CSCD 340
Lab 9

SPECIFICATIONS

For each memory management algorithm, determine the following:

- The memory layout after the events specified below
- The number of fragments per algorithm
- The average size of the fragments per algorithm
- The size of the largest fragment – could it be useable (why or why not)?
- The size of the smallest fragment – could it be useable (why or why not)?

Let there be 400MB of space set aside, starting from address 112MB, to manage all the user processes in the system.

Let the following table depict the memory layout for a set of seven processes in the system:

Process	Memory Amount	Starting Location
P1	40MB	172MB
P2	12MB	224MB
P3	32MB	236MB
P4	48MB	312MB
P5	8MB	382MB
P6	90MB	390MB
P7	8MB	504MB

Now consider the following sequence of events in the system:

- New process P8 starts and is allocated 32MB of memory.
- New process P9 starts and is allocated 24MB of memory.
- Process P6 terminates and releases its memory.
- Process P2 terminates and releases its memory.
- New process P10 starts and is allocated 20MB of memory.
- New process P11 starts and is allocated 16MB of memory.
- New process P12 starts and is allocated 16MB of memory.
- Process P5 terminates and releases its memory.
- Process P9 terminates and releases its memory.
- New process P13 starts and is allocated 24MB of memory.
- Process P4 terminates and releases its memory.

Construct the memory layout after processing the above sequence of memory management events for the following algorithms

1. First Fit algorithm for memory allocation. That is, whenever a process needs to be allocated memory, the system will look for the first free chunk of memory that is at least as large as the amount of memory needed by the process.(low-address end for process)

2. Best Fit algorithm for memory allocation. That is, whenever a process needs to be allocated memory, the system will look for the smallest free chunk of memory that is at least as large as the amount of memory needed by the process. (low-address end for process)

3. Worst Fit algorithm for memory allocation. That is, whenever a process needs to be allocated memory, the system will look for the largest free chunk of memory that is at least as large as the amount of memory needed by the process. (low-address end for process)

4. Next Fit algorithm for memory allocation. That is, whenever a process needs to be allocated memory, the system will look for the first free memory block, beyond the previously allocated block address, whose size is at least as large as the amount of memory needed by the process (low-address end for process)

TURN IN

Submit a single PDF containing your answers for each algorithm per the specifications. Include in that PDF at least a 2 paragraphs analysis of the algorithms as it relates to the specifications. Meaning clearly compare and contrast each algorithm examining fragment size, fragment number, etc. Don't tell us what the algorithm does, we already know. Your compare and contrast will clearly show how fragments work out in each algorithm.

For example: the worst fit algorithm had the smallest number of fragments compared to the other algorithms, and the average size of the fragments was 16 compared to worst fit that had an average size of 8. In the information provided the average process size was 10 so worst fit would have more useable fragments than the first fit algorithm.

NOTE: I don't care if you type it or handwrite it. The PDF needs to be less than 1 MB if you hand write it and scan it. You will want to show your work in the PDF. If you just submit answers without work, and the answers are wrong, then you will receive 0 points for that algorithm.

Name your PDF – your last name first letter of your first name lab9.pdf (Example: steinerslab9.pdf)