Database Systems
Assignment 2 – Two-Phase Merge Sort Algorithm

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1) System Configuration

Memory :- 3.7 GiB
Processor :- Intel® Core™ i3-6006U CPU @ 2.00GHz × 4
Graphics:- Intel® HD Graphics 520 (Skylake GT2)
OS type:- 64-bit
Disk :- 479.3 GB
Base System: Ubuntu 16.04 LTS 64-bit

2)Results

1) File Size (MB) vs Time (s)

Fixed Memory allocated – 50 MB

File Size	Time
5	1.34
50	9.41
500	96.64
1024	192.47
2048	413.05
3072	695.43
4096	871.59
5120	1254.32

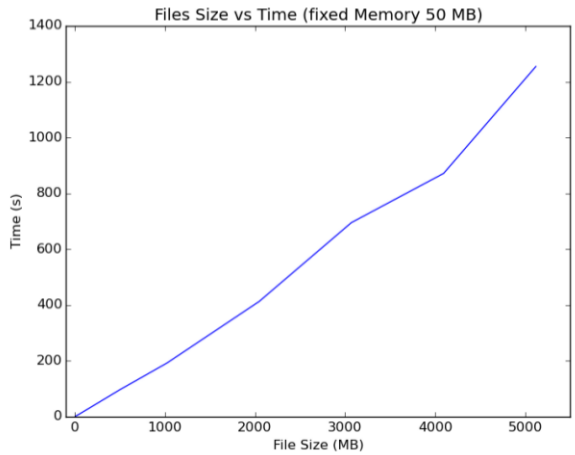
2) Main Memory (MB) vs Time (s)

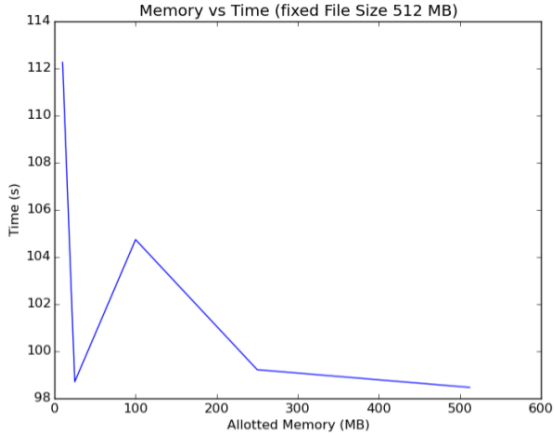
Fixed File Size – 512 MB

Main Memory	Time
10	112.26
25	98.71
100	104.74
250	99.22
512	98.47

3) Explanation

Graphs





After Observing graphs keeping main memory fix as the file size increase, time will also increase because more number of records needs to be sorted and at a time only memory memory size equivalent size of records can be sorted, so more tie will be needed.

And if we keep the file size fix and change the main memory size then for lower values of main memor size the time taken will be more as size increases, and middle values it starts decreasing with time and approches to zero as main memory size increases a lot. It is because data is retrieved and processed faster in main memory as compared to secondary memory.