

CS4303 Video Games Practical 2

Design of a Video Game.

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Design of Video Game on the Processing/Android platform.

1 Title

The title of my game is "Reysoid", a combination of the sounds of the words race and android which are respectively the genre and platform of the game.

2 Genre

The genre of my game is a driving game, it can also be considered a racing game although there is only one car on the track.

3 Environment

In this section I will describe the setting for your game and all its features.

3.1 What is the setting for your game?

The setting for my game is a 3D racing/driving track. The track itself is going to be very similar to PitStop2 [1] race track below:



Figure 1: Screenshot of PitStop2 [1]

Pitstop 2 was the first 3D racing game to implement a split screen [2], however my game will not have a split screen but only one due to the fact that the player will not be competing against other players, but has detailed in section 5 it will be competing against time.

The setting for my game is thus rather simple compared with most modern racing games for smartphones, its features are described below in more detail.

3.2 What are the features of this environment?

The features of this environment include a track, landscape (out of track) and obstacles. The player described on section 4 will be on the track, and will try to avoid leaving it or collide with any of the obstacles. Furthermore, there will be the illusion that the car is moving on the track but it is in fact the track that is moving under the car, similar to a treadmill.

3.2.1 Track

The track allows the player to keep a steady and rising speed if the smartphone is tilted frontwards. On the track there will be obstacles (described on section 3.2.3), to make the task of the player harder.

3.2.2 Out of Track

The out of track is the part of the environment which is not the track itself. In the case of the player leaving the track the speed of the car will become consistently slower, if the player does not return to the track the car will stop

completely. This feature will force the player to keep the car in the track in order to achieve the fastest speed possible, and with that complete the track in the least amount of time possible.

In order to notify the player that they left the track, the smartphone will vibrate until the player gets back to the track.

3.2.3 Obstacles

The obstacles will be on the track, and if the player collides with any of them, the speed of the car will be reduced drastically. These obstacles include other cars and various random objects, such as trees, rocks among others.



Figure 2: Example of an obstacle, in this case, a rock.



Figure 3: Example of an obstacle, in this case, a tree.

These obstacles will be static, in other words will not move, so if the car collides with them, the only way to continue is by going around them.

3.2.4 Information Panel

There is an information panel at the bottom, displaying the current speed and the current time.

4 Player

The player should feel that he is in control of the car described below on section 4.1 and have an experience as similar as possible to driving in real life. The player goal is to keep the car on track and avoid the out of track (section 3.2.2). The player will "win" the game by beating previous high scores, this is described in more detail in section 7.3.

4.1 How is the player represented in your game?

The player is represented by a Lamborghini Aventador LP 700-4 from a rear third-person perspective.



Figure 4: Rear of Lamborghini LP 700-4 Aventador [3].

The figure 4 above will be used for the representation of the user. It is a view from the rear of Lamborghini LP 700-4 Aventador. Below is a mock figure of the final environment, with the player and environment:



Figure 5: Mock of the final environment with the player representation.

The player will see the car in three different perspectives according to the inclination of the smartphone:

1. Normal view, as seen in figure 5 above;
2. Turned to the left, when the player tilts the smartphone to the left;



Figure 6: Mock turned to the left.

3. Turned to the right, when the player tilts the smartphone to the right;



Figure 7: Mock turned to the right.

There will also be brake lights for every perspectives, these brake lights will appear when the player tilts the smartphone backwards.



Figure 8: Mock of brake lights for normal view.

The player will also feel vibration whenever the car goes out of the track (section 3.2.2) or when it collides with an object (section 3.2.3).

5 Opponent

There is not really an opponent in my game, however, time can be considered the opponent since the player will try to complete the track in the minimum time possible. Moreover, if the player wants to get a better score, he will have to beat the previous highest scores. The clock will be displayed on the top center of the screen, as seen in figure 5.

6 Rules/Mechanics

The rules of my game are fairly simple. The player has to drive on the racing track and finish it as fast as possible.

6.1 What abilities does the player have?

The player has the ability to turn left, turn right, accelerate and brake the car. These four abilities will allow the player to interact fully with the environment, as described next.

6.2 How does he/she interact with the environment?

The player interacts with the environment by tilting the smartphone, making use of the built-in accelerometer. There are four inclinations to produce all possible interactions with the environment.

- **Turn Left.** Tilt the smartphone to the left, making the y axis decrease.
- **Turn Right.** Tilt the smartphone to the right, making the y axis increase.
- **Accelerate.** Tilt the smartphone frontwards, making the x axis decrease.
- **Brake.** Tilt the smartphone backwards, making the x axis increase.

The main problem with using the built-in accelerometer is that the player may lose full view of the screen, to fix this the game will be very sensitive to the inclination of the smartphone. Implementing higher sensitivity will allow the player to keep always a perfect view over the screen.

7 Goals

7.1 What is the overall goal of your game?

The overall goal of my game is to complete the track in the least amount of time possible. Furthermore, we also consider the fact that the player can beat previous higher scores to be a secondary goal of the game. Basically,

completing the racing track and trying to be faster than the previous higher scores is the goal.

7.2 How does the player progress?

The player does not progress in my game, the racing track is the same and the only factor that can change is the time that takes the player to complete the track. There will not be a next level, due to limitations on the time to implement the game.

