**Heuristic Evaluation Heuristics**

(Nielson: http://www.nngroup.com/articles/ten-usability-heuristics/)

1. Visibility of system status

* The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

1. Match between system and the real world

* The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

1. User control and freedom

* Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

1. Consistency and standards

* Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

1. Error prevention

* Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

1. Recognition rather than recall

* Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

1. Flexibility and efficiency of use

* Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

1. Aesthetic and minimalist design

* Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

1. Help users recognize, diagnose, and recover from errors

* Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

1. Help and documentation

* Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Heuristic Evaluation

Severity Ratings (Nielson: http://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/)

The severity of a usability problem is a combination of three factors:

· The frequency with which the problem occurs: Is it common or rare?

· The impact of the problem if it occurs: Will it be easy or difficult for the users to overcome?

· The persistence of the problem: Is it a one-time problem that users can overcome once they know about it or will users repeatedly be bothered by the problem?

The following 0 to 4 rating scale can be used to rate the severity of usability problems:

0 = I don't agree that this is a usability problem at all

1 = Cosmetic problem only: need not be fixed unless extra time is available on project

2 = Minor usability problem: fixing this should be given low priority

3 = Major usability problem: important to fix, so should be given high priority

4 = Usability catastrophe: imperative to fix this before product can be released

Heuristic Evaluation - 13/03/2023

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Interface | Issue | Heuristic(s) | Frequency 0 (rare) to 4 (common) | Impact 0 (easy) to difficult (4) | Persistence 0 (once) to 4 (repeated) | Severity = Sum Total of F+I+P /3 |
|  | Difficulty menu buttons. The difficulty menu buttons can be selected but it is not clear that they have been selected. The user needs to click a button and then click back to get to the start screen. | 8. Aesthetic and minimalist design and 1. Visibility of system status | 4 | 3 | 4 | 3.6 |
|  | Menu buttons. There is no change in the button to indicate that it has been selected. | 8. Aesthetic and minimalist design and 1. Visibility of system status | 4 | 3 | 4 | 3.6 |
|  | Background image. The background image on the menu screens is basic and poor quality. The background image on the race page does not move which is not realistic | 8. Aesthetic and minimalist design and 2. Match between system and real world | 4 | 3 | 4 | 3.6 |
|  | Lack of start countdown | 2. Match between system and real world | 2 | 2 | 2 | 2 |

Heuristic Evaluation - 13/03/2023

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Interface | Issue | Heuristic(s) | Frequency 0 (rare) to 4 (common) | Impact 0 (easy) to difficult (4) | Persistence 0 (once) to 4 (repeated) | Severity = Sum Total of F+I+P /3 |
|  | Menu and difficulty menu buttons do not have feedback to make it clear they have been clicked | 1. Visibility of system status | 4 | 3 | 4 | 3.6 |
|  | Not clear what the purpose is or how to play the game | 10. Help and documentation | 4 | 4 | 4 | 4 |

Heuristic Evaluation - 13/04/2023

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Interface | Issue | Heuristic(s) | Frequency 0 (rare) to 4 (common) | Impact 0 (easy) to difficult (4) | Persistence 0 (once) to 4 (repeated) | Severity = Sum Total of F+I+P /3 |
|  | Can play without entering a name, not clear that you need to enter a name | 5. Error prevention and 1. Visibility of system status | 2 | 3 | 1 | 2 |
|  | Background image obscures the buttons, the name entry and the leaderboard | 10. Help and documentation | 2 | 2 | 2 | 2 |

Think Aloud - 13/03/2023

**Features people liked:**

* Good that there is a start screen as opposed to immediate game play when starting the game. Mentioned once on boot up
* Racetrack graphics, direct quote: “graphics are trippy as”. Mentioned once

**Features people did not like:**

*Key issues*

* Not clear that the difficulty option has been selected (buttons do not change and have to manually select the back button to return to the main menu page). Mentioned regularly

*Middling issues*

* Menu art is bad quality, very amateurish. Mentioned once per menu page
* Bug on gameover screen where cars still appeared on the screen after the game ended. Mentioned once per game

**Features people wanted:**

* Not clear how to win or what the purpose is. Mentioned once per game

Think aloud 13/04/2023

**Features people liked:**

* Sound - Mentioned once per game
* Reactiveness of the car
* Random entry of the tanks from both sides
* Track graphics “Maintained its trippiness”

**Features people did not like:**

*Key issues*

* Difficult to see buttons on the screen with the background image - Mentioned repeatedly
* Bot placement at the start, random number generator appears to place them close to the player on a regular basis - Mentioned repeatedly
* Not easy to read the leaderboard with the background image - Mentioned once per game
* Not clear that the name must be entered or that it is pre-selected also difficult to read due to the background image - Mentioned once per game

*Middling issues*

* Not clear what keys to use but worked out quickly - Mentioned once per game
* Not clear who the player car is but worked out quickly - Mentioned once per game
* Easy is a lot easier than the other levels - Mentioned once
* Dark blue track is slightly laggy going across the screen - Mentioned once
* Why does nothing happen when you go off the side of the screen - Mentioned once

**Features people wanted:**

* Put score into leaderboard as soon as game ends – Mentioned once per game