PART 1

Requirements:

1. Computers (c1, c2)
2. LAN connection (internet is not needed for this activity)
3. Wireshark
4. Postman
5. MySQL client (for testing) and server

Setting up the Environment:

1. Install Wireshark for both computers
2. Install Postman for c1
3. Install MySQL server for c2 (make sure c1 can access c2 properly, and they both see each other in the LAN), you can disable the firewall temporarily to test for connection
4. Run MySQL server and create a database in the server called cse1 in c2,
5. Save server.exe in c2, together with config.json
6. Open config.json and change the settings for MySQL server like username, password, and IP address of c2

Example connection string:

"connection_string": "myusername:mypassword@tcp(0.0.0.0:3306)/cse1"

where:
myusername is username in database
mypassword is password in database
0.0.0.0 is the loopback address for LAN, you can access c2 from c1 using their assigned LAN IP
3306 is the port of MySQL server in c2
cse1 is the database name in MySQL server

7. Run server.exe (this file is compiled from source code by me)

API Documentation

In this activity you will simulate how API Clients talks to REST API server, and capture it using a Packet Sniffer.

The server is just a simple database of products, where you can list products, create a product, update a product and remove a product, to make it fast and simple, we just run this inside a LAN, but this is similar setup to any network like the Internet

SYNTAX:

NOTE: every request you must set a header variable "Content-Type" to "application/json"

a) To see all the products, send an HTTP GET request to **<server>:<port>/api/products**, try going to his location using your browser.
b) To see information about a specific product, send a GET request to **<server>:<port>/api/products/{id}** endpoint, where id is the primary key of the product you want to see
c) To create a new product entry, send a POST request to **<server>:<port>/api/products** with a JSON body like the following:

```
{
        "name": "productname",
        "price": 1234,
        "description": "some description here"
}
```

id is optional, because it has an AUTOINCREMENT property in the Database

d) To update an entry, send a HTTP PUT request to **<server>:<port>/api/products/{id}** where id is the product id of the product you want to update

   Then include a JSON body containing the updated values of the product (same as in c, but updated value)

e) To delete an entry, send a HTTP DELETE request to **<server>:<port>/api/products/{id}** where id is the product id of the product you want to delete

Try practicing the procedures above first, then proceed to the next section

DRILL

Assuming you have tried creating, listing, updating and deleting a product using Postman, next step is to capture those actions using Wireshark, record your screen while doing this.

1. Start Postman & Wireshark,
2. Start the Wireshark capture
3. Send an HTTP request that returns a list of all products in the API Server
4. Create three product entries, pick any name, price and description you want
5. Display detailed information for 3rd product only
6. Update the description of 2nd product by appending the string UPDATED into the existing entry
7. Delete the 1st entry
8. Stop Wireshark capture
9. Filter all HTTP requests only

Then answer the following questions:

1. What is the IP address of the server and client
2. Explain each line in the filtered output of Wireshark, what is happening on those requests
3. Point in the entries where I would find the time where the 1st entry in the activity you did was deleted. How did you know?
4. What is the message returned by the server when an entry is successfully deleted.
5. What is the significance of the value "HTTP/1.1 200" in the logs
6. What is user-agent use in HTTP header for? What is the value of this when a browser issues a request compared to when Postman issues a request.
7. What is the time the POST request has been replied by the server. Show it

Deliverables:

- Video of the activity (while doing the http request up to when explaining the answers to the questions).
- The capture file of Wireshark (Go to File then Save as)
- Store the files into a folder having the format <surname1>-<surname2>-Drill3, compress the folder
- Upload to your google drive folder, get the link (make sure I can download this folder)
- Send the link to the google form provided in this post.