Bilkent University

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Operating Systems Project

Project 3 Report

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Algorithm	N(number of allocations per process)	M(allocation size in bytes)	Runtime
First fit	256	32	real 0m0,051s user 0m0,020s sys 0m0,016s
First fit	512	32	real 0m0,118s user 0m0,027s sys 0m0,068s
First fit	1024	32	real 0m0,248s user 0m0,145s sys 0m0,090s
First fit	2048	32	real 0m0,888s user 0m0,678s sys 0m0,146s
Worst fit	256	32	real 0m0,068s user 0m0,034s sys 0m0,016s
Worst fit	512	32	real 0m0,217s user 0m0,090s sys 0m0,031s
Worst fit	1024	32	real 0m0,300s user 0m0,209s sys 0m0,064s
Worst fit	2048	32	real 0m0,998s user 0m0,660s sys 0m0,191s

Table1 : Runtimes of Algorithms

Based on the observations from Table 1, real time, system time,and user time are proportional with number of allocation per process. The reasoning can be done with common sense.As the number of allocations per process increases, the number of holes that are required will increase. This means the number of traversals of the linked list will increase.Also as one can see, the worst fit algorithm generally performs slower than the first width algorithm. The reason again is very simple,the worst fit algorithm seeks for the largest fitting hole, instead of the first fitting hole like the first fit algorithm. Hence,while the first fit stops at the first fitting hole, the worst fit algorithm always traverses all of the list to find the largest, resulting in the largest runtime. In terms of memory utilization, first fit gives a better performance. Since the worst fit always allocates the largest hole, the possible space for the remaining processes decrease. For instance, a small process can get a very big space, and may make other larger processes wait with the worst fit algorithm.So results indicate that, first fit better than worst fit based on decreasing time and storage&memory utilization.