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DETAILED LECTURE NOTES

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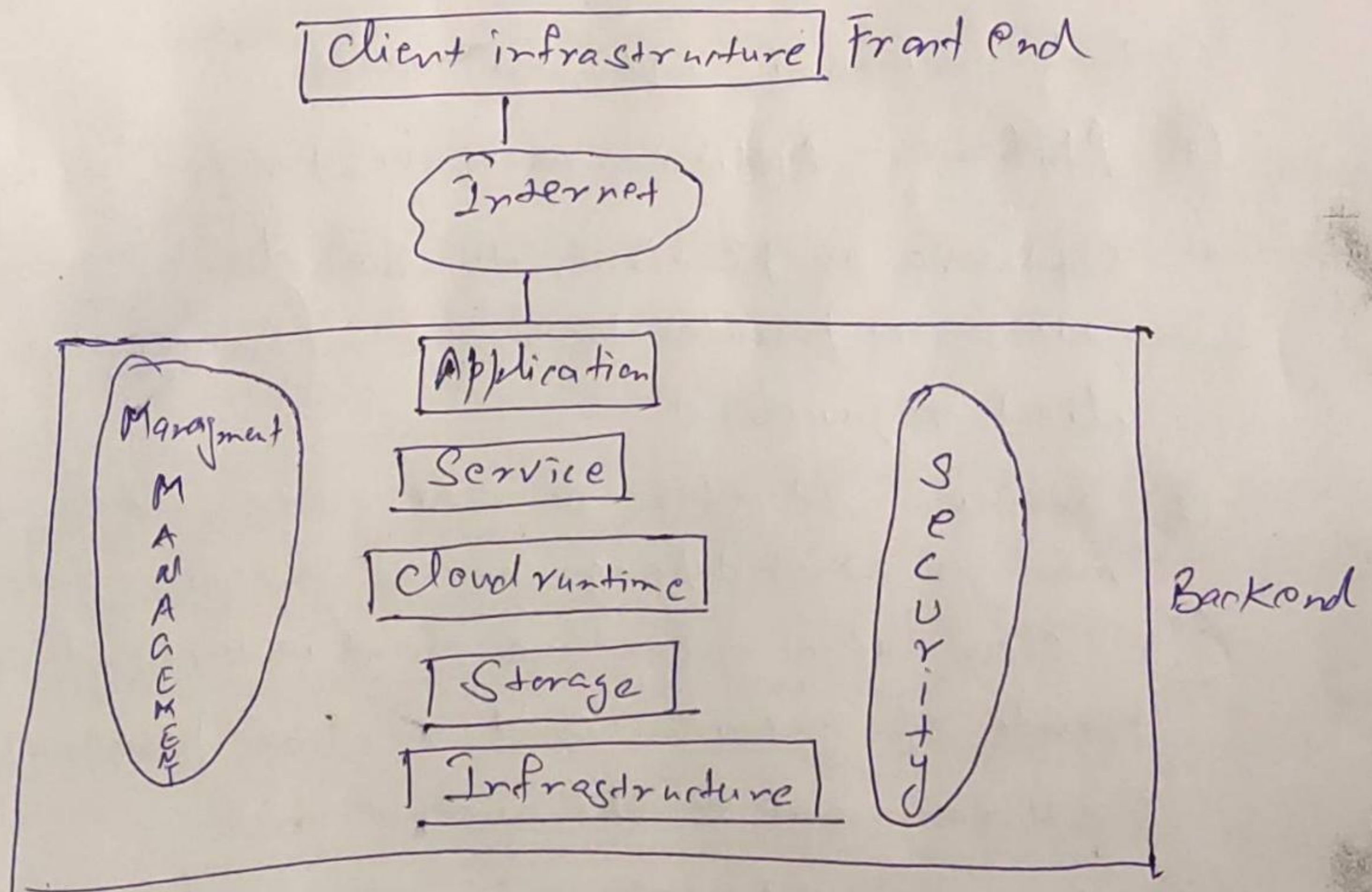
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Cloud Computing Architecture- Unit - 2

The cloud architecture is divided into 2 parts -
1. Frontend 2. Backend



Architecture of cloud computing is the combination of both Service oriented Architecture and EDA Event driven Architecture.

1. Frontend- Front end of the cloud architecture refers to the client side of cloud computing system. It contains all the user interfaces and applications which are used by the client to access the cloud computing services/ clouds. • For example use of web browser to access the cloud platform.
2. Backend - It is a cloud which is used by service provider. It contains the resources as well as manages the resources and provides security mechanisms. Along with this it includes huge storage, virtual applications, traffic control mechanisms, deployment models.
 - ① Application- Application in backend refers to a software or platform to which client accesses. Means it provides the service in backend as per the client requirement.
 - ② Service - It refers to SaaS, IaaS, PaaS. Also manages which type of service the user accesses.
 - ③ Cloud runtime - Runtime cloud in backend refers to provide of execution and runtime platform/~~runtime~~ environment to the virtual machine.
 - ④ Storage - It refers to provide flexible and scalable storage service and management of stored data.
 - ⑤ Infrastructure - Cloud infrastructure in backend refers to the hardware and software components like it includes servers, storage, network devices, virtualization software etc.



