**Operating System**

**Topic: Page Faults**

**Set-2**

**Question-1**

A system uses FIFO policy for page replacement. It has 4 page frames with no pages loaded to begin with. The system first accesses 50 distinct pages in some order and then accesses the same 50 pages in reverse order. How many page faults will occur?

1) 96

2) 100

3)  97

4) 92

**Question-2**

A system uses FIFO policy for page replacement. It has 4 page frames with no pages loaded to begin with. The system first accesses 100 distinct pages in some order and then accesses the same 100 pages but now in the reverse order. How many page faults will occur?

1. 196
2. 192
3. 197
4. 195

**Question-3**

In which one of the following page replacement algorithms it is possible for the page fault rate to increase even when the number of allocated frames increases?

1. LRU (Least Recently Used)
2. OPT (Optimal Page Replacement)
3. MRU (Most Recently Used)
4. FIFO (First In First Out)

**Question-4**

Given reference to the following pages by a program

0, 9, 0, 1, 8, 1, 8, 7, 8, 7, 1, 2, 8, 2, 7, 8, 2, 3, 8, 3

How many page faults will occur if the program has three page frames available to it and uses an optimal replacement?

1. 7
2. 8
3. 9
4. None of the above

**Question -5**

Consider the virtual page reference string

1, 2, 3, 2, 4, 1, 3, 2, 4, 1

on a demand paged virtual memory system running on a computer system that has main memory size of 3 page frames which are initially empty. Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacement policy. Then

1. OPTIMAL < LRU < FIFO
2. OPTIMAL < FIFO < LRU
3. OPTIMAL = LRU
4. OPTIMAL = FIFO

**Set-1**

**Question-1**

Consider the virtual page reference string

1, 2, 3, 2, 4, 1, 3, 2, 4, 1

On a demand paged virtual memory system running on a computer system that has a main memory size of 3 pages frames which are initially empty. Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacements policy. Then

(A) OPTIMAL < LRU < FIFO

(B) OPTIMAL < FIFO < LRU

(C) OPTIMAL = LRU

(D) OPTIMAL = FIFO

**Question-2**

Suppose the time to service a page fault is on the average 10 milliseconds, while a memory access takes 1 microsecond. Then a 99.99% hit ratio results in average memory access time of

(a) 1.9999 milliseconds

(b) 1 millisecond

(c) 9.999 microseconds

(d) 1.9999 microseconds

Note:

***Average memory access time =***

***[(% of page miss)\*(time to service a page fault) +***

***(% of page hit)\*(memory access time)]/100***

**Question-3**

Let the page fault service time be 10ms in a computer with average memory access time being 20ns. If one page fault is generated for every 10^6 memory accesses, what is the effective access time for the memory?

(A) 21ns

(B) 30ns

(C) 23ns

(D) 35ns

**Question-4**

A system uses FIFO policy for page replacement. It has 4 page frames with no pages loaded to begin with. The system first accesses 100 distinct pages in some order and then accesses the same 100 pages but now in the reverse order. How many page faults will occur?

(A) 196

(B) 192

(C) 197

(D) 195

**Question--5**

Increasing the RAM of a computer typically improves performance because:

(a) Virtual memory increases

(b) Larger RAMs are faster

(c) Fewer page faults occur

(d) Fewer segmentation faults occur