**Assignment #1**

**Individual or Pair**

**ASSIGNED: Week 2**

**DUE: Beginning of Class Week 4 (-10% / day for late)**

**SUBMIT: Report (Paper and Electronic in PDF format) Zip of Source Code (Electronic Only)**

**Failure to submit paper copy will result in late penalty.**

Create a client/server TCP socket application pair, and a UDP send/receive pair of applications. Configure a custom protocol that allows for blocks of 1000, 2000, 5000 and 10000 bytes to be sent between sender and receiver.

In your experimentation, determine:

* whether there's any speed difference in sending blocks of data between 2 Windows PCs vs. 2 Linux PCs
* number of blocks per second that you can reliably send through
* whether you actually obtain all blocks in the order that you sent them
* whether TCP has any appreciable overhead in send/receive vs UDP

You may need to benchmark the sending and receiving of thousands of blocks of the data sizes above to get measurable results!

In your report, you will provide metrics for the above, and explanations of why you feel your results reflect theoretical expectations.

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The marking criteria for the research reports will be as follows:

Report Layout: maximum 2 marks awarded for all aspects of layout\*

Clarity: maximum 3 marks awarded for clear, consise English in your

report (no filler material, good grammar, spelling, etc.)

all diagrams, flowcharts, flow diagrams, etc., must be

clearly labelled, unambiguous, etc.

Quality: maximum 3 marks awarded for correct answers in your research.

Don't guess on the topics! Research them, and accurately convey

that information via your reports!

References: maximum 2 marks awarded for excellence in research. We encourage

you all to be able to dig deeply for information on all

topic areas at all times. This simply reinforces that concept!

Have MANY references to illustrate the depth of your research!

Note: simple Wikipedia citations are not sufficient enough

for marks in this area! What we're looking for is industrial

level information from manufactures, suppliers, vendors,

R&D companies, and so forth. Wikipedia is simply your

first stop to get a fundamental understanding of a topic!

Marking scheme for assignments is as follows:

Assignment Documentation: 0 (incomplete, minimal documentation effort)

to

A (top notch report with all required discussions, plus expected Doxygen support information)

Assignment Completeness: 0 (few required features implemented)

to

B (all required features implemented)

Assignment Maintainability: 0 (no effort for future maintainability)

to

C (fully maintainable, modern techniques used for maintainability)

Assignment Demonstration: 0 (no demo before due date, or poor demo due to non-functionality)

to

D (excellent demo, able to answer questions during interview portion of demo)

Technical Factors: 0 (little effort to prove technical aspects of software)

to

E (solution provides tests to prove technical functionality)

Bugs: maximum F marks deductable for obvious/serious programming flaws

Where:

A#1 A#2

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A = 3 5

B = 2 3

C = 1 2

D = 2 3

E = 1 1

F = 1 1

The assignment can be implemented in teams of maximum 2 students to ensure reasonable workload.

\*Report Layout details

* title page documenting assignment number, author, student ID
* a page describing assignment scope (nature of assignment, who the intended audience is, etc.)
* the assignment report
* flowcharts and/or pseudo-code to support your research and solutions
* a bibliography indicating references of where you located the information you used in your report (be it books, online articles, discussions with professors, etc.)