



Advanced Operating system ECE 519

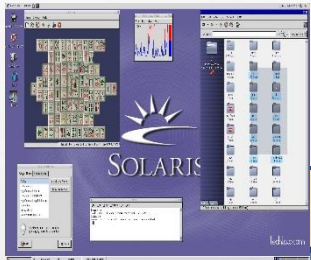


MEMORY MANAGMENT

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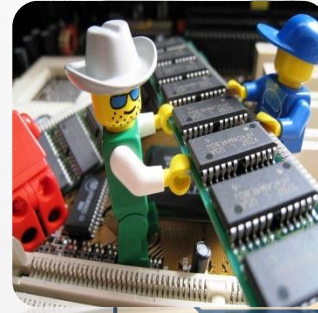
Master Student-ECE

TOPICS



Overview

**What is Solaris OS?
Objectives & Function**



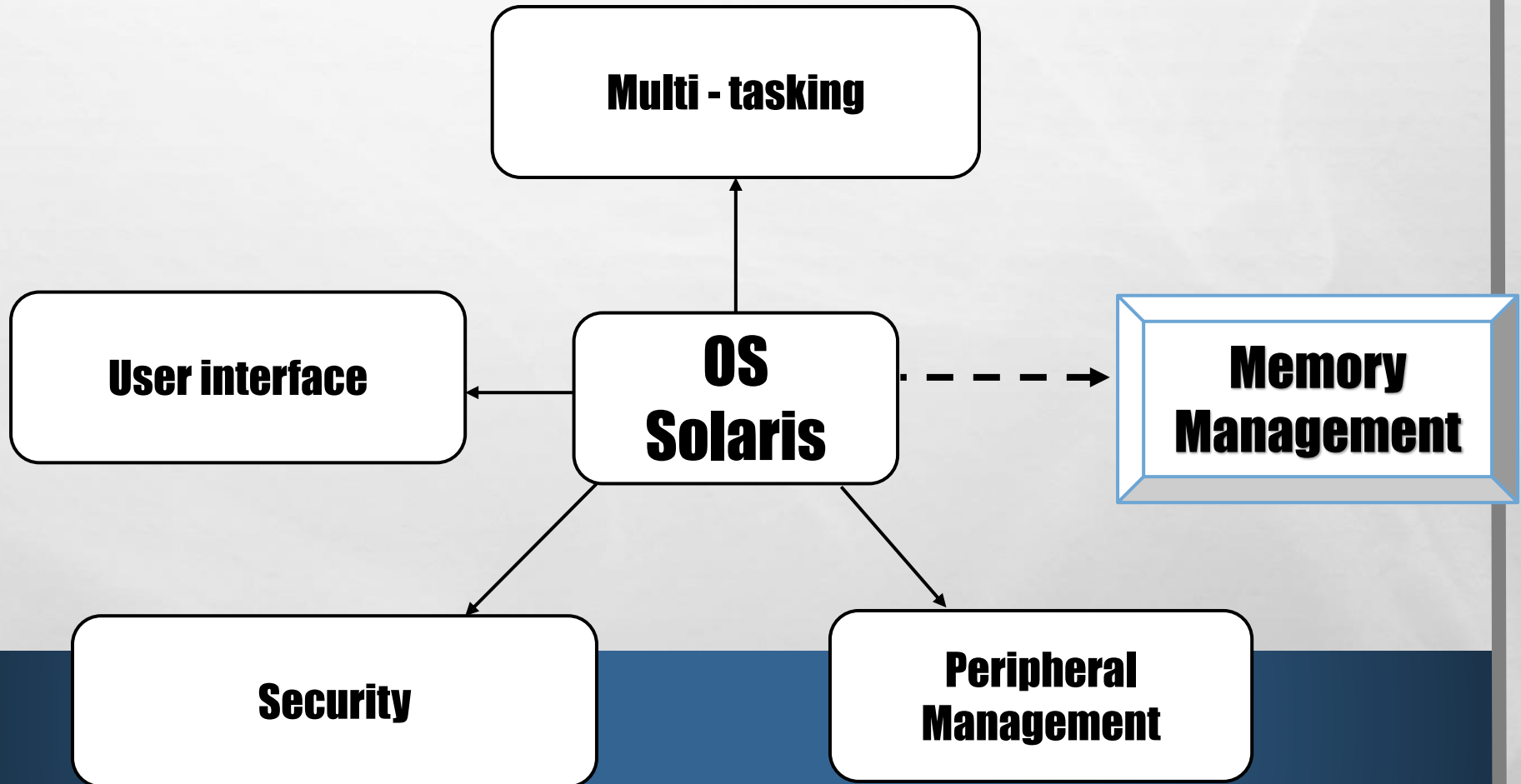
Memory Management

**What is MMU
what are tasks of MMU
what is virtual memory
What is paging
What is swapping
what is demand paging
How to use memory
for each application**

