Memory Management:-

Memory management is the act of managing computer memory. The essential requirement of memory management is to provide ways to dynamically allocate portions of memory to programs at their request, and freeing it for reuse when no longer needed.

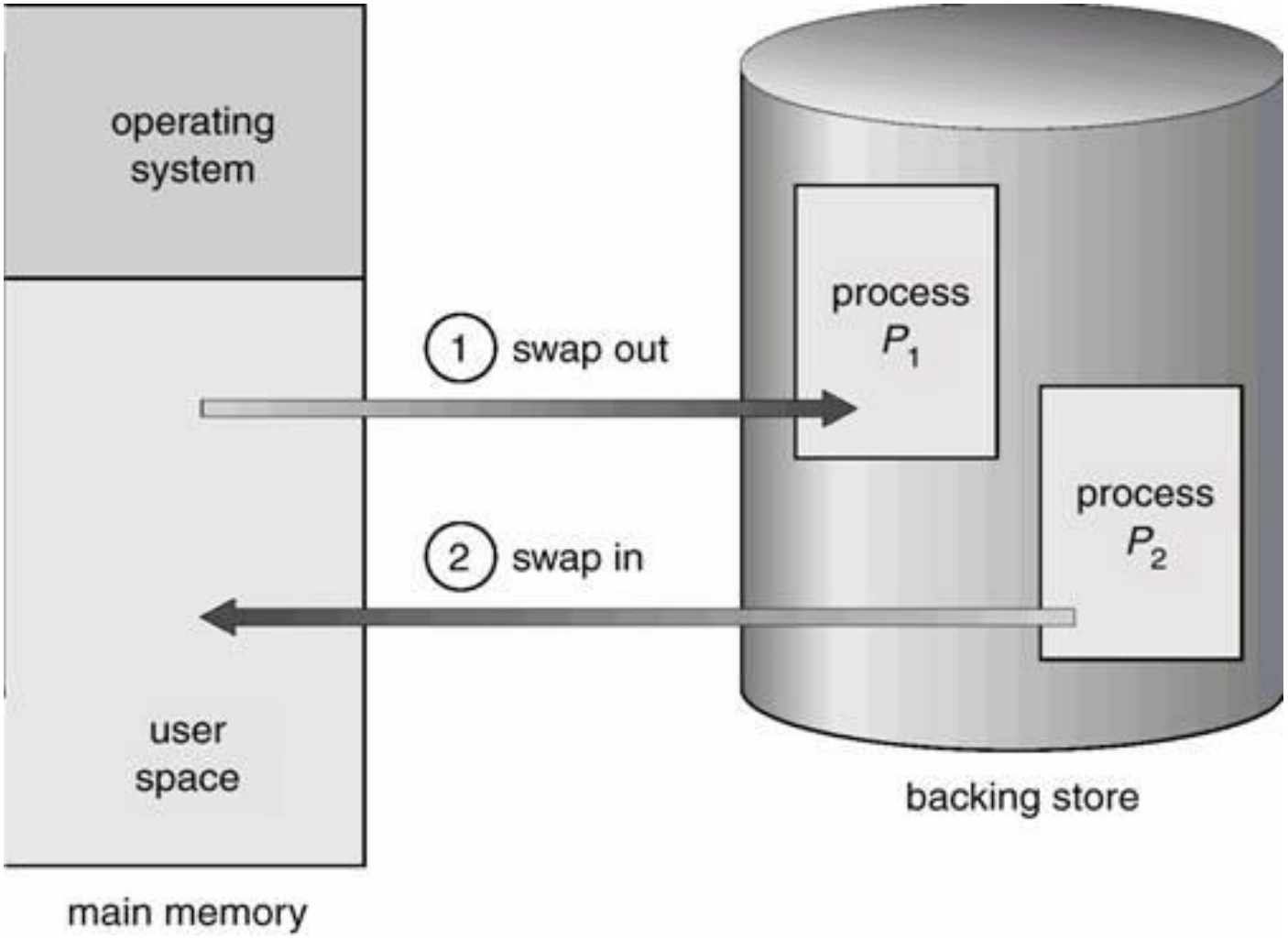
Memory management Techniques:-

- ***Swapping***
- ***Paging***
- ***Segmentation***

Swapping

Swapping is a simple memory/process management technique used by the operating system (OS) to increase the utilization of the processor by moving some blocked process from the main memory to the secondary memory (hard disk); thus forming a queue of temporarily suspended process and the execution continues with the newly arrived process , After performing the swapping process , the operating system has two options in selecting a process for execution :

