WEEK2 ASSIGNMENTS

1. Memory Interleaving.
2. A certain program generates the following sequence of word addresses 4,5,12,8,10,28,6,10: A page has four words; the number of page frames in main memory is 3. How many page faults are generated if optimum page replacement policy is used ?
3. What is meant by the cache miss penalty? Briefly discuss "early restart" technique to reduce miss penalty.
4. Let us consider a memory system consisting of main memory and cache memory. In case of a cache miss assume that performance of the basic memory organization as:  
    4 clock cycle to send the address  
    24 clock cycle for the access time per word  
    4 clock cycles to send a word of data.  
   (i) What will be the miss penalty, give a cache block of four words?  
    (ii) What will be the memory bandwidth?
5. What do you mean by memory fragmentation? What is the advantages of using paging? Explain Virtual memory concept with an example where logical address space is 8 kb, physical address space is 4 kb, page size is 1 kb. Explain page fault with FIFO and LRU Algorithm.
6. What do you mean by cache coherence problem? Describe one method to remove this problem and indicate its limitations.
7. What is the objective of OPT page replacement algorithm policy of virtual memory? Using LRU show the page fault rate for the reference string.  
   7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1.
8. Briefly explain the two write policies: write through and write back with advantages and disadvantages.
9. What are the major differences between segmentation and paging. Why is the page size is usually a power of 2.
10. An address space is specified by 28 bits and corresponding memory space of 26 bits. If a page consists of 4K words
11. How many pages and blocks are there in the system.
12. The associative memory page-table contains the following entries.

|  |  |
| --- | --- |
| Page | Block |
| 0 | 0 |
| 1 | 1 |
| 5 | 2 |
| 6 | 3 |

Make a list of all virtual addresses –in decimal and in binary- that will cause a page fault.

1. A system has 48 bit virtual address, 36 bit physical address and 128 MB main memory address. If the system has 4096 bytes pages, how many virtual and physical pages can have address support. How many page frames of main memory are there.