MMU : Memory Management Unit

What is Solaris OS

- SOLARIS IS A UNIX-BRANDED OPERATING SYSTEM
- DEVELOPED BY SUN MICROSYSTEMS



MEMORY MANAGEMENT



is the process of **controlling** and **coordinating** computer memory, assigning portions called **blocks** to various running programs to optimize overall system performance. Memory management resides in **hardware**, in the OS (operating system), and in programs and applications , and It is a term used to describe how the OS handles the available Memory ..

The memory management provides:

Large Address Spaces

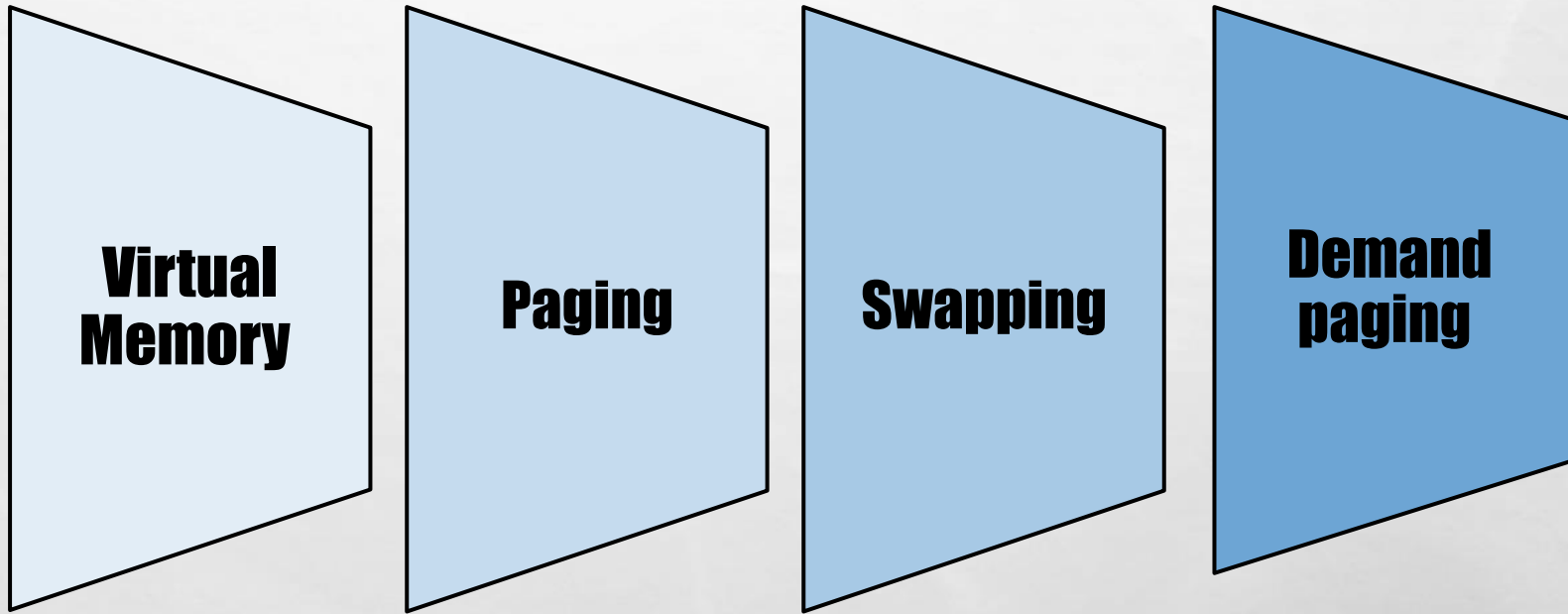
Memory Mapping

Protection

