University of London International Programmes
CO2222 Data communications and enterprise networking
Coursework assignment 2 2016–17

Statement
This coursework assignment aims to develop your skills in researching a large network infrastructure application, assimilating the main requirements and proposing a possible solution in the form of a feasibility report.

Learning objectives
You should be able to:

- research a topical network application
- perform a requirements analysis on the necessary technology
- identify and evaluate potential solutions
- present the findings in the form of a concise report.

Introduction
A number of cities around the world have either introduced congestion charging systems or are considering doing so. Most levy a charge based on the time of day and/or vehicle size in order to reduce congestion at peak times. An added benefit is that it can help to reduce air pollution.

The technologies employed differ: for example, in Singapore wireless transponders are fitted to vehicles that are preloaded with payment and are then debited as they pass under a gantry; in London, cameras and electronic number plate recognition is used to identify vehicles and drivers login to make payment before the end of the day.

In computer network terms, the system in Singapore is an example of a client/server network whereas that in London is an example of a server based architecture.

A useful overview of a number of current systems can be found in: http://www.theicct.org/sites/default/files/publications/congestion_apr10.pdf

You should download and read this report by way of preparation for this coursework assignment.

The problem

Your company has been commissioned by your Government to propose a congestion charging system for a large city in your country but with the idea that it could also be suitable for roll out to less densely populated urban areas. Produce an overall design that addresses, as a minimum, the following points:

a) whether a client or server based architecture should be adopted;
b) the underlying interconnection network needed to support the application;
c) the design of the consumer units in terms of their communications needs
d) security and authentication issues;
e) an example of the processes and operations involved in a typical transaction (*e.g.* how a vehicle is identified as it enters the charging zone and how payment is made).

Your design should, as far as possible, make use of existing technologies and infrastructures in order to produce a solution that is both cost effective and user friendly.

Your report is intended for Government ministers, and it is therefore not expected to include 'text book' type details of network operation and protocols. What it should include are **reasoned justifications** of why certain options have been selected and others rejected; and how they contribute to the overall design.

Deliverables and marking

This is an individual coursework assignment. You are required to produce a feasibility study in the form of a word-processed report of approximately 6–10 pages in length, and it should be submitted in .pdf format.

Important: please ensure that you submit one pdf document which is named using the following convention:

FamilyName_SRN_COxxxxcw#.pdf (e.g. Zuckerberg_920000000_CO2222cw2.pdf)

- ***FamilyName*** *is your family name (also known as last name or surname) as it appears in your student record (check your student portal)*
- ***SRN*** *is your Student Reference Number, for example 920000000*
- ***COXXXX*** *is the course number, for example CO1108, and*
- ***cw#*** *is either cw1 (coursework 1) or cw2 (coursework 2).*

Marks will be awarded for technical content, feasibility and appropriateness of the design, originality and standard of presentation of the report. The total mark for the assignment will be presented as a percentage for assessment purposes.

Your report should contain the following section headings and numbering scheme:

Section No	Heading	Contents	Marks
1	Introduction	Set the scene for the report.	5%
2	Requirements Analysis	Summary of the main features of the system needed to support the required functionality.	30%
3	Recommended Architecture	Details of the proposed network architecture and monitoring technology, including diagrams to illustrate as necessary.	30%
4	Security and Authentication	A summary of the main issues and how the proposed architecture addresses them.	15%
5	Typical Transaction	Brief description of the various processes involved in a typical transaction, with particular emphasis on the network requirements.	15%
6	Conclusions	Summary of the main benefits of the main findings and recommendations.	5%
		Total	100%

[END OF COURSEWORK ASSIGNMENT 2]