handling close to realistic, mimicking the feel of actual cars in racing. While it benefits its fans well, some gamers prefer that semi-realistic or arcade feel, where the cars handle easily and quicker than what is perceived in “realistic” racing games. There has been a lack of these sorts of racers as of late, so it would be good to go back to the roots to bring players a fun experience.

## 2.2 Common Questions

### 2.2.1 What is the game?

Overdrive is a racing game where a rookie racer must make it to the top of an anything goes racing tournament, where the races are intense and chaotic, requiring the best to make it to first place.

### 2.2.2 Why create this game?

This game is part of individual projects in Reboot games. The main aim is to create a high octane racing experience similar to that of classic racing games.

### 2.2.3 Where does the game take place?

The game takes place in multiple locations around the world, anywhere from city race tracks, circuit tracks and dirt trials across numerous world locations.

### 2.2.4 What do I control?

The player controls the rookie driver, once a movie stuntman. The player also drives the character’s main car, which is chosen by the player.

There are numerous cars that can be chosen by the player, all can be driven and upgradable, with such cars as estates, performance cars, sports saloons, touring cars and racing prototypes.

### 2.2.5 What is the main focus?

The game is about a former movie stuntman, who enters the tournament after his career took a downfall. Now he must beat the all-time champion in order to get his career back as well as take the top spot as the new all-time champion, if he chooses.

### 2.2.6 What’s different?

What Overdrive is aiming to do is to bring back the limitless type of customizations that you can make to your car and make it more suitable for a different type of race rather than just buy another car, however that is a choice too in this game.

The game features more arcade like handling, mainly to reach out to more of an audience and appeal to all sorts of gamers and not be too difficult to the point of which it is not fun.

# 3. Features in Overdrive

## 3.1 Gameplay Overview

The game will focus on fast paced gameplay for any player, which should make the game in turn able for anyone to pick up and play. There will be an arcade element or feeling to the game to make the game achieve that all-round feeling.

The player will race in each racing division, acquiring cash and using it for cars or upgrades to the cars. The campaign will allow players to race to unlock tracks, upgrade and cars, which subsequently be used for single player. The player will race against a huge grid of players, which should make each race very frantic.

## 3.2 Customization

Customization in this game will be available for all the cars in the game no matter what that car is. Each car can be modified to what the player wants regardless to create a unique racing machine, capable. Each upgrade is as followed:

* Front Bumpers
* Rear Bumpers
* Side Splits
* Hoods
* Spoilers
* Exhaust

In addition to this, cars will also have the ability to upgrade the performance, with engine, chassis, suspension, tires and nitrous. These upgrades will give the car added acceleration, speed, grip and handling, through 3-5 levels depending on the type of car due to the base performance and class. Nitrous allows players at the press of a button to give their car a burst of acceleration, again depending on the level; a low level nitrous system will only offer a quick burst whereas high level nitro will offer a longer, much powerful burst as well as go over the car’s top speed.

## 3.3 Race Types

There are many different race types that will be available in Overdrive, each with their own objectives to complete the race. The player can choose to play:

### 3.3.1 Circuit Racing

The simplest and recognized form of racing. Drivers race around a looped track which can vary depending on player choice to a number of laps. The driver wins if they have completed the maximum number of laps and crossed the finish line first.

Players can also finish in any podium position (second or third place), they can progress the game if they have finished in this position, but the rewards won’t be as that of first place.

### 3.3.2 Sprint Race

Same as circuit racing but rather than racing in a number of laps, players simply must race from point A to point B. The player can still finish first, second or third.

### 3.3.3 Drag Race

A drag race will be set on a straight-line track, where several drivers must get to the end first to win. This mode is almost like that of a sprint race, but players are forced to use manual transmission, which is where this mode shines. To be the fastest, players must time their shifts perfectly to come out on top, but if the player misses a shift, over-revs or short shifts, then the player can lose time.

This mode will have a tutorial dialogue box for any new players on their first race, detailing the shift controls and when to shift, along with some bonus tips.