Fair Physical Memory Allocation

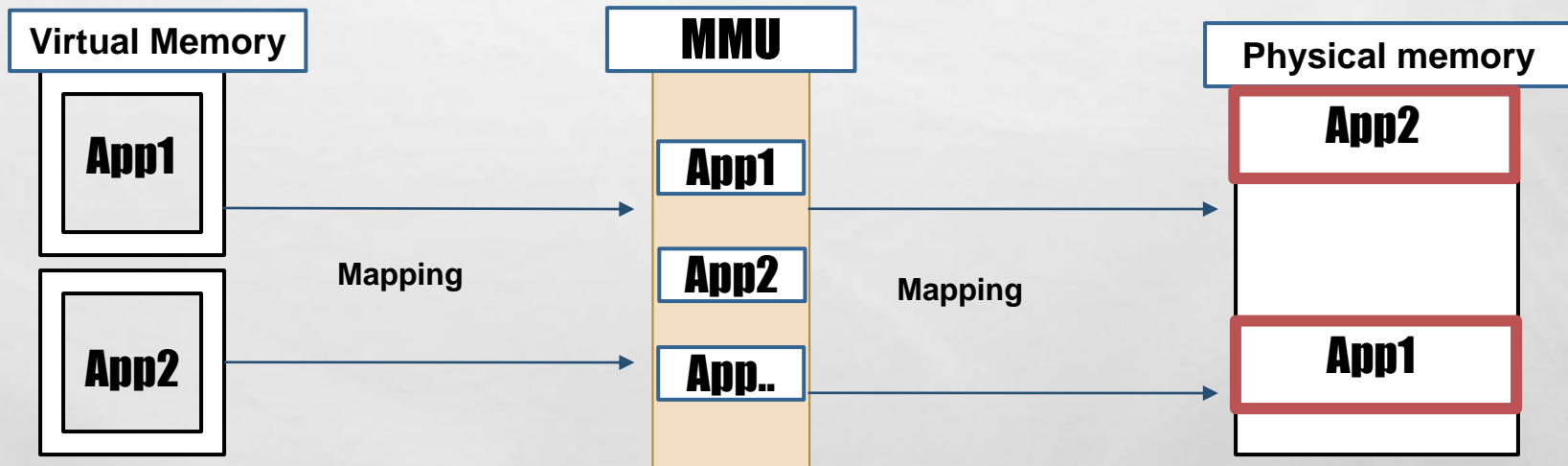
Shared Virtual Memory

Memory Management Techniques



Tasks of Memory Management

- 1- Manage virtual-to-physical mappings
- 2- Manage physical memory.
- 3- It checks how much memory should be allocated to processes
- 4 - Provide isolation between processes.
- 5- It decides which process will get memory at what time

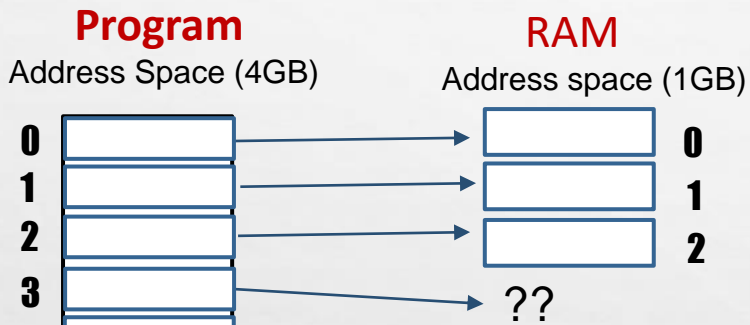


Virtual Memory

“ Any Problem in computer science can be solved by adding indirection .”

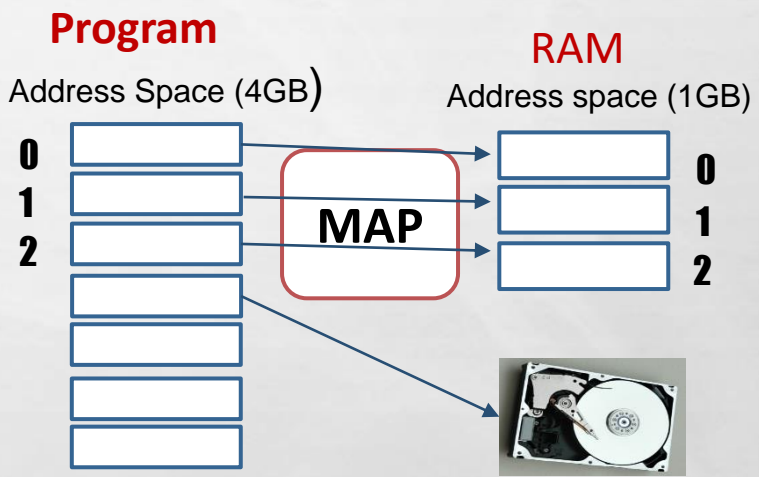
Virtual Memory takes **program addresses** and **maps** them to **RAM addresses**

