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Scheduling → It is a process of arranging, controlling & optimizing work & workloads in a production process.

Purpose of Scheduling:

→ The operating system has following duties while scheduling:-

- Process as many jobs as possible.
- Make max. use of CPU time.
- Be responsive to the user so that they are unaware of delay while scheduling.
- Make max. use of i/p - o/p devices.
- Be able to prioritise all jobs
- Be fair to all jobs.
- Avoid Deadlock.
- Be able to alter priorities according to scheduler.

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Cloud Simulators :

→ A cloud simulator helps to model various kinds of cloud applications by creating data centers, virtual nodes & other utilities that can be configured, thus making it easier to analyze.

→ Benefits provided by simulators :

- Minimal Cost → Purchasing s/w is less costly than purchasing diff. h/w.
- Repeatable & Controllable
- Environment → A simulator provides environment for evaluation of various scenarios under diff. workloads.

CloudSim : → It is the most popular simulation tool of Cloud computing.

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→ It is an event driven simulator, its programming is done in Java.

→ CloudSim is open source & is free to extend.

⇒ Features of CloudSim -

- It supports modelling & simulation of large scale data centres.
- Availability of virtualization Engine.
- Support for simulation of n/w connection among the simulated sys. elements.

HDFS

→ Hadoop Distributed file System.

→ It was developed using distributed file design.

→ HDFS is highly fault tolerant & designed using low-cost h/w.

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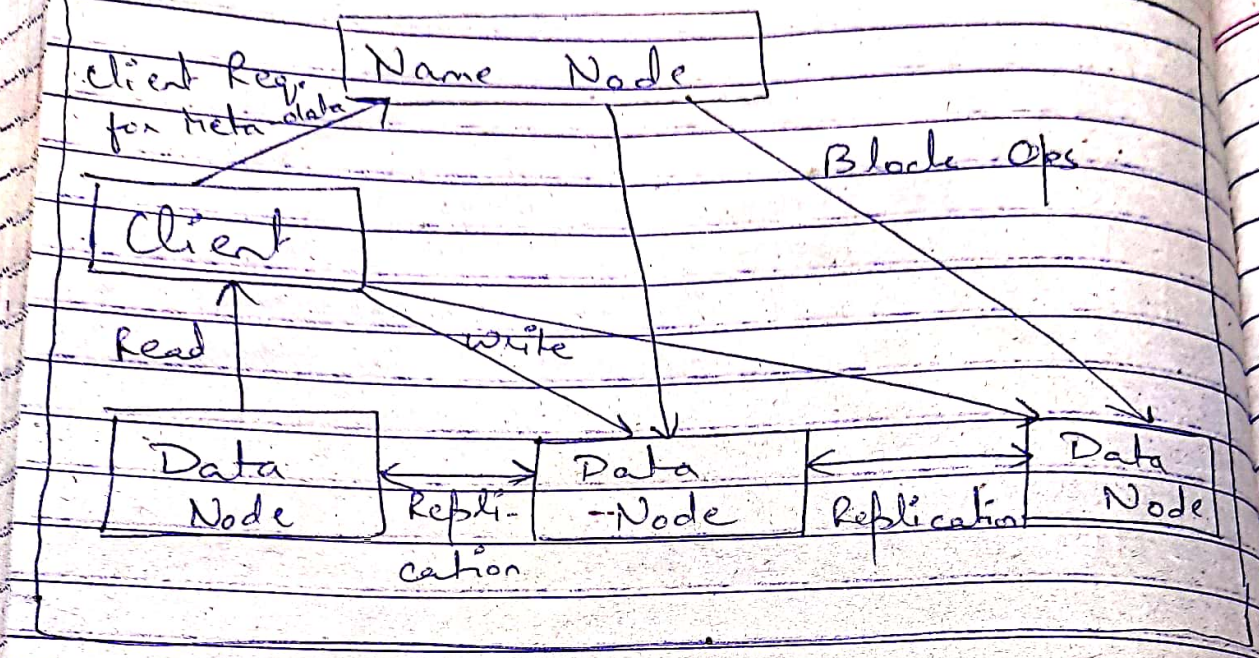
→ HDFS holds large amt. of data & provides easier access.

→ These files are stored in redundant fashion to rescue the system from possible data losses in case of failure.

——→ Features of HDFS :

- It is suitable for the distributed storage & processing.
- Hadoop provides a command interface to interact with HDFS.
- Streaming access to file sys. data.
- HDFS provides file permissions & authentication.
- It provides high throughput.
- Fault Tolerant.



HDFS Architecture

⇒ Components of HDFS Architecture:

i.) Data Node - It contains structured & or unstructured data. It supports the request of all type of users.

→ Data Node stores the metadata which is request of client.

ii.) Name Node - It executes the file sys. to provide services to the client.

→ It is the primary entity which supports the communication b/w

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client node & data Node.

iii.) Client Node - In HDFS, client does the request for data.