



Worksheet 10 - VM1

1. A process in a paged system accesses the following virtual addresses:
10, 11, 104, 170, 73, 309, 185, 245, 246, 434, 458, 364

Derive the corresponding reference string if the page size is 100 words and 200 words.

2. At time i , the four-page frames contain the pages shown below.

Time t	...	i	...
Frame 0		0	
Frame 1		7	
Frame 2		2	
Frame 3		5	

The  points to the oldest resident page. Page size = 512 words. The system uses the FIFO page replacement algorithm. For each virtual address VA, write the corresponding page number p and whether that VA will cause a page fault at time $i+1$. Where will be the pointer after all replacements if any.

VA = 2581

VA = 4029

VA = 1981

VA = 1189

3. Physical memory consists of 4-page frames, initially all empty. The following reference string is processed:
0 1 4 0 2 3 0 1 0 2 3 4 2 3
- Show which pages are resident under the optimal page replacement algorithm. Indicate when page faults happen.
 - Show which pages are resident under the FIFO page replacement algorithm. Indicate when page faults happen
 - Show which pages are resident under the LRU page replacement algorithm. Indicate when page faults happen.
4. Plot the number of page faults generated for the reference string 0 1 2 3 0 1 4 0 1 2 3 4 as the number of frames increases from 1 to 6 for a FIFO page replacement algorithm. Write your observation.