

**CS69003**  
**Computing Systems Lab – I**  
**Lab Test - 3**  
**Time: 2 Hours**

Write a C program to implement the following TCP client-server program.

On the client side, the client reads an English paragraph containing a number of sentences from the user. Each sentence of the paragraph is terminated by a full-stop ('.'). Note that a sentence can span across multiple lines. The paragraph is terminated by putting a full-stop as the first (and only) character at the beginning of the next line. The paragraph is sent to the server (you can send it together or in any number of chunks of your choice). The server (concurrent TCP server) counts the total number of sentences and the total number of words in all the sentences, and returns them to the client. The client then prints the counts out. Note that the paragraph can contain any number of sentences — there is no upper limit (if you assume an upper limit on the number of characters, in one sentence or total, you will incur a 25% marks deduction). Also, the paragraph may be typed with arbitrary numbers of spaces and blank lines in between.

A word is defined as a set of consecutive alphanumeric characters delimited by any number of spaces, tab characters, new-line characters, or a full-stop. You can assume that no other punctuation characters like comma, semi-colon etc. will appear in the paragraph.

As an example, suppose that the user types the following English paragraph (please note the full stop at the last line to indicate the end of the paragraph):

**This is a test paragraph. I will add the second sentence here. The third sentence spans across two lines. But this will be the last sentence so note the full stop at the beginning of the next line.**

.

Then the client should finally print out something like:

**Number of sentences = 4**  
**Number of words = 38**

Use port numbers linked to your roll number as advised for the assignments. Use the IP address of any of the Xeon servers you have connected to.

Your program should be properly indented. For the sake of time, you need not add comments to your program, except for a comment at the beginning of the C file to write your name and roll no. (Do not forget to do this). Name your C file as <your roll no.>\_client.c (for example, 07CS6001\_client.c) and <your roll no.>\_server.c. Submit only the C files to the e-mail account. The e-mail sent should contain your name, roll no., and the word “Lab test 3” in the subject line.

***Note for weaker students:*** First try to read in until the end of one sentence and send it to server, and have the server find the number of words in it, that will give you at least pass marks in this lab-test. Once that works, think what you have to do for more than one sentence.