Internet Application Design and Implementation 2016 - 2017

Test 1 – 1:30h

November 7th, 2016

Consider a single-page Internet-based application that implements a video game with cars and their pilots. The game is for a single person to play against the computer (represented by several cars).

In this game the user starts by choosing the driver from a list of available drivers. For each driver a set of features are displayed, namely, their strength, and experience. The user gives a name to the driver.

In a second step the user can choose a car from a list of available vehicles. Again, for each car a set of features are shown, in this case the speed and acceleration.

After selecting the car the user can start playing the game. In the playing page the user will see a map with the track and the cars and their current position in the track, a list with the drivers names ordered by their position in the race, the driver details (name, strength, and experience), and the car details (speed and acceleration). At any moment the player can go back and choose a new car or a new driver.

If you need, assume drivers and cars are available through a RESTful web service returning the information in json format (at your choice).

Group 1

Question 1 Define the IFML pages, components, and navigation and data flows for the given scenario. Don't forget to include the data that must be sent with the flows. You should also distinguish navigation from data flows whenever applicable.

Question 2 Identify all the necessary *react* components you would need to implement the given scenario/IFML. In particular, for each react component identify the:

1. name,

2. parameters (the ones accessed through `props` and the ones accessed through the URL parameters),

3. state (some components may not have state) and a description of how it is initialized,

4. for each component rendered using other components, define the *render* method just with the necessary components and corresponding parameters, and

5. correspondence with the IFML specification.

Question 3   Define the necessary routing system for the given application as you would do in a react application.

Question 4   Sketch the implementation of the react component that allows to select the driver and proceed with the game.

Group 2

Question 1   Discuss the advantages and disadvantages of using client side frameworks and libraries (like react, bootstrap, or jquery) when compared to the use of languages (like HTML, CSS, or JS).

Question 2   Discuss the advantages and disadvantages of using a formal language like IFML to model an application navigability before starting coding it.