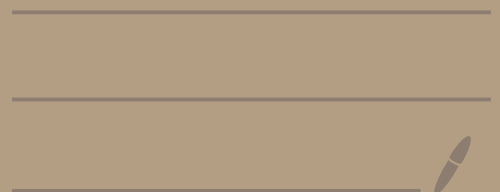


OPERATING SYSTEMS

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IMPORTANT NOTES

- **Interrupt** is hardware generated, while **trap** is software generated.
- **System Call**:
 - System calls allow user-level processes to request services of the operating system.
- **System Call parameter passing**:
 - Pass the parameters in Registers.
 - Parameters stored in a block, or table, in memory, and address of block passed as a parameter in a register.
 - On a stack.
- **Interprocess Communication**:
 - Message-passing Model:
 - Exchanged through a through a common mailbox.
 - Shared-memory Model:
 - Processes use shared memory create() and shared memory attach() to access other process memory.
- **Context-Switch**
 - When interrupt occur, the current running process must be saved.
- **Internal Fragmentation and External Fragmentation**:
 - EF: Total memory exists to satisfy a request, but it is not contiguous.
 - IF: Allocated memory may be slightly larger than requested memory.
- **Memory-Mapped Files**:
 - Memory-mapped file I/O allows file I/O to be treated as routine memory access by mapping a disk block to a page in memory.
 - Memory-mapped file is a virtual memory that mapped into physical memory one-to-one.
- **Shared Memory**:
 - It is a memory that may be simultaneously accessed by multiple programs with an intent to provide communication among them or avoid redundant copies.
 - Pros:
 - Faster than message passing, because in shared-memory the system calls are required to only establish shared-memory region.
 - Cons:
 - Need of synchronization for consistency of data.
- **Message Passing**:
 - Communication takes place by means of messages exchanged between the cooperating processes.
 - Pros:
 - Useful to for exchanging smaller amount of data, because no conflicts need to be avoided.

- Easier to implement in distributed system.
- Cons:
- Slower

What does the system want?

→ to maximize:

- CPU utilization: keep the CPU as busy as possible
- Throughput: number of processes that complete their execution per time unit.

→ to minimize:

- Turnaround time: amount of time to execute a particular process
- Waiting time
- Response time

Interrupt vectors

→ set of addresses that give the information to the interrupt handler to where to find the appropriate interrupt to the service routine.

