

CS 342
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PROJECT #3

PROJECT REPORT

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I did my experiments with a computer which has processor intel core i5 vPro. The computer is seven years old and it is a slow machine when compared to today's computers. I tested both ordered allocation and complex allocation for the experimentation.

Ordered Allocation

Allocating 5 memories in order. Each memory is 128 bytes.

	Chunk Size = 32KB	Chunk Size = 1024KB	Chunk Size = 32MB
First Fit	2800ms	88526ms	2749938ms
Best Fit	3750ms	106669ms	3355379ms
Worst Fit	3108ms	78979ms	2468125ms

Table 1

Allocating 5 memories in order. Each memory is 2048KB.

	Chunk Size = 32MB
First Fit	2716833ms
Best Fit	3483998ms
Worst Fit	2736476ms

Table 2

Complex Allocation

I allocated 16 MB of chunk for experimenting complex allocation. The structure of allocated and free spaces of the chunk are given below.

4 MB allocated

2 MB free

1 MB allocated

3 MB free

2 MB allocated

4 MB free

500MBs of memories are allocated seperately until the chunk gets full. Results are given below:

	Chunk Size = 16MB
First Fit	4885176ms
Best Fit	6063723ms
Worst Fit	5717092ms

Table 3

According to the results, it is obviously seen that even best fit algorithm presents the worst performance in all conditions even it provides the best fragmentation. First fit algorithm is the best algorithm in terms of performance in most of the cases but when the allocation number stays same and chunk size increases, worst fit algorithm takes the lead in terms of performance. When the chunk size grows and allocation number stay same, the execution time of the algorithms increases mostly in linear. Also number of processes directly effect the performance in negative way. As number of processes increases, performance of the three algorithms decreases and also worst fit algorithm almost approaches to bad performance of best fit.

For the general evaluation of the algorithms, first fit algorithm presents the best performance in average, however it wastes lots of memory. A memory which has smaller size than remaining chunk size may not be allocated by first fit. Best fit algorithm is the best for memory efficiency but worst in terms of performance. Worst fit algorithm is advantageous for avoiding small and unnecessary holes in the memory but it causes problems for allocating large sizes of memory in the future processes because of the occupation of larger blocks.