

Programare concurentă și distribuită, Homework 1

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1. Requirements

PDF link: [PCD_Homework1.pdf \(uaic.ro\)](https://uaic.ro/PCD_Homework1.pdf)

Write a program that measures the time to transfer various amounts of data (500MB, 1GB (1.5 million of WhatsApp messages, 4000 photos, 10.000 emails or reuse a large buffer)) under various conditions (Make sure you are sending bytes. Do not use higher-level functions that assume you are writing strings.)

Requirements for implementation:

- A) Supported protocols as parameters (for both client/server): UDP, TCP
- B) Message size: 1 to 65535 bytes
- C) Two mechanisms should be implemented: streaming and stop-and-wait (acknowledge is performed before the sending of the next message)

Requirements for output:

- A) After each server session, the server will print: used protocol, number of messages read, number of bytes reads
- B) At the end of execution, the client will print: transmission time, number of sent messages, number of bytes sent.

Language: you can use any language for implementation. The program must run on a Linux system.

2. Technologies used

Python3, PyCharm, Windows 10 Home - 64bit

3. Results

A) TCP

a) Stream:

- File size: 3,026,413,568 bytes (2.81 Gb), Extension: .iso
 - Client:
 - Time: 58.0405 seconds
 - Chunks: 46561
 - Bytes: 3026413568 bytes
 - Chunk Size: 65000 bytes
 - Server:
 - Chunks: 46561
 - Bytes: 3026413568 bytes
 - Chunk Size: 65000 bytes
- File size: 2,320,667 bytes (2.21 Mb), Extension: .pdf
 - Client:
 - Time: 0.1319
 - Chunks: 36

- Bytes: 2320667 bytes
- Chunk Size: 65000 bytes
- Server:
 - Chunks: 36
 - Bytes: 2320667 bytes
 - Chunk Size: 65000 bytes

b) Stop And Wait:

- File size: 3,026,413,568 bytes (2.81 Gb), Extension: .iso
 - Client:
 - Time: 57.5139 seconds
 - Chunks: 46561
 - Bytes: 3026413568 bytes
 - Chunk Size: 65000 bytes
 - Server:
 - Chunks: 46561
 - Bytes: 3026413568 bytes
 - Chunk Size: 65000 bytes
- File size: 2,320,667 bytes (2.21 Mb), Extension: .pdf
 - Client:
 - Time: 1.5903 seconds
 - Chunks: 36
 - Bytes: 2320667 bytes
 - Chunk Size: 65000 bytes
 - Server:
 - Chunks: 36
 - Bytes: 2320667 bytes
 - Chunk Size: 65000 bytes

B) UDP

a) Stream:

- File size: 3,026,413,568 bytes (2.81 Gb), Extension: .iso
 - Client:
 - Time: 96.5647 seconds
 - Chunks: 2955482
 - Bytes: 3026413568 bytes
 - Chunk Size: 1024 bytes
 - Server:
 - Chunks: 2947481
 - Bytes: 3018220544 bytes
 - Chunk Size: 65000 bytes
- File size: 2,320,667 bytes (2.21 Mb), Extension: .pdf
 - Client:
 - Time: 0.0539
 - Chunks: 2267
 - Bytes: 2320667 bytes
 - Chunk Size: 1024 bytes
 - Server:

- Chunks: 2216
- Bytes: 2268443 bytes
- Chunk Size: 65000 bytes

b) Stop And Wait:

- File size: 3,026,413,568 bytes (2.81 Gb), Extension: .iso
 - Client:
 - Time: 281.1672 seconds
 - Chunks: 2955482
 - Bytes: 3026413568 bytes
 - Chunk Size: 1024 bytes
 - Server:
 - Chunks: 2952708
 - Bytes: 3026413568 bytes
 - Chunk Size: 65000 bytes
- File size: 2,320,667 bytes (2.21 Mb), Extension: .pdf
 - Client:
 - Time: 1.5903 seconds
 - Chunks: 2267
 - Bytes: 2320667 bytes
 - Chunk Size: 1024 bytes
 - Server:
 - Chunks: 2267
 - Bytes: 2320667 bytes
 - Chunk Size: 65000 bytes