This game mode will be very tense and harder when faster cars eventually are used, cars with top speeds of 300+ mph might bring on an anxiety attack.

### 3.3.4 Drift

In this mode, the player does compete, but instead of racing for first, the player must drift to meet the target score, either bronze, silver or gold. By drifting, the player can accumulate points, but only if the car has reached a certain angle and if they are travelling at a fast-enough speed.

The handling dynamic will change significantly for drift cars, rather than having the player adjust themselves or their car for drifting.

# 4. The Tournament

## 4.1 Overview

The tournament in Overdrive sets out across the entire world, where multiple races takes place at once, though being threatened by a bizarre association and ultimately, the police.

These races take place all over the globe, taking place either in the built up, challenging streets of London, the lovely winding roads of Italy or even the long Bonneville Salt Flats in the USA. Everyone can race… everywhere.

### 4.1.2 Setting

The game takes place in a modern-day setting, in a close but fictional representation of most continents, countries, cities and streets. Each country will vary but overall, it takes place now.

## 4.2 Massively Worldwide

Races can take place almost everywhere around the globe. Each mode has a track for each location, meaning that no matter what race, there will be a track for each location, either its own or part of a pre-existing race track. This means that there will be a huge amount of race tracks for the player to drive on.

## 4.3 The World Locations

### 4.3.1 Overview

As described above, the world will have many race tracks within each location in the world, with different types of tracks depending the mode being played. This means that there will be at least one mode dependent race track, to ensure a good variety for the players and us not making it too arcadey with only a few select tracks.

The race tracks will be long and challenging, wide enough for the players to overtake and to match the handling model of the game. Certain drift tracks will be wider for drifting. These race tracks are going to be a mixture of authentic race tracks, street circuits and nature trails.

### 4.3.2 Race Locations

Overdrive takes place all over the world, with the player being able to choose the country they want and choosing a race there, which is how the player “travels” in the game. These are some of the countries that will be featured:

* England – Quaint, a mix of car culture, but can be built up with traffic.
* Japan – Winding mountain roads, bright vibrant cities and where JDM originated from.
* Italy – Classic, vintage roads built for old sportscars and offers the best driving experience.
* Brazil – Featured here because it gets no love in driving games.
* Sweden – Mainly for the rally stages.

More locations will be featured, as the game is developed.

### 4.3.3 Day and Night

There is no active day and night change due to the shortness of the races. However, the player can race on any track in any given time zone. These will be sunrise, sunset (Like a sunrise, but a bit nicer), evening, midnight, morning and afternoon.

# 5. Development and Testing

## 5.1 Development

### 5.1.1 Plan Overview

By using the Game design document, development of the game will be conducted by running by the existing features presented in the document and implement them one by one. As the game will be run in Unity, the latest version available will be used for development and testing. C# will be used for the development of each feature. The reason for this is simple, being that there will be a level of consistency for each script that will be used, helping with ease of use and no other embedded languages that would cause confusion.

The features will be implemented in accordance to what the game design has stated the game will have. Any feature deemed complex will be slowly, with its first iteration being simple and worked on from there. The scripts will be ordered into different folders to aid within development and will be assigned to the specific game objects within to help with defining each feature.

On building the game, the settings will be configured for PC and formatted as an executable file.

**5.1.2 Backlog**

#### 5.1.2.1 User Stories

* As a user, I would like to be able to run the game.
* As a user, I would like to see a splash screen.
* As a user, I would like to interact with the menu.
* As a user, I would like to see the credits.
* As a user, I would like to play the level.
  + As a user, I would like a countdown to start the level.
  + As a user, I would like to drive the car.
  + As a user, I would like to be scored points.
    - As a user, I would like points based on speed.
    - As a user, I would like points scored when drifting.
  + As a user, I would like to drive around the track in a set number of laps
  + As a user, I would like to pause the game.
    - As a user, I would like to resume the level.
    - As a user, I would like to restart the level.
    - As a user, I would like to exit to the menu.
  + As a user, I would like car damage.
    - As a user, I would like to know how much health I have left.
    - As a user, I would like to know how many lives I have left.
    - As a user, I would like to lose a life if I’ve wrecked my car.
    - As a user, I would like a game over screen if I’ve lost all my lives.
  + As a user, I would like to finish the level.
  + As a user, I would like to know if I’ve won or lost.
* As a user, I would like to return to the menu.
* As a user, I would like to quit the game.