Without Virtual Memory



NO VM : Crash if we try to access more RAM than we have

With Virtual Memory

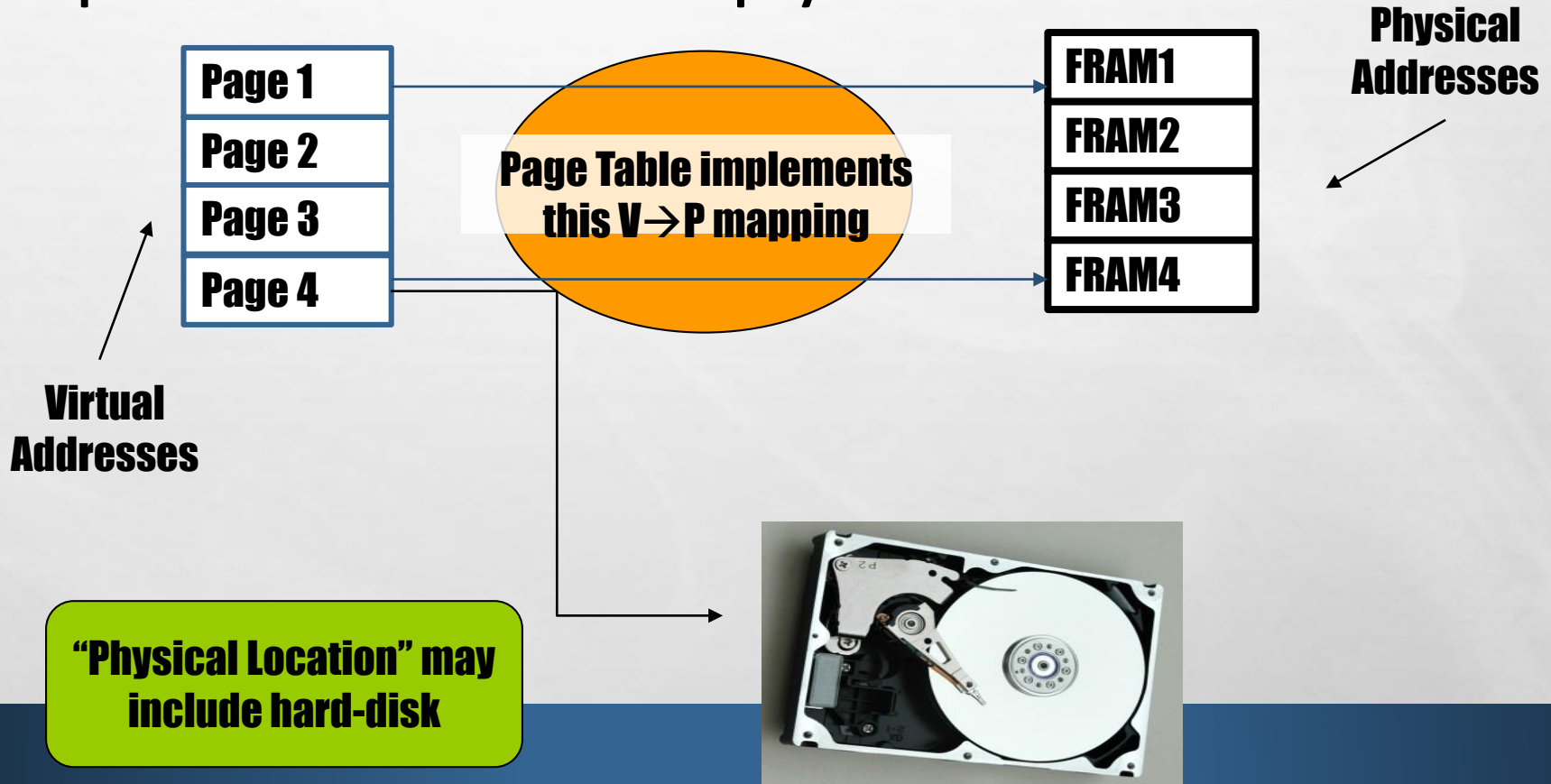


VM :Mapping gives us flexibility in how we use the RAM

