**OS Assignment IV**

The size of physical frames and logical pages is 16 bytes. The RAM can hold 3 such frames. The virtual addresses of the process are 6 bits in size. Consider that the physical frames in RAM are initially empty. The program generates the following 20 virtual address sequences as it runs on the CPU:

**0, 1, 20, 2, 20, 21, 32, 31, 0, 60, 0, 0, 16, 1, 17, 18, 32, 31, 0, 61**.

Simulate a Memory management module to solve following problems :-

(a) Translate the virtual addresses given above into physical frame numbers and print the steps of

address translation process. Generate the reference string of 20 frame numbers corresponding to

the virtual address. Assume pages are numbered starting from 0, 1, ...

(b) Calculate the number total number of page faults generated , assuming a FIFO page

replacement algorithm. You must correctly point out which page accesses in the reference string

are responsible for the page faults.

(c) Repeat the above process for LRU page replacement algorithm.

(d) What would be the lowest number of page faults achievable in this example, assuming an

optimal page replacement algorithm were to be used? Repeat the sequence above for optimal

page replacement algorithm.