

## Practice questions:

1. Consider a logical address space of 8 pages with 1024 words per page, mapped onto a physical memory of 16 frames.
  - i. How many bits are there in the logical address?
  - ii. How many bits are there in the physical address?
2. Define external fragmentation. Which type of contiguous memory allocation techniques suffer from external fragmentation? Explain by giving one example.
3. List the steps for handling page fault in implementing virtual memory thru demand paging. Draw figure for the same.
4. Why is virtual memory concept used? Explain by giving one example.
5. Consider a process executing on an operating system that uses demand paging. The average time for a memory access in the system is  $T$  units if the corresponding memory page is available in memory. In case of page fault, extra  $D$  units are needed. Compute effective memory access time if a page fault occurs after every  $N$  instructions?
6. Consider a machine with 8 GB main memory and 16-bits virtual address space, with page size as 4KB. Frame size and page size is same for the given machine. Find the following:
  - a. Find number of pages required for the given virtual address space.
  - b. The number of bits reserved for the frame offset.
7. Name the page replacement algorithms in which chances of increase in the page fault rate is more compared to LRU even if the number of allocated frames are increased? Give your reasoning.