

REPORT

Experiments

Here are some time measurement of our program with the respective function usage. In all experiments, we changed only the independent variable (which is the amount of data or number of files) and kept same all the other functions and numbers to correctly measure the dependent variable (which is the time that passes until the end of the program). To increase credibility, all results were calculated by running the respective function 10 times with these numbers and taking the average of these 10 results. For each function, standart deviation is also measured for some data.

- Read() function time results with the given bytes of data:

For 100 bytes of data: 48 ns

For 1000 bytes of data: 474 ns

For 10.000 bytes of data: 2503 ns

For 50.000 bytes of data: 7100 ns

For 100.000 bytes of data: 46037 ns

Standart deviation for 100.000 bytes of data: 2478 ns

Standart deviation for 50.000 bytes of data: 1014 ns

- Write() function time results with the given bytes of data:

For 100 bytes of data: 1214 ns

For 1000 bytes of data: 11551 ns

For 10.000 bytes of data: 115164 ns

For 50.000 bytes of data: 549246 ns

For 100.000 bytes of data: 1122924 ns

Standart deviation for 100.000 bytes of data: 15273 ns

Standart deviation for 50.000 bytes of data: 10117 ns

- Createfile() function time results when the given numbers of files were created at the same time:

For 1 file: 5 ns

For 5 files: 21 ns

For 10 files: 50 ns

For 32 files: 144 ns

For 64 files: 200 ns

Standart deviation for 64 files: 10 ns

Standart deviation for 32 files: 4 ns

- Openfile() function time results when the given numbers of files were opened at the same time:

For 1 file: 1 ns

For 5 files: 1 ns

For 10 files: 2 ns

For 32 files: 4 ns

For 64 files: 7 ns

Standart deviation for 64 files: 1 ns

Standart deviation for 32 files: 1 ns

- Deletefile() function time results when the given numbers of files were closed at the same time:

For 1 file: 1 ns

For 5 files: 3 ns

For 10 files: 10 ns

For 32 files: 27 ns

For 64 files: 50 ns

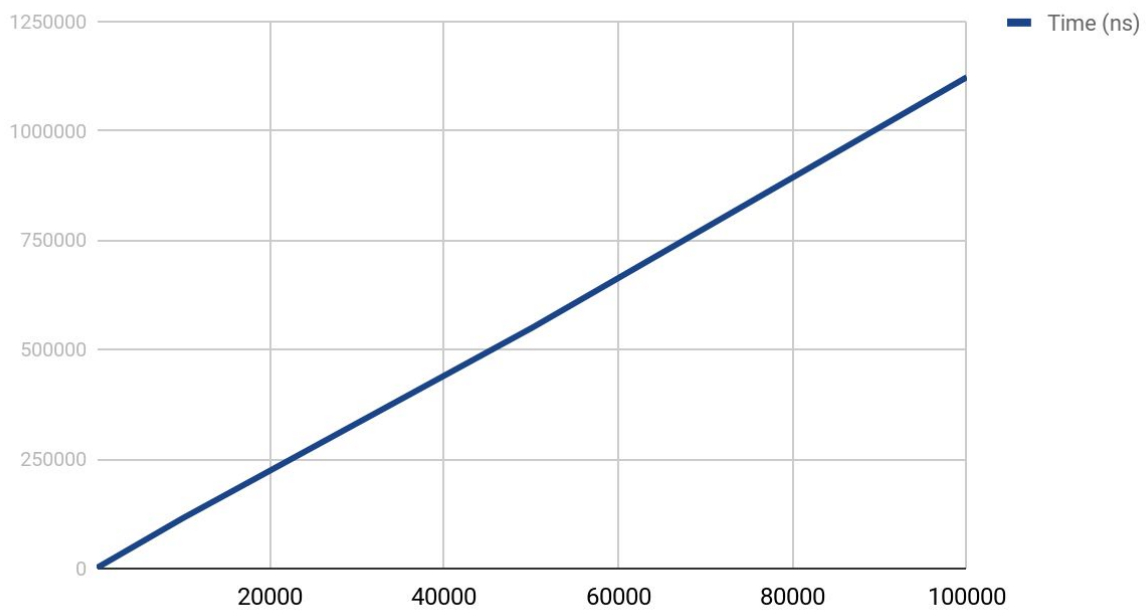
Standart deviation for 64 files: 5 ns

Standart deviation for 32 files: 3 ns

Graphs

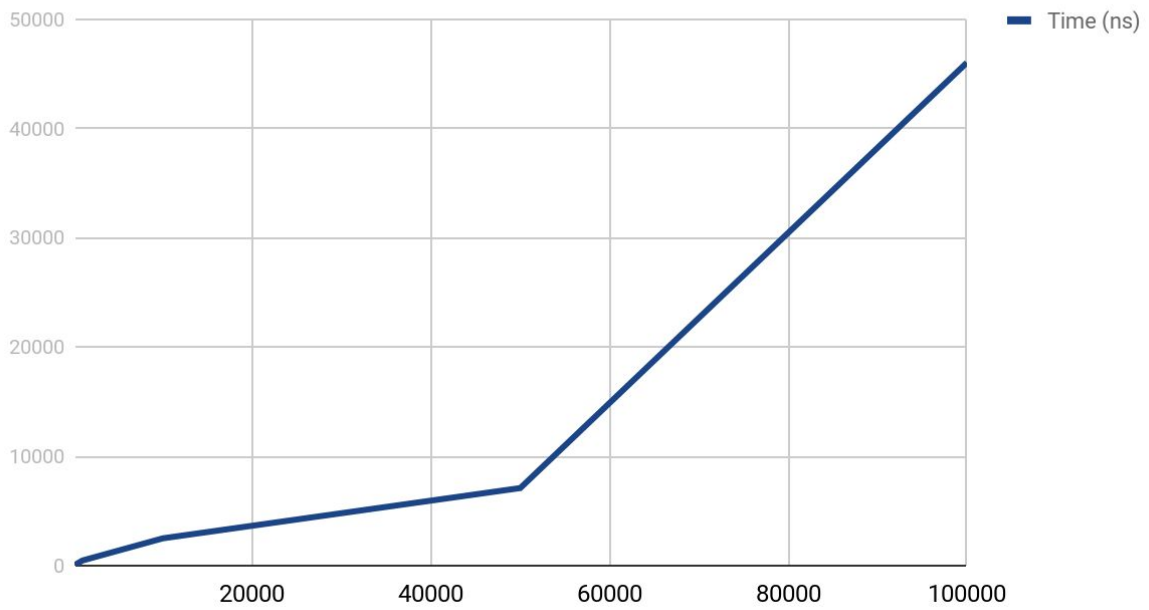
Write function:

Time Passed



Read function:

Time Passed



Comments

As expected, for all the functions, when we increased the size or amount of the independent variable, time that passes (which is the dependent variable for all the experiments) is also increased because of the increased work load of the program. Also, there are some other points as well. For example, write function works much slower than the read function. We assume that it happens because traversing and reading the respective memory segment is less costly than writing the data.

Moreover, it seems that creating a file is more costly than deleting a file. Since while creating a file, many structs are also created such as file control block. Also, the created file will take a place in directory array which requires additional work load. However, for delete operation, checking whether it is open or not and then deleting it is sufficient.