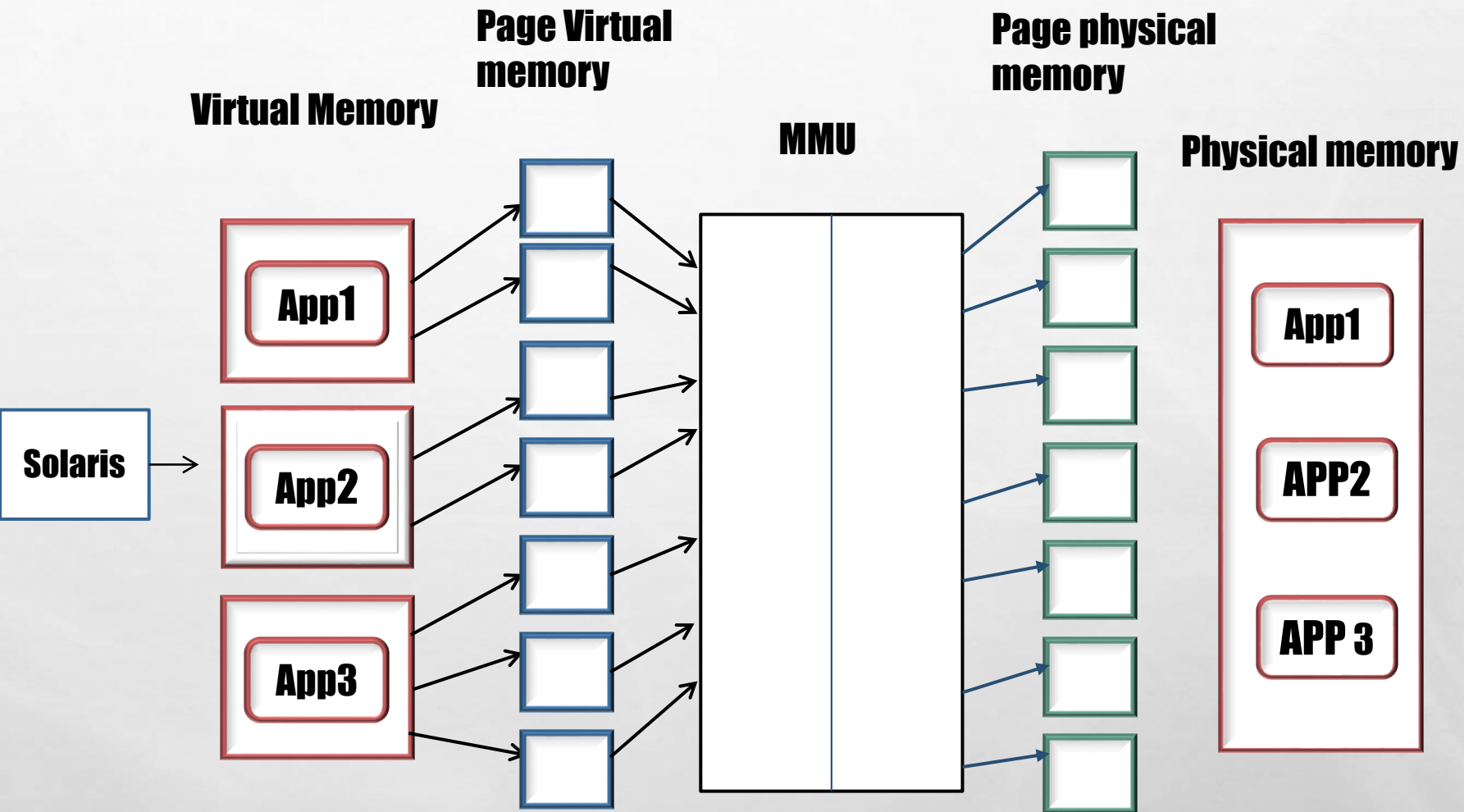
PAGING

A technique used by virtual memory is divide up the virtual memory into pages and divides physical into frames

