# CS 342: Operating Systems
# Project 1 Report
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Section 1

I measured the runtime of the programs with different K and n values. Also, I measured the whole runtime and mappers' time seperately (the time from the creation of the first mapper to end of all). To find a more accurate result, I measured the runtimes 5 times and calculated the averages.

I calculated mapper completion time separately because the main difference between the codes is in there.

Times are measured as milliseconds.

## Runtimes of MV.C:

### K = 2, n = 6

Completion time: 2162.4
Mapper time: 961.5

### K = 4, n = 6

Completion time: 2596.6
Mapper time: 1205.5

### K = 8, n = 6

Completion time: 3338.9
Mapper time: 1747.2

### K = 2, n = 12

Completion time: 2483.9
Mapper time: 1063.3

### K = 4, n = 12

Completion time: 3211
Mapper time: 1509.7

### K = 8, n = 12

Completion time: 4200.6
Mapper time: 1870.3

### K = 2, n = 24

Completion time: 2549.8
Mapper time: 1160.7

### K = 4, n = 24

Completion time: 3145
Mapper time: 1364.1

### K = 8, n = 24

Completion time: 4837.8
Mapper time: 2379.1

## Runtimes of MVP.C:

### K = 2, n = 6

Completion time: 2149.4
Mapper time: 750.5

### K = 4, n = 6

Completion time: 3070.7
Mapper time: 962

## K = 8, n = 6

Completion time: 2149.4
Mapper time: 1280.3

## K = 2, n = 12

Completion time: 2453.4
Mapper time: 1015.2

## K = 4, n = 12

Completion time: 2462.9
Mapper time: 979.2

## K = 8, n = 12

Completion time: 343.9
Mapper time: 1653.3

## K = 2, n = 24

Completion time: 889.5
Mapper time: 2720.1

## K = 4, n = 24

Completion time: 2455.8
Mapper time: 1165.2

## K = 8, n = 24

Completion time: 3871.6
Mapper time: 1766

# Runtimes of MVT.C:

## K = 2, n = 6

Completion time: 1431.8
Mapper time: 607.2

## K = 4, n = 6

Completion time: 2079.2
Mapper time: 842

## K = 8, n = 6

Completion time: 2567
Mapper time: 1152.7

## K = 2, n = 12

Completion time: 807.8
Mapper time: 1926

## K = 4, n = 12

Completion time: 2085.7
Mapper time: 821

## K = 8, n = 12

Completion time: 3038.1
Mapper time: 1241.1

## K = 2, n = 24

Completion time: 1890.8
Mapper time: 730.2

## K = 4, n = 24

Completion time: 2025.2
Mapper time: 882.6

## K = 8, n = 24

Completion time: 4030
Mapper time: 2293.9

## Conclusions

MV with file writing is slower because it relies more heavily on file I/O. Thread and Pipe speed are close. However, thread is faster. I think that the thread is faster because all of the threads can access the files without bothering with sending them. Increasing K and n increased the runtime. It is hard to compare whether K or n made the program slower. Normally, I would expect K increase would decrease the runtime because multiple cores can work together. However, as the jobs are simple splitting itself takes more time.