CSTechnocrat
+91-8354820003

Inter Process Communication (IPC)

Processes executing concurrently is the operating system can be of two types:

(i) **Independent Process:** A process is independent if it cannot affect or be affected by the other processes executing in the system. An independent process does not share data with any other process.

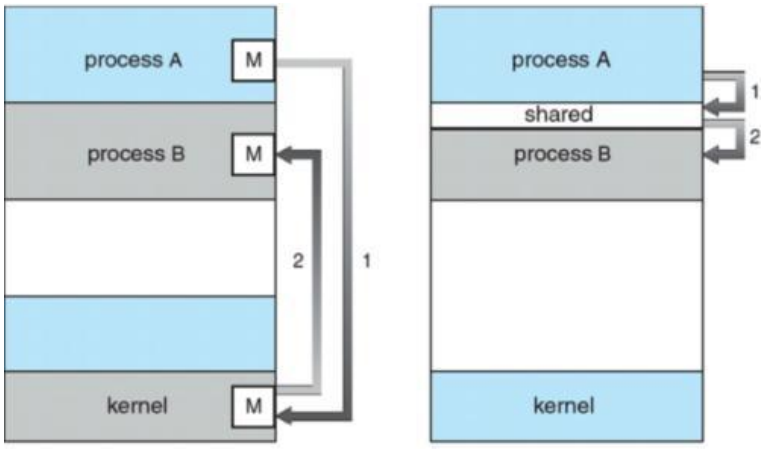
(ii) **Cooperating Process:** A process is cooperating if it can affect or be affected by the other processes executing in the system. A cooperating process shares data with other processes.

The cooperating of process is required due to several reasons:

- ***Information Sharing***: Since several users may be interested in the same piece of information for example shared files.
- ***Computation Speedup:*** If we want a particular task to run faster, we must break it into subtasks, each of which will be executing in parallel with the others.
- ***Modularity:*** We may want to construct the system in a modular fashion, dividing the system functions into separate processes or threads,
- ***Convenience:*** Even an individual user may have many tasks on which to work at one time.

Cooperating processes require an Inter Process Communication (IPC) mechanism that will allow them to exchange data & Information. There are two fundamental model of Inter Process Communication:-

1. **Shared Memory:** In shared memory model, a region of memory that is shared by cooperating processes is established. Process can then exchange information by reading & writing data to the shared region.
2. **Message Passing:** In the message passing model communication takes place by means of messages exchanged between the cooperating processes.



(a) Message Passing *(b) Shared Memory*

Figure: Communication Model

CSTechnocrat
+91-8354820003

CSTechnocrat

Difference between Message Passing & Shared Memory

+91-8354820003

Message Passing	Shared Memory
It is useful for exchanging smaller amounts of data.	It can be useful for exchanging large amount of data.
Easy to implement.	Difficult to implement.
Message passing is slower than shared memory.	Shared memory is faster than message passing.

The concept of cooperating processes can be described by a producer consumer problem.

Questions asked in semester exam:

Question: What is the use of inter process communication and context switching?

[2017-2018][2 Marks]

Question: Define Message passing and shared memory interprocess communication.

[2015-2016][10 Marks]

Question: Explain the need of process synchronization. How can the interprocess communication be achieved?

[2014-2015][5 Marks]

Question: Define Message passing and shared memory inter-process communication.

[2013-2014][5 Marks]

Question: Discuss message-passing system. Explain how message passing can be used to solve buffer Producer/Consumer problem with infinite buffer.

[2012-2013][10 Marks]

Question: Write a short note on interprocess communication.

[2011-2012] [10 Marks]

Question: Write a brief note on Inter Process Communication.

[2009-2010] [5 Marks]

Question: How can the interprocess communication be achieved?

[2008-2009] [5 Marks]

Question: It is said Inter Process Communication is best provided by a message passing system. Explain the implementation issues in message passing system for Inter Process Communication.

[2007-2008] [10 Marks]

CSTechnocrat
+91-8354820003