3 sections

1. Infographic of a car
   1. User can see various cutaways of a car
   2. Able to change views of a car (front, side, rear)
   3. Allow user to obtain more information on the part of the car by clicking on the name of the part mapped to the car’s actual part
   4. Add links to online videos/animation showing the part of the car in action
2. Simulating multiple situations and functions of a car
   1. Add components to a car
   2. Show the difference between front and all wheel drive
   3. Simulation of fuel system (ie show how fuel passed to engine when accelerating)
   4. Simulation of cooling system
   5. Simulation of electrical system
   6. Simulation of steering
   7. Simulation of braking system
   8. Adding attachments like trailer
   9. Modelling different fuel systems (hybrid, hydrogen)
   10. Simulating fuel consumption (flat land, going up and down a hill)
   11. Able to change display facia of the car (change layout of instrument cluster)
   12. Should show vehicle symbols (standardised symbols on instrument cluster light up as features are turned on)
   13. Able to turn on and turn off parts of the car (lights, indicators, etc)
   14. Active tracking of fuel, temperature and speed
3. Quiz on parts of the car
   1. Timed (~10 minutes for 10 question)
   2. Give situations to a user, prompt for correct action (ie turning on lights when dark)
   3. Should choose questions at random
   4. Ask users to identify the correct part of the car
   5. Leaderboard
   6. Have at least 50 questions stored in the system
4. Additional features
   1. Multiple language support (different names for parts in different versions of english)
   2. Have a thread monitor (show the passing of info among threads)
   3. Should be intuitive and have an easy to use interface

3 sections

**F1: Infographic of a car**

This section will cover the requirements of the first main feature of the application, which is the infographic of the car

|  |  |  |
| --- | --- | --- |
| **Requirement #: F1.1** | **Requirement Type:** Functional | **Use Case #: UC1\_1** |
| **Requirement: A user is able to choose infographics of multiple cutaways of a car** | | |
| **Description:** The system should allow the user to be able to switch views of the car, to be able to see various views such as powertrain view, exterior body view and interior view. This allows us to easily view various parts of the car, i.e. the engine cannot be seen unless we are able to remove the exterior shell of the car | | |
| **Requirement Level:** High | | |

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| **Requirement #: F1.2** | **Requirement Type:** Functional | **Use Case #: UC1\_1** |
| **Requirement: A user is able to rotate the infographic of the car** | | |
| **Description:** A user should be able change the perspective of the car, that is they should be able to view the rear, side and front of a car. This allows for a user to be able to clearly see the various parts of the car | | |
| **Requirement Level:** High | | |

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| --- | --- | --- |
| **Requirement #: F1.3** | **Requirement Type:** Functional | **Use Case #: UC1\_1** |
| **Requirement: A user is able to obtain more information of the part of the car** | | |
| **Description:** By clicking on the name of the part that maps to the car in the infographic, a user should be able to get a description of the part  The description should include the following:   * Part name * Purpose of the part * Other names of the part (i.e. a trunk is called a boot in different variations of English) | | |
| **Requirement Level:** High | | |

|  |  |  |
| --- | --- | --- |
| **Requirement #: F1.4** | **Requirement Type:** Functional | **Use Case #: UC1\_1** |
| **Requirement: Link to online video or animations showing the part of the car in action** | | |
| **Description:** On clicking the name of the part of the car and getting the description of the part, the system should try to get a link to the internet to obtain a video of that part in action.  This video link could be potentially hard coded into the system to ensure the video will always be there, and is consistent with the part of the car | | |
| **Requirement Level:** Medium | | |

F2: Simulating multiple situations and functions of a car

This part of the program is probably the largest part, with the most amount of functionality. It aims to allow the user to get a demonstration on each of the parts of the car, to allow a user to get a feel on how each part works.

* 1. Add components to a car (lights, spoilers, with limitation)
  2. Show the difference between front and all wheel drive (demo of both modes?)
  3. Simulation of fuel system (ie show how fuel passed to engine when accelerating)
  4. Simulation of cooling system
  5. Simulation of electrical system (lights, wipers, electronics in the car)
  6. Simulation of steering (should show how wheels can turn)
  7. Simulation of braking system (difference between foot brake and handbrake)
  8. Adding attachments like trailer
  9. Modelling different fuel systems (hybrid, hydrogen)
  10. Simulating fuel consumption (flat land, going up and down a hill)
  11. Able to change display facia of the car (change layout of instrument cluster)
  12. Should show vehicle symbols (standardised symbols on instrument cluster light up as features are turned on) – cluster should run in its own thread
  13. Able to turn on and turn off parts of the car (lights, indicators, etc)
  14. Active tracking of fuel, temperature and speed (should be running in a thread of its own)

1. Quiz on parts of the car
   1. Timed (~10 minutes for 10 question)
   2. Give situations to a user, prompt for correct action (ie turning on lights when dark)
   3. Should choose questions at random – random function runs in a thread, while waiting, show an animation of loading
   4. Ask users to identify the correct part of the car
   5. Leaderboard
   6. Have at least 50 questions stored in the system
2. Additional features
   1. Multiple language support (different names for parts in different versions of english)
   2. Have a thread monitor (show the passing of info among threads)
   3. Should be intuitive and have an easy to use interface
3. Tech features
   1. Each main feature (F1,2,3) should run in individual threads
   2. There should be some form of a message bank that allows a message to be sent to a “server” that handles the request and calls the correct function