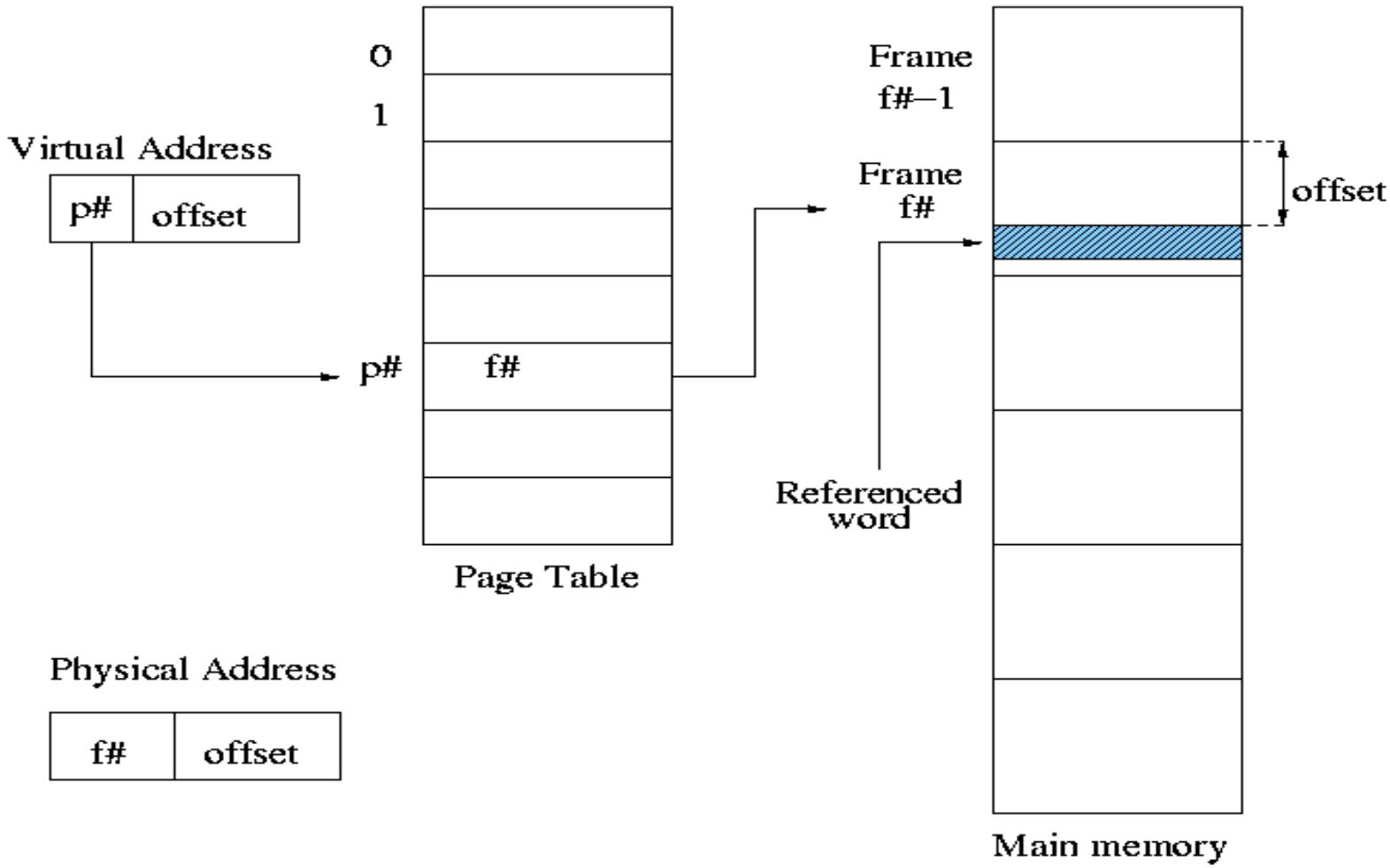
- *Operating System can admit newly created process.*
- *Operating system can activate suspended process from the swap memory.*


operating system
user space
main memory
1 swap out
2 swap in
process P_1
process P_2
backing store

Paging

*In computer operating systems, **paging** is one of the memory-management schemes by which a computer can store and retrieve data from secondary storage for use in main memory. In the paging memory-management scheme, the operating system retrieves data from secondary storage in same-size blocks called pages. The main advantage of paging over memory segmentation is that it allows the physical address space of a process to be noncontiguous. Before paging came into use, systems had to fit whole programs into storage contiguously, which caused various storage problems.*

Paging is an important part of virtual memory implementation in most contemporary general-purpose operating systems, allowing them to use disk storage for data that does not fit into physical random-access memory (RAM).


Virtual Address
p#
offset
0
1
p#
f#
Page Table
Frame
f#–1
Frame
f#
offset
Referenced
word
Main memory
Physical Address
f#
offset