

* Distributed System (DS) - Assignment Number - 2

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* Explain the uses of RMI mechanism for inter process communication in distributed system.

- - RMI stands for Remote Method Invocation, is an object-oriented implementation of the remote procedure call model. It is an API for Java programs only.
- RMI allows developers to invoke object methods and execute them on remote Java virtual machines.
 - RMI also supports a registry, which allows clients to perform lookup for a particular service. The object provides remote methods, which can be invoked in client programs.
 - Remote object must be written in Java. Remote object are accessed through their interfaces only.
 - RMI is a higher-level API built on top sockets.
 - Socket-level programming allows you to pass data through socket among computers.

- RMI enables you not only to pass data (parameters and return values) among objects on different systems, but also to invoke methods in a remote objects.

- Interprocess communication:

It is a process of exchanging the data between two or more independent process in a distributed environment is called as Interprocess communication. Interprocess communication on the internet provides both Datagram and stream communication.

- Example of IPC:-

1. N number of applications can communicate with the Xserver through network protocol.
2. Servers like Apache spawn child processes to handle requests.
3. Pipes are a form of IPC: `grep foo file | sort`.

- Characteristics of Inter-Process - communication:-

1. Synchronous System call
2. Message Destination.
3. Reliability
4. Integrity
5. Validity
6. Ordering.

★ Difference between synchronous and asynchronous communication?

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Synchronous communication.

① Synchronous communication happens in the moment.

② Synchronous communication is faster and more dynamic.

③ Synchronous communication is also good for participation and active discussion with smaller group.

④ Example :- Video conferencing, instant messages and telephone conversation etc...

Asynchronous communication.

Asynchronous communication happens over a period of time.

Asynchronous communication is less faster than synchronous and static.

Asynchronous communication are good and active discussion with larger group.

Example :- Messaging software (MS Teams, Slack), Email (Gmail, Outlook), Cloud collaboration (Zoom, Google workspace, Microsoft teams), Project management software (Asana, Trello) etc...