COMP4442 Service and Cloud Computing
Group Project

Due: 23:59, Sunday, April 24, 2022

This is a group project with up to **4** members. You may find the grouping list here. Within a group, all the members are expected to participate in project development and be responsible for certain tasks including design, implementation, deployment, and testing.

1. What to Do

As an important part of an intelligent transportation system, driving behavior analysis helps us to identify dangerous driving behavior to avoid traffic accidents. The project is to develop a website for driving behavior analysis. We provide a dataset, which records 10 drivers' driving behavior over **10 consecutive days**. The dataset and a more detailed description are available in the appendix. You are required to use Amazon Web Services (AWS) to develop the website. Particularly, you should **Spark** to conduce the analysis.

The website should support the following functions:

a) Generate a summary to show the driving behavior of all drivers.
b) Monitor the driving speed of each driver in real time.

For a), you are required to display the driving behavior information during the given period in a HTML table. The information includes but not limited to the car plate number, the cumulative number of times of overspeed and fatigue driving, the total time of overspeed and neutral slide.

For b), you are required to use a diagram to visualize the driving speed of each driver during the given period. When the driver is speeding, a warning shall be issued from the website to remind the driver. The diagram should be automatically updated every 30 seconds for monitoring the driving speed.

The programming language for this project should be one of the following:

- Python (recommended)
- PHP
- Java
- Node.js

If you prefer to use other programming languages, please ask the lecturer for approval as early as possible (at least two weeks before the deadline).

2. What to Submit

Each group is required to submit a compressed file (.zip) including:

- Source code in a folder
- A video recording of operating the developed website to demonstrate the functionality.

- A **report** in PDF format with an outline. It is supposed to include the following elements
  - Group tasks performed by each member
  - Specification of the development environment: operation system, programming language with version, system software, required packages, etc.
  - Functional modules design: key functions, relationship among them, etc.
  - System architecture to show how you orchestrate the AWS services.
  - Deployment procedures: operations in AWS management console, scripts to be executed locally, etc.
  - Testing reports for different functions: design of use cases and screenshots of testing results.

3. Grading Criteria

- System implementation (60%)
  - Complete functionalities including driving behavior summary and real-time driving speed virtualization
  - Robustness of the website, no run-time error
  - Effective and user-friendly user interface
  - A nice and concise video showing all the elements above

- Documentation: the PDF report (40%)
  - A completed report should contain all the elements as listed in "what to submit".

- Late submission and plagiarism are **prohibited** as indicated in the schedule of this course. Any case will lead to significant penalty on your group performance.