

**Department of Computing
The Hong Kong Polytechnic University**

**COMP4442 Service and Cloud Computing
Project**

Due: 23:59, Sunday, April 28, 2024

This is a group project. Students can form their own groups with up to **5** members. Within a group, all the members should participate in the project development and be responsible for some tasks (design, implementation, deployment, testing, etc.).

0. What to Do

As an important part of an intelligent transportation system, driving behavior analysis helps us to identify dangerous driving scenarios to avoid traffic accidents. The project is to **develop a website** for driver behavior analysis.

The website should support the following functions:

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

We provide a dataset, which records 10 drivers' driving behavior over **10 consecutive days**. The dataset and a more detailed description are available at following link (Google Drive). You are required to use Amazon Web Services (AWS) to develop the website. Particularly, you should **analyze the driving behavior with Spark**.

https://drive.google.com/drive/folders/1awhtsQpl-LUGDp13DnvRBsRLbsXaJ7Dp?usp=drive_link

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 will 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).

1. What to Submit

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

- **Source code** in a folder
- A **report** in PDF format, which should include:
 - The website URL
 - Group tasks performed by each member (no applicable if there is only one member in your group)
 - 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 steps: operations in AWS management console, scripts to be executed locally, etc.
 - Function testing: design of use cases and screenshots of testing results.

2. Grading Criteria

- No unjustified late submission and no cheating is allowed as indicated in the assignment policy of the tentative schedule of this course.
- System implementation (60%)
 - Driver behavior summary
 - Real-time driving speed virtualization
 - Running of the website: no run-time error
 - Effective and user-friendly user interface
- Documentation: the PDF report (40%)