7.3 How does the player win the game?

It is not possible to win the game, since it is a racing game and the main goal of the game is to complete the track as soon as possible. However, the player can beat previous higher scores and therefore win against those higher scores. In other words, the player will "win" if its time is higher than the other highest scores.

When the player beats any of the other high scores a screen will appear so he can add his name to the table of the highest scores.

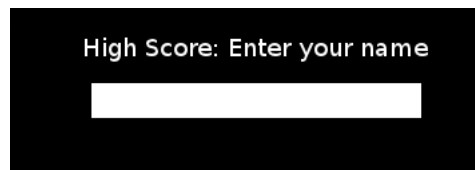


Figure 9: Mock of the screen to enter the name.

After the player inserts his name, a screen with the highest scores is displayed.



Figure 10: Mock of the screen with highest scores.

8 Game Loops

8.1 Idle loop

```
show initial animation
if click play
  go to main loop
else if click exit
  confirm you want to exit?
  if click yes
    exit
  else if click no
    goto idle loop
```

8.2 Main game loop

```
if not click exit
  check for input
  if smartphone tilted
    if tilted left
      turn left
    else if tilted right
      turn right
    else if tilted front
      increase speed (e.g. accelerate)
    else if tilted back
      decrease speed (e.g. brake)
  else
    stop
else
  goto idle loop
```

8.3 End game loop

```
if high score
  enter name
goto idle loop
```

9 State Diagram

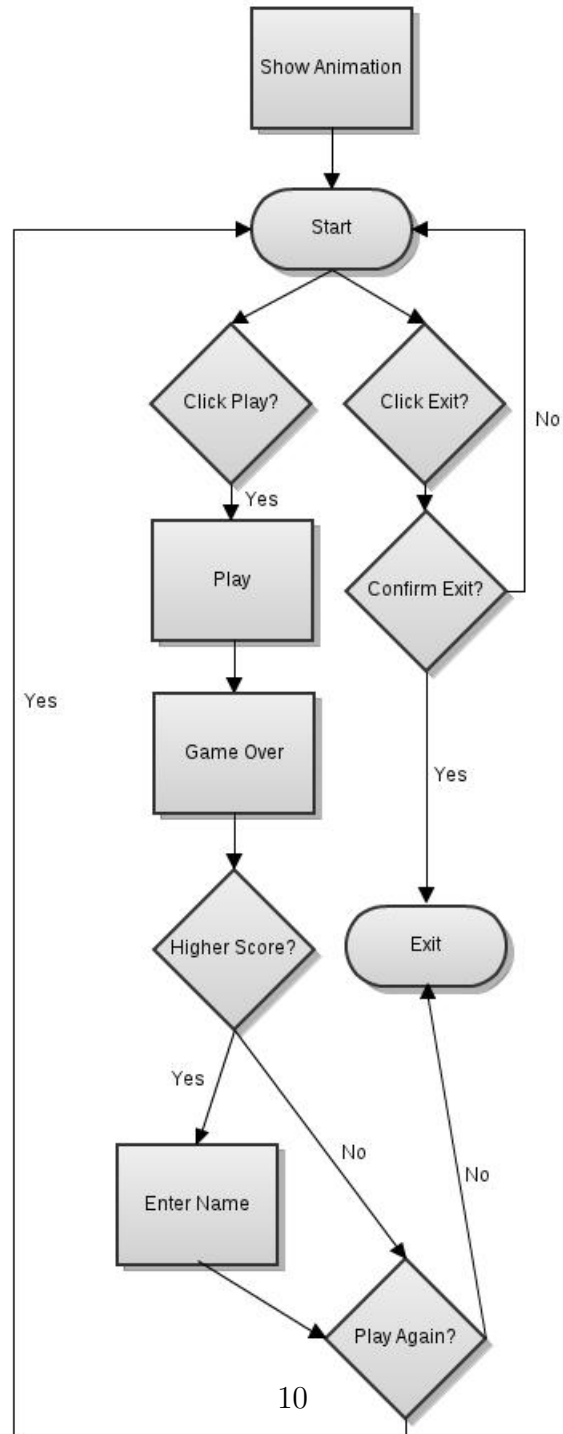


Figure 11: State diagram created using gliffy [4].

10 In Context

Generically, racing videos games date back to the 70s, more precisely 1973, when Space Race [5] was first released by Atari. Space Race is basically a racing game with two players represented as spaceships that race upwards on a monochrome screen and trying to keep away from asteroids that come from the left. The following year, the first driving racing game was released which was named Speed Race [6]. The game Speed Race introduced to the video game industry the notion of collision detection and scrolling graphics, more specifically overhead vertical scrolling [7].

Following these first racing games dozens of other racing games ever complex were released, including the game Pitstop 2 which was the base for my game. Pitstop 2 was released by Epyx in 1984 [2] and all the features are basically identical, however my game does use the state-of-the-art technology that allows the player representation (section 4.1), in other words, the car to be controlled intuitively by tilting the smartphone to where the player wants the car to go. Moreover, my game will have obstacles and it will not be a F1 racing game for two players.

Surprisingly, Pitstop 2 was re-released in 2008-2009, respectively in Europe and North America [8].

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