#### 5.1.2.2 Development Tasks

|  |  |  |  |
| --- | --- | --- | --- |
| Task No. | User Story | Value | Task |
| 1 | As a user, I would like to be able to run the game. | 1 | Create a scene that the game will start on. |
| 2 | As a user, I would like to see a splash screen. | 1 | Have a splash screen made with the company logo on it. This will be the first thing the player will see. |
| 3 | As a user, I would like to interact with the menu. | 1 | Create a main menu with graphics that the user can use with options for them to select |
| 4 | As a user, I would like to see the credits | 1 | Make a menu button that takes the user to a separate screen containing the credits, along with a button for them to go back to the main menu. |
| 5 | As a user, I would like to play the level. | 2 | Make a menu button for the user to select the demo level |
| 6 | As a user, I would like a countdown to start the level. | 1 | At the start of the race, a countdown timer with sound will play and the player will drive the car once it reaches 0 |
| 7 | As a user, I would like to drive the car. | 3 | The player will be able to drive the car and shift the gears via a car controller. |
| 8 | As a user, I would like to be scored points. | 3 | A scoring system to be in place. This will be text that appears during the game and at the game over screen. |
| 9 | As a user, I would like points based on speed. | 2 | A score of 50 points will be added continuously when over 100MPH |
| 10 | As a user, I would like points scored when drifting. | 2 | A score of 50 will be added when the player drifts but doesn’t spin out. |
| 11 | As a user, I would like to drive around the track in a set number of laps | 3 | A set number of laps will be added for the player to race. The game will end once the number of laps has been reached |
| 12 | As a user, I would like to pause the game. | 1 | Make a pause menu that will stop the game momentarily with on-screen options |
| 13 | As a user, I would like to resume the level. | 1 | First pause screen option that will resume the game on selection |
| 14 | As a user, I would like to restart the level. | 1 | Second pause menu option that will restart the level back to the beginning of the level. |
| 15 | As a user, I would like to exit to the menu. | 1 | Last pause menu option that will send the user back to the main menu. |
| 16 | As a user, I would like car damage. | 5 | Make a damage system that has the car take damage on collisions dependent of speed. |
| 17 | As a user, I would like to know how much health I have left. | 2 | Show the car’s health on the screen |
| 18 | As a user, I would like to know how many lives I have left. | 2 | Show the car’s lives on the screen |
| 19 | As a user, I would like to lose a life if I’ve wrecked my car. | 3 | Make it so that the car will lose a life and reset to the track once all the health is lost. |
| 20 | As a user, I would like a game over screen if I’ve lost all my lives. | 3 | Make a game over screen that has the player lose the game once all the lives are lost. |
| 21 | As a user, I would like to finish the level. | 2 | Make a finish condition to finish the game once the max number of laps have been completed. |
| 22 | As a user, I would like to know if I’ve won or lost. | 5 | Have a win and lose condition based on the time element of the game (Race within a set time) and display if the player has won or lost |
| 23 | As a user, I would like to return to the menu. | 2 | Make it so that the game over screen has an option for the player to return to the main menu. |
| 24 | As a user, I would like to quit the game. | 1 | Have an option at the main menu where the player can quit the game. |

## 5.2 Testing

### 5.2.1 Plan Overview

The testing of the game will be carried out via two methods of testing; black box and white box testing. By going with the development plan, after the gameplay elements have been implemented, each will be tested out via white box testing. Any fails that will be noted down and any improvements will be noted within the tested table to be carried out in the next test of the feature.

