	FACULTY OF COMPUTING	MARKS
	COURSE: BCS2243 WEB ENGINEERING	
	COMPONENT : Modelling the Web Application	
	ASSESSMENT: Lab assignment 3	
	DURATION : 2 hours	

General Instructions:

1. This assessment is an individual task.
2. You can refer and cite to any notes and references from any sources.
3. ALL submission must in **soft-copy** version.

You are given a task to develop a web-based application for UMP vehicle tracking system (UMPVi). The application aims to manage the information of staffs' or students' vehicle in UMP campus. The potential users for this application system are administrator; whom an officer from Unit Keselamatan UMP, UMP staffs (staff) and UMP students (student). All users will have their own username and password to access the application. The basic requirements for UMPVi are:

Module 1: Manage vehicle sticker

Each UMP staff and student is required to apply for yearly vehicle sticker. A copy of proof of vehicle ownerships (vehicle grant) must be attached in the application. The administrator needs to approve the application.

Module 2: Manage QR codes

Upon application approval by administrator, a UMP vehicle sticker with QR code will be generated and printed. The vehicle sticker with QR code must be displayed on the vehicle.

Module 3: Manage traffic violation

A penalty will be issued for each traffic violation in UMP (e.g. parking, no sticker displayed). A staff from Unit Keselamatan will need to scan the vehicle sticker with QR code and insert relevant violation details in UMPVi database. The staff will need to insert their staff identification number and password to verify the violation process.

Module 4: Manage point

The application provides a module to calculate total merit obtained by a staff or student according to their obedient to UMP campus traffic. Default total merit for each of the users for a year are 10,000. Unit Keselamatan has introduced a penalty point for traffic violation as given in Table 1. There are also events organised by the department where user able to claim for point. In the end of the year, staff, or student able to get a free vehicle sticker for the next year based on the cumulative point.

Table 1. Merit deduction for traffic violation in UMP

Position	Penalty Point
Cause accident	500
Parking violation	400
No sticker displayed	300
Not wearing seat belt or helmet	200

Module 5: Manage user

The application provides a module to manage user profile such as create new user, update, delete and view profile. Please remind that the administrator will also be able to manage user profile.

Module 6: Manage report and data analytics and login

This module will provide the function of reporting such as student, violation, merit, or any suitable reports for the system administrator.

Answer the following questions:

a) Suggest **TWO (2) non-functional requirements** suitable for UMP vehicle tracking system (UMPVi).
b) Propose the **use case diagram** from the case study above.
c) Draw the **entity relationship diagram** to capture all the requirements mentioned above.
d) Produce a **class diagram** that consist of the list of attributes and methods for the proposed application.
e) Draw a **state diagram** for **Module 4.**
f) Propose a **presentation diagram** for the **main page** of the application.
g) Produce a **hypertext structure model** for **Module 3.**
h) Produce an **access model** for **Module 1.**