

TUTORIAL 8 – Virtual Memory

1. From Wikipedia:

"In computing, virtual memory is a memory management technique developed for multitasking kernels. This technique virtualizes a computer architecture's various forms of computer data storage (such as random-access memory and disk storage), allowing a program to be designed as though there is only one kind of memory, "virtual" memory, which behaves like directly addressable read/write memory (RAM)."

Understand and re-write into your own words.

2. Virtual memory is an integral part of a computer architecture
- a) requiring a memory management unit
 - b) allowing processes to assume a linear addressing space
 - c) allowing processes to assume a larger address space than physically possible
 - d) allowing the CPU to run multiple processes in a smaller physical memory area.

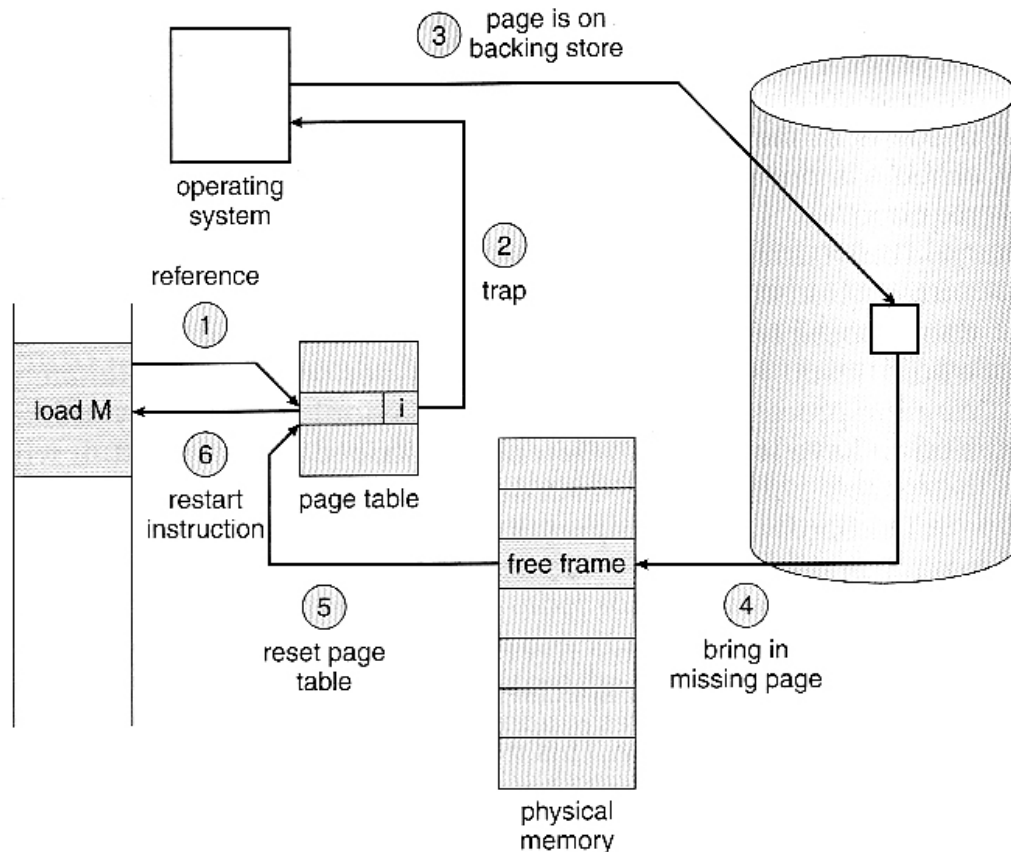
Best practises in the management of Microsoft Virtual memory

<http://technet.microsoft.com/en-us/magazine/ff382717.aspx>

Highlights:

- a) default installation is on same drive as OS
- b) page file is , by default, 1.5Xmemory ~ 3X memory
- c) pagefile.sys is created
- d) can be managed by the user

3. Use the diagram in the Lecture Notes Slide 9, add necessary changes for is_present, dirty bits, etc.
(see following page)



4. Question came from:
<http://www.programmerinterview.com/index.php/operating-systems/paging-and-page-faults/>

(Shows that operating systems is important in your IT future!)

Number of page faults : 9

5. With 4 frames: 9 Page Faults
 With 3 frames: 9 Page Faults
6. See last line in: <http://www.programmerinterview.com/index.php/operating-systems/purpose-of-swapping/>

A more complex explanation:
http://en.wikipedia.org/wiki/Thrashing_%28computer_science%29

Thrashing occurs in a multi-process system having a small physical memory space and with many applications running. To resolve the situation, increase physical memory or reduce the number of running processes.