UNIVERSITI TUNKU ABDUL RAHMAN

UEEN3433/3123 TCP/IP NETWORK APPLICATION DEVELOPMENT

ASSIGNMENT

Membership:

This assignment is an **individual** assignment.

Outcomes:

1. Build client-server network applications using TCP and UDP transport-layer protocols.
2. Develop multicast and broadcast network applications.
3. Utilize a scripting language to automate networking tasks.

Part A:

Develop a TCP client-server networked application based on one of the two topics listed below.

Choice of Topics:

1. **Rewards Points Balance Enquiry**
   User enters his member ID to enquire points balance of a rewards programme. Data is read from a text file containing the member ID and points for each member.

2. **Toll Calculator**
   User enters the ID of the entry toll plaza and exit toll plaza. Data is read from a text file that stores the toll charges in a two-dimension table format.

Required Features:

1. Server program must be able to handle multiple connections simultaneously. You may implement this feature either using *multithreading* or using *Java Non-blocking I/O (NIO)*.
2. No GUI is required for the client program. Program should prompt for user input interactively.
3. Data is to be stored by the server program using a text file in any appropriate format.

Programming Language: Java

Part B:

Develop a multicast application as follows:

Client Program: Joins a multicast group at the multicast address 224.0.0.3 to receive information of temperature reading sent by the multicast server. Each time the client program receives the temperature reading from the multicast server, it calculates the average temperature based on all readings received and displays the current temperature and average temperature on the console.

Server Program: Continuously sends the current temperature reading every 60 seconds to the multicast address 224.0.0.3.

Programming Language: Java

Part C:

Develop a script to extract data in JSON format from an HTTP URL. Upon retrieving the JSON data, the script processes the data and writes all fields of each record to a CSV file.

You will be provided with the HTTP URL to be used in this assignment in due course.

Programming Language: Perl

Deliverables:

1. Hardcopy printouts of the following code:

    a. All class files used in this assignment, grouped according to parts.
    b. Text and CSV files used for Question 1 & 3.

2. Hardcopy printouts of sample screen output.

3. Complete softcopy of your programs as a ZIP archive. Programs/scripts for each part should be placed within its own folder. The archive file should be in the format **<Your Name>.zip**, e.g. ***Ng Pei Li.zip*.**

Submission and Plagiarism Policies:

1. All assignments are due on **Tuesday, August 29, 2017**.

2. All work must be original and if, taken from any works other than yours must be properly referenced.

Marks Allocation:

Part	Criteria	Marks Allotted
A	Use of correct socket type and program logic	15
	Correct implementation of multithreading/non-blocking I/O	5
B	Use of correct socket type and program logic	16
	Correct implementation of joining of multicast group	4
C	Correctness of script logic	13
	Correct use of LWP library	7
	TOTAL	**60**