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6. Management - Management in backend refers to the management of backend components like application, service, ~~runtime~~ runtime, cloud, storage, infrastructure and other security mechanism.
7. Security - Security in backend refers to implementation of different security mechanisms in the backend for secure cloud resources, systems, files and infrastructure to end users.
8. Internet - Internet connection acts as the medium or a bridge between frontend and backend and establishes the interaction and communication between frontend and backend.



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Parallel Computing - In parallel computing multiple processors performs multiple tasks to assigned to them

Simultaneously. Memory in parallel systems can be either shared or distributed, Parallel computing provides concurrency and saves time and money.

Distributed Computing - In distributed computing we have multiple autonomous computers which seems to the user as single system. In distributed systems there is no shared memory and computers communicate with each other through message passing. In distributed computing a single task is divided among different computers.

Difference between Parallel Computing and Distributed Computing

① Many operations are performed simultaneously

② It ~~have~~ may have shared or distributed memory.

Distributed Computing
System components are located at different locations.

It have only distributed memory.

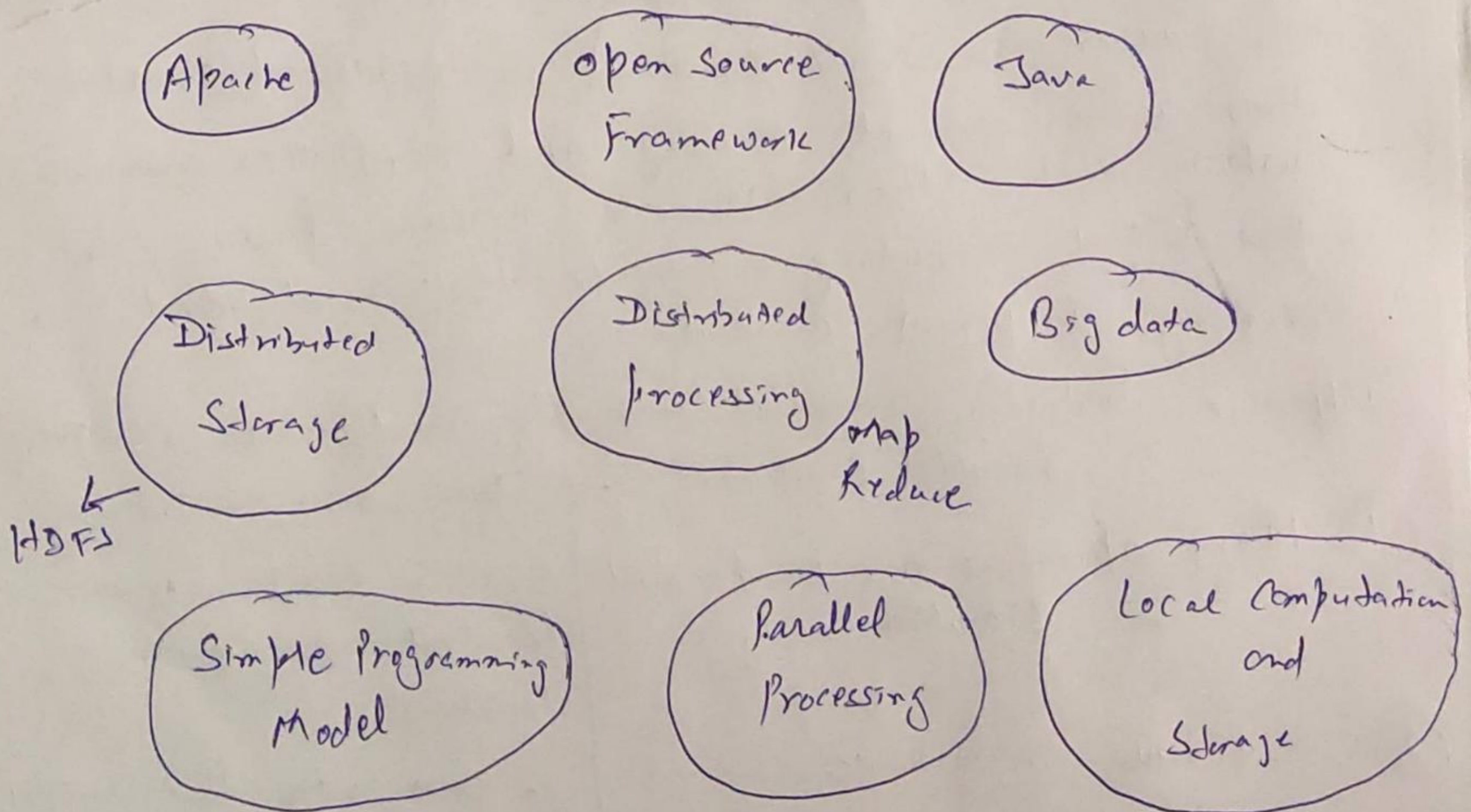
Parallel Computing

- ③ Multiple ~~processors~~ processors perform multiple operations.
- ④ Processors communicate with each other through bus
- ⑤ Improves the system performance

