EVALUATION AND ANALYSIS

For the evaluation and analysis, all three algorithms were run under the same conditions :

1. 2 GB memory
2. Run for allocation sizes : 5000, 1000, 100, 10.
3. 100 executions for each.

The following shows the analysis results of all the allocation algorithms. :

- Before' shows the memory utilization before the algorithm is run.
- 'After' shows the memory utilization after the algorithm is run.
- The first list shows the holes list before the allocation, for a single run of the algorithm.
- The second list shows the holes list after the allocation, for a single run of the algorithm.
- The average time for 100 iterations for different sizes is listed next, in miliseconds.

Next Fit

Memory Utilization :
- Before
  4096 523887 513517 509367 0
- After
  4096 523887 513506 509367 0

Holes Before :
VM: Total number of holes: 6
VM: Hole 0 [Page: 12062, Size 509367]
VM: Hole 1 [Page: 4096, Size 1037]
VM: Hole 2 [Page: 2101, Size 1982]
VM: Hole 3 [Page: 1982, Size 20]
VM: Hole 4 [Page: 256, Size 787]
VM: Hole 5 [Page: 1, Size 143]

Holes After :
VM: Hole 0 [Page: 12062, Size 509367]
VM: Hole 1 [Page: 5081, Size 47]
VM: Hole 2 [Page: 4096, Size 977]
VM: Hole 3 [Page: 2101, Size 1982]
VM: Hole 4 [Page: 1982, Size 20]
VM: Hole 5 [Page: 256, Size 787]
VM: Hole 6 [Page: 1, Size 143]

Size : 5000, Average time : 9.333 ms
Size : 1000, Average time : 1.666 ms
Size : 100, Average time : 1.166 ms
Size : 10, Average time : 1.166 ms

Last Fit

Memory Utilization :
- Before
  4096 523887 513519 509367 0

- After
  4096 523887 513504 509367 0

Holes Before :
VM: Hole 0 [Page: 12062, Size 509367]
VM: Hole 1 [Page: 2101, Size 3055]
VM: Hole 2 [Page: 1982, Size 20]
VM: Hole 3 [Page: 256, Size 787]
VM: Hole 4 [Page: 36, Size 108]
VM: Hole 5 [Page: 6, Size 2]

Holes After :
VM: Total number of holes: 7
VM: Hole 0 [Page: 21429, Size 500000]
VM: Hole 1 [Page: 12062, Size 4367]
VM: Hole 2 [Page: 2101, Size 2995]
VM: Hole 3 [Page: 1982, Size 20]
VM: Hole 4 [Page: 256, Size 787]
VM: Hole 5 [Page: 36, Size 108]
VM: Hole 6 [Page: 6, Size 2]

Size : 5000 Average time : 19.833
Size : 1000 Average time : 3.000
Size : 100 Average time : 1.666
Size : 10 Average time : 1.500

Best Fit

Memory Utilization :
- Before
  4096 523887 513519 509367 0

- After
  4096 523887 513504 509367 0

Holes Before :
VM: Total number of holes: 5
VM: Hole 0 [Page: 12062, Size 509367]
VM: Hole 1 [Page: 2101, Size 3050]
VM: Hole 2 [Page: 1982, Size 1]
VM: Hole 3 [Page: 256, Size 787]
VM: Hole 4 [Page: 1, Size 129]

Holes After :
VM: Total number of holes: 6
VM: Hole 0 [Page: 12062, Size 509367]
VM: Hole 1 [Page: 5099, Size 47]
VM: Hole 2 [Page: 2101, Size 2990]
VM: Hole 3 [Page: 1982, Size 1]
VM: Hole 4 [Page: 256, Size 787]
VM: Hole 5 [Page: 1, Size 129]

Size : 5000 Average time 39.166
Size : 1000 Average time 2.500
Size : 100 Average time 2.166
Size : 10 Average time 2.166

ANALYSIS

The first fit algorithm is fast coz it allocates the first hole that can accommodate the memory requested and returns it. The Last Fit algorithm takes much more time because it traverses the whole memory and then allocates the last fit large enough to accommodate the requested memory. The Best Fit algorithm takes larger time because it scans the whole memory for holes and then returns the best fitting one .