CS250 2017 Fall Lab 09

Buffered and Non-buffered I/O

The policy for all lab assignments this semester is as follows. Please sign, which you may do by typing in your name.

*In the following I have not represented the work of another person as my own nor have I knowingly or actively assisted another person in violating this standard.*

(Signed) \_\_\_\_\_\_\_Farhan Shafi\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. [15 points] Correctly implement the unbuffered writing described on the handout. Show the code to your TA. Execute the program and make a note of the time.

2. [30 points] Correctly implement the buffered writing described on the handout. Show the code to your TA. Execute the program and make a note of the time.

3. [15 points] Correctly implement the unbuffered reading described on the handout. Show the code to your TA. Insert a print statement in the main function to print out the characters read. Execute the program to verify the read operation was performed correctly. Re-run again without the print statement and record the time.

4. [30 points] Correctly implement the buffered reading described on the handout. Show the code to your TA. Insert a print statement in the main function to print out the characters read. Execute the program to verify the read operation was performed correctly. Re-run again without the print statement and record the time.

5. [10 points] Fill in the below table.

BYTES\_TO\_TO\_READ\_WRITE = 819200

File size = 809593

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Buffer Size (bytes) | Time to write (s) | Write Throughput (bytes/s) | Time to read (s) | Read Throughput  (bytes/s) |
| 1 | 4.406220 | 185919 | 0.906124 | 893468 |
| 32 | 0.496317 | 1650558 | 0.121396 | 6669025 |
| 256 | 0.287493 | 2849461 | 0.076330 | 10606485 |
| 1024 (1KB) | 0.259936 | 3151544 | 0.070591 | 11468785 |
| 8192 (8 KB) | 0.259427 | 3157728 | 0.068923 | 11746340 |
| 65536 (64KB) | 0.237331 | 3451719 | 0.068844 | 11759819 |

Create plots graphing:

Write Throughput vs. Buffer Size

Read Throughput vs. Buffer Size

Use MS Excel or any graphing/plotting tool.

Explain the differences.

For both the graphs as the buffer size increases the throughput levels off. That means after a certain point increasing the buffer size does not affect the throughput much.

**NOTE: Submit Problems 1-4 via turnin. Problem 5 should be submitted as a PDF via Blackboard.**