Map from virtual addresses to physical locations

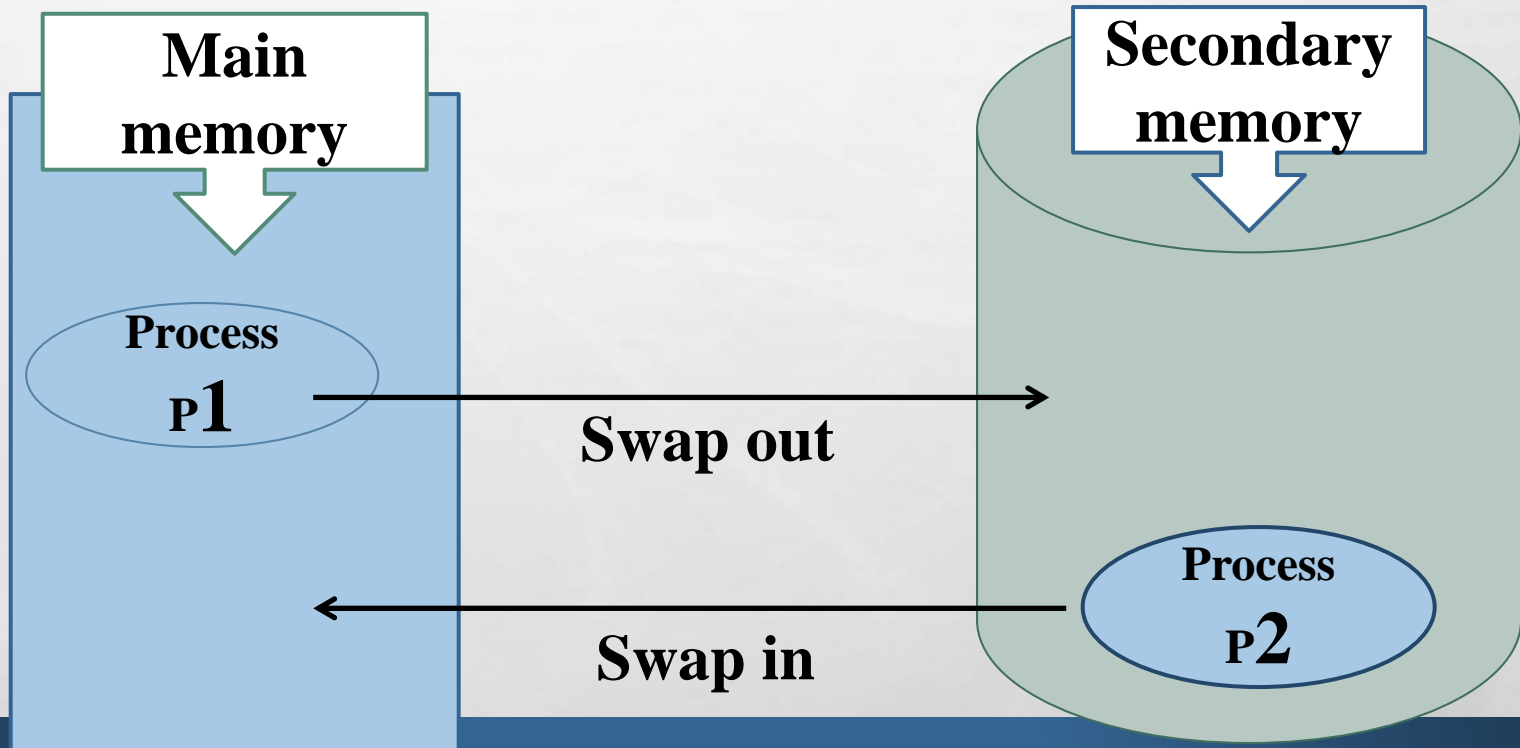


How to use memory for each application



SWAPPING

A process swapped temporary between memory and secondary memory a specific program in memory is replaced by another program on secondary memory to be inserted into the memory and executed.



DEMAND PAGING

- Is one of the methods used in the philosophy of virtual memory
- Used to move pages from secondary memory to main memory when requested
- Similar to the switch but the difference that moves here is not the whole process only the pages required from that process
- This process allows to store more processes on the system

References

Book:

- Solaris Internals, Core Kernel Architecture, Sun
- <https://en.Wikipedia.org/wiki/solaris>

Website:

- www.sun.com
- https://en.wikipedia.org/wiki/Memory_management
- https://www.youtube.com/watch?v=_CruQY55HOk

Internet



Any Questions?

Thank you
Have a Peaceful Night