**Requirements**

1. **Functionality**

The focus of this system is to simulate a car race.

The cars must have random statistics such as engine type and tire quality which will be determined by the user input at **(1)** at the table below.

The racing venue must have 4 specific starting points for the cars; see **(2)** and **(3)** below.

The output will be relayed back to the user when the race is over at **(4).**

When the system is ran for the first time, the following scenarios will take place:

|  |  |
| --- | --- |
| **(1)** User chooses between 2 and 4 cars. Each car with an engine type and tire quality. | **(2)** Cars are placed on a ***Racing Venue***  with 4 set locations where each car may be placed. |
| **(3)** Each car should be placed at a different location on the track. | **(4)** Race begins; Whichever car gets to it's destination first, wins the race. |

1. **Usability**

Our prototype should be very efficient in its usability. The user interface will be simplified to only allow choices that are feasible in terms of the engine type, tire quality and amount of cars in the race track.

1. **Reliability**

Issues with reliability are non-existent in this early phase development of our prototype. Other than the user input and system output that will flow through the system, there likely won't really be any concerns with internal malfunctioning. Also no information should be backed up. If any issues were to arrive it should be corrected at the implementation level of design or future versions.

1. **Performance**

As discussed under Reliability, the only data flowing through the system will be strictly the user input which in turn will determine the randomization of the race, and the the result output to the user. There shouldn't be any constraints on the execution speed, response time nor throughput in our prototype nor the finished system because this is not a resource heavy system, and there should only be one iteration of this program running at one specific point in time. It should be a very simple system.

1. **Supportability**

This system is very easily upgradeable. We thought of adding a turbo charged car, a speedometer for each car, having the engine affect acceleration and the tires affect the cars performance in turns among other features. We will leave those options open for future versions.