Black box testing will be carried out after all the main features have been implemented and tested via white box. This will find any missing features or undetected bugs, which will be noted and improved within the next plan.

### 5.2.2 White-Box Testing

The white box testing was carried out to test the features of the game and to determine if the game had any bugs. The bugs from each feature were noted down for improvements for that feature.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test reference no. | Description of  test | Type of test | Expected  outcome | Real outcome |
| 1. | Importing Assets for use within the game | White-Box | The assets imported are fully supported and show up within the game view | Passed.  The assets show up within the project view and the scene view. |
| 2. | Car assigned to a BodyCollider | White-Box | The car being assigned should have rough collisions and come in contact with the ground | Passed.  The car is assigned the Rigidbody and comes in contact with the ground. |
| 3. | The WheelColliders should be positioned in the right places of the car | White-Box | The wheel colliders should be positioned on the car and be used to recognise the position of the wheels | Passed.  The wheels are positioned correctly, and the code successfully recognises where the wheels are supposed to be. |
| 4.  (A) | WheelColliders define the car wheels | White-Box | The car should be assigned the wheels to which they should turn. | Failed.  The WheelColliders turn. However, the wheels on the car are fixed and don’t appear to move. |
| 4.  (B) | WheelColliders define the car wheels | White-Box | The car should be assigned the wheels and they should appear to turn by assigning the wheel object to the wheels | Passed.  The WheelCollider wheels turn and the car wheels turn with it. |
| 5. | The car should be controlled via the controller | White-Box | Input by the keyboard should be done by the controller. | Passed.  The controller input works and can move the car via the buttons mapped for driving. |
| 6.  (A) | Advanced Controls | White-Box | The car should reset back to track, have a functional handbrake and both transmission settings. | Failed.  Despite the reset to track and handbrake working, the transmission lacks gears and doesn’t shift properly |
| 6.  (B) | Advanced Controls | White-Box | Follow up from the first test but with functioning transmission | Passed.  Both the auto and manual transmission work accordingly |
| 7. | Lap Timer and Counter | White-Box | The Lap timer and lap counter function by counting the number of laps against set track laps and recording the best lap time from each lap. | Passed.  Both the counter and timer function and work accordingly. |
| 8. | Car Damage and life loss | White-Box | The car should take damage from collisions and when wrecked, the player loses a life. The game ends when the lives are lost. | Passed.  The car sustains damage and loses a life. Upon all lives lost, the game ends. |
| 9. | Scoring | White-Box | The player should get points based on their driving and the points upon winning the time trial. | Passed.  Scoring successfully tracks drifting and speed, and also scores points from the game’s objective. |

### 5.2.3 Black-Box Testing

The black box testing was done in a realistic environment; have another player test the system to see if the game functions well as if it were a game sold to a consumer. The reason for this test is to find any faults that would crop up during gameplay, based on the player’s experience.

Tester: Matthew Sides

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test reference no. | Description of  test | Type of test | Expected  outcome | Real outcome |
| 1. | Car drives, steers and reverses | Black-box | The car can accelerate, steer and reverse | Passed.  The car successfully accelerates, steers and reverses based on input |
| 2. | The main brakes | Black-box | The car’s brakes function and slow the car down fast. | Passed.  The car’s brakes work accordingly and can stop the car in a fast amount of time. |
| 3. | Manual Transmission | Black-box | The player can shift up and down through the gears. | Passed.  The player can shift up and down through the gears. |
| 4.  (A) | Auto Transmission | Black-box | The player should drive and the gears cycle automatically | Failed.  The car didn’t shift through the gears automatically |
| 4.  (B) | Auto Transmission | Black-box | The player should drive and the gears cycle automatically at certain RPM values | Passed  The car shifted through the gears automatically at the RPM ranges |
| 5.  (A) | Handbrake | Black-box | The car’s handbrake should work and should impact the car’s stability. | Failed.  There was no button discerning the handbrake, meaning it was non-existent. |
| 5.  (B) | Handbrake | Black-box | The car’s handbrake should be mapped, work and should impact the car’s stability. | Passed.  The handbrake was successfully mapped and spins the car. |
| 6. | Full lap of the track | Black-box | Testing the handling. The car can go around the track with ease | Passed.  Was able to drive the car around the track without difficulty. |
| 7. | Crash the car | Black-box | The car should crash and sustain damage | Passed.  Damage is sustained when crashed |
| 8. | 3 Laps of the track | Black-box | The player should complete three laps of the track | Passed.  The player can do three laps around the track without interruption. |
| 9. | Scoring | Black-box | The player should receive points based on driving | Passed.  The player can gain points based on how they drive |

