

Consider the following page reference string:1,2,3,4,5,3,4,1,2,7,8,7,8,9,7,8,9,5,4,5. How many page faults would occur for the following replacement algorithm, assuming four frames:a) FIFO b) LRU

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- a) FIFO
- b) LRU

**a) FIFO (First In First Out) algorithm:**

Using the FIFO algorithm with four frames and the given page reference string, the page faults occur as follows:

Page	Frame 0	Frame 1	Frame 2	Frame 3	Page Fault?
1	1				Yes
2	1	2			Yes
3	1	2	3		Yes
4	1	2	3	4	Yes
5	5	2	3	4	Yes
3	5	2	3	4	No
4	5	2	3	4	No
1	5	2	3	4	No
2	5	2	3	4	No
7	5	7	3	4	Yes
8	5	7	8	4	Yes

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Page	Frame 0	Frame 1	Frame 2	Frame 3	Page Fault?
7	5	7	8	4	No
8	5	7	8	4	No
9	5	7	8	9	Yes
7	5	7	8	9	No
8	5	7	8	9	No
9	5	7	8	9	No
5	5	7	8	9	No
4	5	4	8	9	Yes
5	5	4	8	9	No

Therefore, the total number of page faults is 9.

### b) LRU (Least Recently Used) algorithm:

Using the LRU algorithm with four frames and the given page reference string, the page faults occur as follows:

Page	Frame 0	Frame 1	Frame 2	Frame 3	Page Fault?
1	1				Yes

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Page	Frame 0	Frame 1	Frame 2	Frame 3	Page Fault?
2	1	2			Yes
3	1	2	3		Yes
4	1	2	3	4	Yes
5	5	2	3	4	Yes
3	5	2	3	4	No
4	5	2	3	4	No
1	1	2	3	4	Yes
2	1	2	3	4	No
7	1	2	7	4	Yes
8	1	2	7	8	Yes
7	1	2	7	8	No
8	1	2	7	8	No
9	1	2	7	9	Yes
7	1	2	7	9	No
8	1	2	8	9	Yes
9	1	2	8	9	No
5	1	2	5	9	Yes
4	1	2	5	4	Yes
5	1	2	5	4	No

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Therefore, the total number of page faults is 10.

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61. What is Process Scheduling, CPU Scheduling, Disk Scheduling? Explain Short, Medium and Long term Scheduler?
62. Explain concept of a process with its components ?
63. Explain the following in brief Contiguous and Linked list allocation for implementing file system?
64. Explain various Disk scheduling algorithms with Illustrations ?
65. Define process and thread. What is PCB ? Explain its various entries with their usefulness ?
66. Discuss advantages and disadvantages of the Buffer cache ?
67. Explain different types of OS with examples of each ?
68. What is an Operating System? Write down its desirable characteristics ?
69. Define a deadlock ? Write down the conditions responsible for deadlock? How can we recover from deadlock ?
70. What are the various services provided by Operating system ?
71. What do you mean by PCB? Where is it used? What are its contents? Explain.
72. What is Binary and Counting semaphores ?
73. What is File? What are the different File attribute and operations?

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74. What are System call? Explain briefly about various types of system call provided by an Operating System?
75. Describe necessary conditions for deadlocks situation to arise.
76. What are points to be consider in file system design? Explain linked list allocation in detail?
77. Write a Semaphore solution for dining Philosopher's problem?
78. Explain CPU schedulers in operating system?
79. Write the different state of a process with the help of Process state deagram?
80. What is Mutex in operating system?
81. Explain Network operating system?
82. What do you mean by paging in operating system ?

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