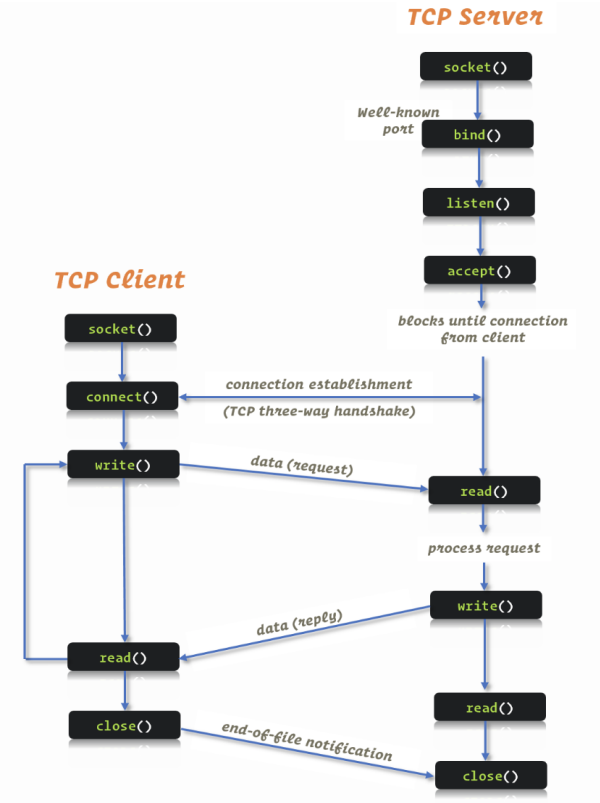
Assignment



1. - In this assignment, you have to use the sample codes to implement a TCP server that sorts an array of integers provided by the clients.
- Modify the client code such that it can input an array of integers to the server.
- Initially, develop an iterative version of this sorting server, which accepts the requests as an array of integers from the clients one-by-one and outputs back the sorted array. Increase the number of clients from 1 to 4.
- For each client request and response, measure the system time elapsed from the request submitted, and the result returned, and also find out the average CPU utilization.

```
- Next, you need to develop a concurrent sorting server that handles
multiple simultaneous requests from four different clients.<br>
- Measure the response time of the concurrent server at each
client end and also the server's average CPU utilization.<br>
- What is your observation regarding the response time and CPU cycles engaged?<br>
- Plot (using bar plot) the response times at each
client under the iterative and concurrent scenarios.<br>
- Also, plot the CPU utilization at each server type.<br>
```

2.

- The objective of this programming assignment is to make use of the sample codes and implement an online vocabulary service on two concurrent TCP servers.
- These servers take words as input from four clients at the same time and respond with the corresponding antonyms. E.g., if the client gives as input “top,” the server responds with “bottom.” If the input word is not

present, the server should return an error message “Sorry, antonym not found.”

- You need to maintain a lookup table at the server side (implementation of the lookup table is your choice), which contains a list of predefined words and the corresponding antonyms. The first server searches the input word in the lookup table row-by-row and gives back the result (i.e., either the antonym or the error message). The second server should alphabetically sort the lookup table according to the words as a pre-processing, perform a binary search, and returns the result. Measure the response times from both the concurrent servers and write your observations regarding their performances.