

Department of Computer Science and Engineering

**FACULTY OF ENGINEERING AND TECHNOLOGY
UNIVERSITY OF LUCKNOW
LUCKNOW**



Dr. Zeeshan Ali Siddiqui
Assistant Professor
Deptt. of C.S.E.

INTER-PROCESS COMMUNICATION CONCEPT

Food for Thought!

Is it possible to have **concurrency** but not **parallelism**?

Concurrent Processes

- Processes executing *concurrently* in the operating system is of two types:

1. Independent processes

- A process is independent if it *cannot affect or be affected* by the other processes executing in the system.
- Any process that *does not share data* with any other process is independent.

2. Cooperating processes

- A process is cooperating if it *can affect or be affected* by the other processes executing in the system.
- That is, any process that *shares data* with other processes is a cooperating process.

Reasons for Cooperating Processes

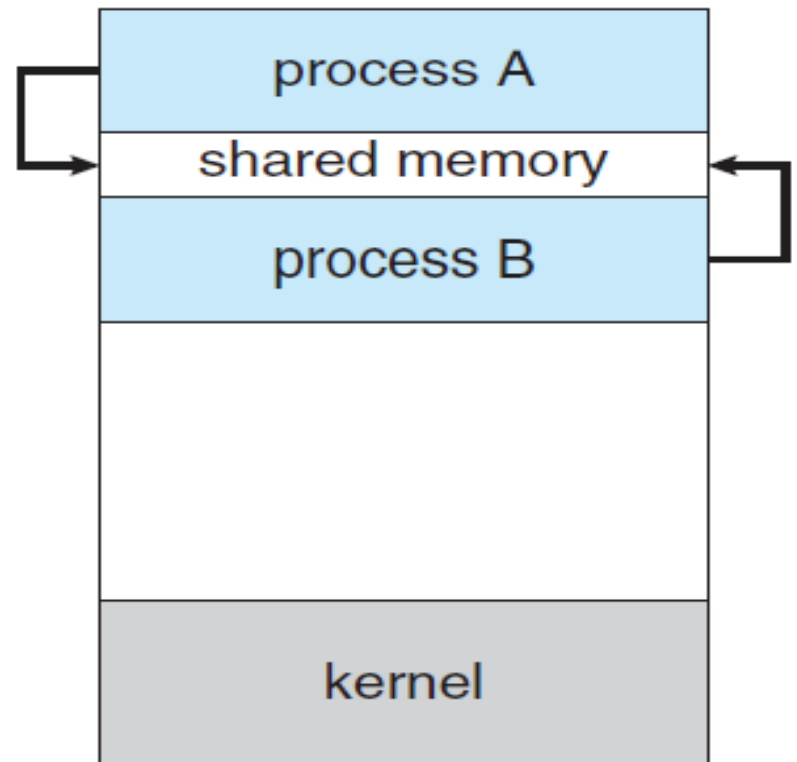
- Information sharing
- Computation speedup
- Modularity
- Convenience

Inter-process Communication (IPC)

- Cooperating processes require an *inter-process communication (IPC) mechanism* that will allow them to exchange data and information.
- There are two fundamental models of inter-process communication:
 - Shared memory
 - Message passing

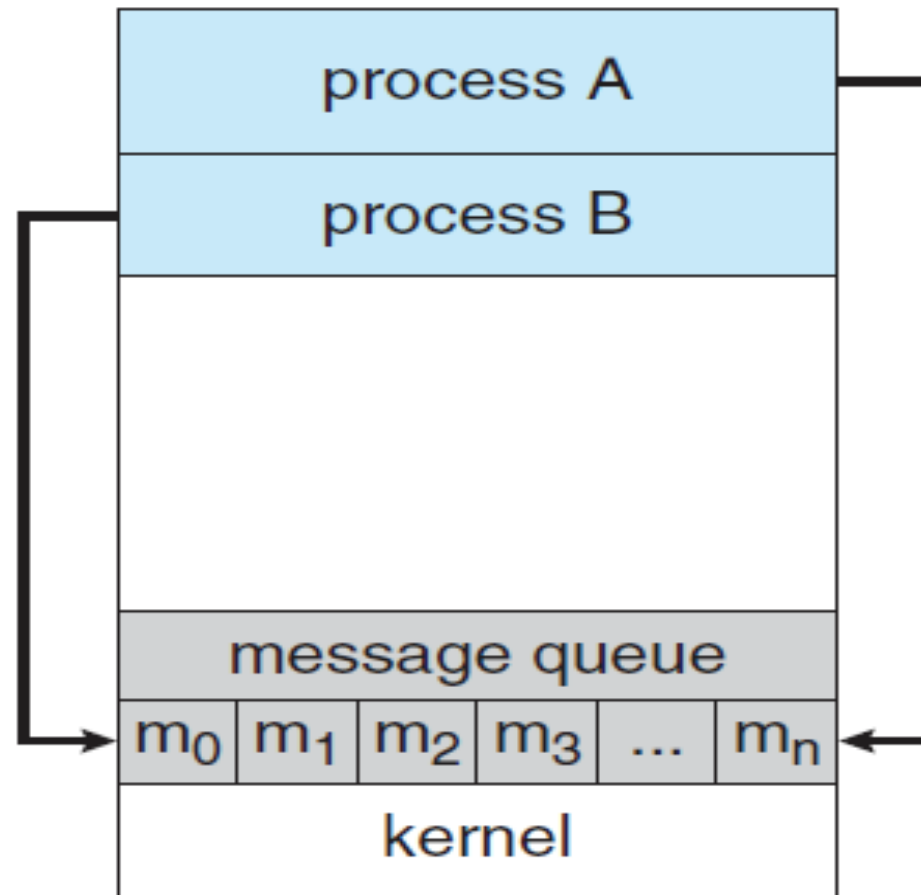
Shared Memory Model

- In the shared-memory model, a *region of memory* that is shared by cooperating processes is established.
- **Processes** can then exchange information by reading and writing data to the shared region.



Message Passing Model

- In the message-passing model, communication takes place by means of *messages exchanged* between the cooperating processes.



References

1. Silberschatz, Galvin and Gagne, “Operating Systems Concepts”, Wiley.
2. William Stallings, “Operating Systems: Internals and Design Principles”, 6th Edition, Pearson Education.
3. D M Dhamdhere, “Operating Systems: A Concept based Approach”, 2nd Edition, TMH.

Thank You.