## 5.3 Feedback of Testing

### 5.3.1 Peer Feedback

The plan was reviewed by two students within college, who reviewed the plan for both the testing and development for the game, Overdrive.

|  |  |
| --- | --- |
| **Reviewers** | **Feedback** |
| **Matthew** | The plan looks like it will help with the development of the game, as it looks like each feature is well covered from the user stories, however there should extend the full list of features for the demo to extend playability. Testing is also well in-depth and both white and black box testing should help make the game stable and should help with finding each bug or error. The testing should also be carried out alongside other elements and even after the build has been completed. |
| **Joe** | Each plan looks well structured and would help with the development of the game, both with implementation and the testing. The testing plan looks as if each feature from the document will be implemented well and tested thoroughly. The problem is that it is unknown if all the features would be implemented within the demo. |

### 5.3.2 Feedback Interpretation

From the feedback given from the testing plan, it was generally positive from what was given. Both peers had reviewed both the in-depth elements of the testing and development, saying that developing the elements as the design document intended would have the initial demo come close to the actual design of the game. The features they were referring to were the ones listed within the development backlogs; the user stories and the development tasks. Near enough the feedback from the testing was also received positively, as it was found that the nature of the testing would be thorough enough to find and report any bugs within the build of the game.

In terms of improvements offered by my peers, the faults of the plan within the development both focused on the lack of implementation that wouldn’t make it into demo, being that only one game mode had made it in to the final demo. From this, the development backlog was subjected to a lack of different features that were told in different sections of the game design document, actively criticizing the plan for not taking these additional features into consideration for the demo.

Similarly, there were certain weaknesses within the testing of the game, mainly looking at the lack of additional testing during different iterations of the game and even the final build of the game. From what was gathered regarding the testing feedback, I should have carried out the testing at different points of the game’s development; after adding different implementations to the game and even at the final build which can be worked on or rebuilt

From what was gathered overall, the feedback was positive but also had outline specific faults within the plan, detailing the lack of testing in certain parts of development and implementing a certain number of features. With this feedback, it does show the missed opportunities that would improve the overall quality of the demo, mainly on how it was tested and developed.

The game did in fact have only one game mode and over elements were restricted due to the amount of time that was given to develop the demo; the player was only given one car and one track without any given opportunity to customize the car that they had and choose a location to race on. However, despite the time and from the feedback, the features could have been implemented into the game so that the player can have freedom of choice, making the demo more enjoyable to any player peaking interest higher. What could have been implemented or planned in with the user stories would be a limited number of cars and tracks. These cars would have the classes from the GDD, so it would give the player a glimpse of what the customizable aspect would have on each car and tracks that would showcase what locations would be in the final game.

The testing of the game did have faults from the feedback. This was from the lack of different areas of testing and from the feedback given, these areas included if certain elements had been implemented and the final build. If I took more of testing into consideration, then the playability and quality of the demo would improve based on what else needed to be tested. Different features within the game could have been finetuned or other features would have been added. The demo as it stands does have errors and faults that could have been taken into consideration from more in-depth testing. This in-depth testing could have been taking different elements and ran them at once as part of the game to see if any features clashed or any errors would have come out of running the features at once. This could’ve also extended to the black-box testing were different scenarios could have been tested to improve factors, such as how the game would run on different systems or how the game would take a certain engine build older or newer than the one developed, so that the game would be optimized for better stability and gameplay.