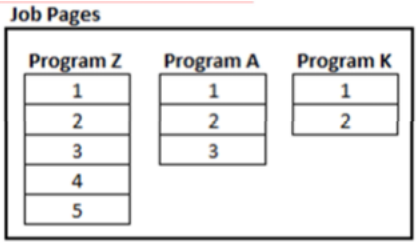
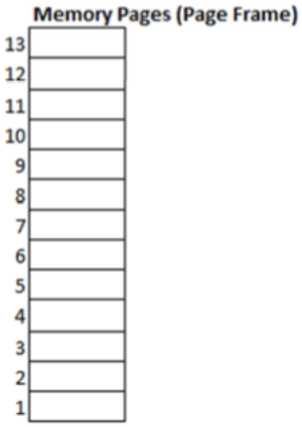
Paging Practice Question

Saturday, 27 February 2021 1:42 PM

Paging Practice

PAGING PRACTICE QUESTION. 1





1 a) What are job pages?

A page, memory page is fixed length block of physically installed program. It is logical division.

[2]

b) What are Memory pages?

These are memory frames to accomodate pages . It is physical division in RAM.

[2]

c) i) What type of memory management technique is being used here by the operating system?

It is paging.

[1]

2

ii) Explain what is meant by paging?

In operating system, memory paging is a memory management technique/method by which computer stores and retrieve data from hard disk drive or other compatible secondary storage devices for use in main memory. [3]

iii) Give **two** benefits of using paging.

Benefit Programs amounting more than the available memory are loaded.

Reason Only pages required are loaded and not the whole program.

Benefit Virtual memory is used to load more than available space.

Reason All idle pages, when more space is required in RAM, are sent to VM to find enough space for new pages. [4]

Page Frame Table

Job Page	Memory Page Frame	
	1	Not available
Z1	2	*
		Not available
Z2	4	
Z5	5	
		Not available
A1	7	*
		Not available
A3	9	
		Not available
K1	11	
Z3	12	
K2	13	*

c) Few of the memory pages (frames) are not available for the programs.
What could be the possible reasons for this?

- They are O/S pages
- They are currently being used
- They are damaged *

[4]

d) Why operating system uses Page table?

- To find required 'job page already loaded in computer's memory as fast as possible.
- Page table is maintained by O/S in computer's main memory.

[2]

e) Load the following Job Pages in ascending and available memory order of Page Frame Table **above**.

Z1, Z2, Z5, A1, A3, K1, Z3, K2

[6]

2 Few memory pages (frames) are marked (*) to show that they are idle for the most time.

a) What is Virtual Memory?

It is a memory management technique that provides an abstraction for the user who have loaded programs amounting more than the available main memory. If

work by transferring pages of data from RAM to disk storage. This process is done to work as a combination of RAM and space on the disk.

[4]

b) How these marked pages are connected to Virtual Memory?

- These marked pages are the 'idle' pages for the most time. When memory is full and more pages are required to be loaded; then those marked pages are sent to VM to find space for the new pages. [2]

c) What is the reason that only those marked memory pages that are holding unsaved data are sent to virtual memory while others are simply offloaded?

Since program pages and saved data pages are already saved to the disk they are not required to be sent to the VM; they are simply offloaded and loaded back when required again. Only data pages which are not saved yet by the user are sent to VM. [2]

d) Program Z is a word processor. While using Z user has pressed spell check tool bar button to check the spellings in entered text.

- Page 4 of program Z holds instructions of spell checker routine.

Program A is a spreadsheet. While using A user has opened a file.

- this action requires loading a data file, which requires two memory pages (frames).

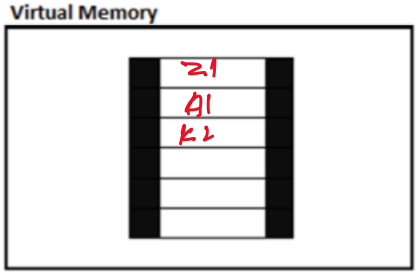
There is no space in memory to hold page Z4 and two pages of Program A's data file.
Few of the loaded pages are offloaded to the Virtual Memory to accommodate new pages in memory.

Update Virtual Memory and Memory Page frame table diagrams below to show the latest situation.

Page Frame Table

Job Page	Memory Page Frame	
		Not available
Z4	2	
		Not available
Z2	4	
Z5	5	
		Not available
A4	7	
		Not available
A3	9	
		Not available
K1	11	
Z3	12	
A5	13	

Virtual Memory



[10]