

COMP3520 Host Dispatcher Design Document

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1 Memory Allocation Algorithm

A number of memory allocation algorithms were available to choose from for this assignment, and each one will be detailed below - with a description of what they do, their advantages and disadvantages, as well as, where applicable, real world cases where they have been used before and how they held up in these situations.

The algorithms that were allowed to be chosen from were First Fit, Worst Fit, Next Fit, Best Fit, and the Buddy System, all of which fall under the category of ‘Dynamic Partitioning’, in contrast to ‘Fixed Partitioning’. The former allows a variable number of partitions as well as their sizes, while the latter has both a fixed number of partitions as well as their sizes (although fixed sizes does not necessarily indicate fixed *equal* sizes - unequal fixed sizes also still fit the category as well).

At this point, part of the narrowing down of algorithm choice has already been done for us due to the limitations of the specifications of the task - the exclusion of Fixed Partitioning algorithms means that we automatically avoid some of their main disadvantages, including having a fixed (and hence) inflexible number of processes that can be running at any one time, and inefficient use of partition space by smaller jobs. Not only this, but virtually no real world systems still employ the use of fixed partitioning, a clear indicator of its inefficiencies and pitfalls.

1.1 First Fit

1.2 Worst Fit

1.3 Next Fit

1.4 Best Fit

1.5 Buddy System

2 Queuing, Dispatching, Memory Allocation, and Resource Allocation Structures

3 Program Structure

4 Discussion - Use of Multilevel Dispatching Scheme