1. *Why would using fixed partitions in a current operating systems (Windows, Mac OS, Linux, etc.) be a big mistake? Provide at least two (2) reasons.*

* The number of programs people run at once nowadays would be unsustainable by such a limited way of dividing resources. This would require so many partitions to even be viable.
* Since each job can only have one partition at a time, internal fragmentation would constantly be a problem.

1. *What are some advantages and disadvantages of fixed partitions and dynamic partitions? List at least one (1) advantage and disadvantage for****each****.*

**Fixed Partitions:**

* Much more flexible than the outdated single user scheme, could store more than one job at a time.
* Simple implementation: One partition = One job.
* Partition sizes are fixed and require a system restart to be altered.
* Internal Fragmentation: Causes unused memory in a partition to go to waste.

**Dynamic Partitions:**

* Jobs are allocated in one contiguous block.
* Memory is given only as much as requested for a job.
* External Fragmentation creates fragments of free memory between partitions of allocated memory, like clustering in hash tables.

1. What is the **primary** problem associated with fragmentation (internal or external)?

Memory is unused, and therefore wasted.

1. Why might **internal** fragmentation be worse than **external** fragmentation? Provide at least two (2) reasons.

Internal fragmentation is definitely worse because the memory that is wasted cannot be used by any other job at all. Additionally, in order to actually ‘fix’ the fragmentation you need to know before hand what block sizes would be optimal for the jobs. Also, the fix requires an actual system restart.

1. Can **internal** fragmentation occur when using **fixed** partitions?

It can. The issue with fixed partitions is that one block gets one job period. No unused memory can be used by other jobs and will go to waste.

1. Can **external** fragmentation occur when using **fixed** partitions?

No, external fragmentation cannot occur in fixed partitions because the memory that is unused is in the same block requested for the job. It is inside a requested block.

1. Can **internal** fragmentation occur when using **dynamic** partitions?

No, memory is only called as needed in dynamic partitioning and unused memory (if the proper size) can be called upon to be used by another job.

1. Can **external** fragmentation occur when using **dynamic**partitions?

Yes, blocks of free memory between occupied memory can often be too small for larger incoming jobs. This can be solved with relocatable dynamic partitions.

1. What are some advantages and disadvantages of the **First-Fit** memory allocation algorithm? List at least one (1) advantage and disadvantage.

* First Fit memory is faster, it places the waiting job into the first available memory space that has enough room.
* Can create a fragmentation problem as the partitions are inefficiently filled.

1. What are some advantages and disadvantages of the Be**st-Fit** memory allocation algorithm? List at least one (1) advantage and disadvantage.

* Optimizes memory placement by locating block in which memory fits the best.
* Is slower than First Fit
* Does not completely eliminate fragmentation