Distributed Computing

- Multiple computers perform multiple operations.
- Computers communicate with each other through message passing.
- Improves system scalability, fault tolerance and resource sharing capabilities.

What is Hadoop?





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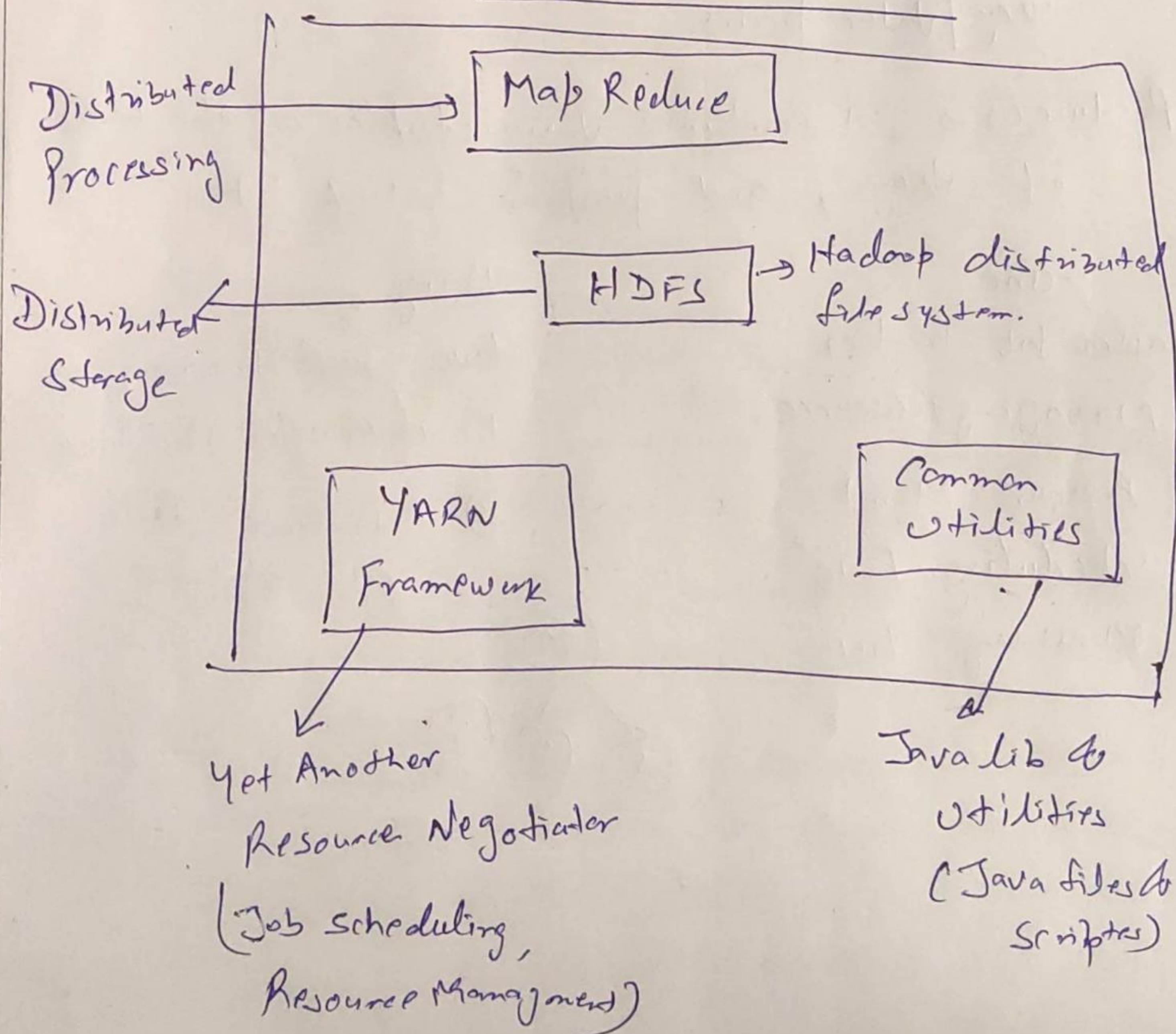
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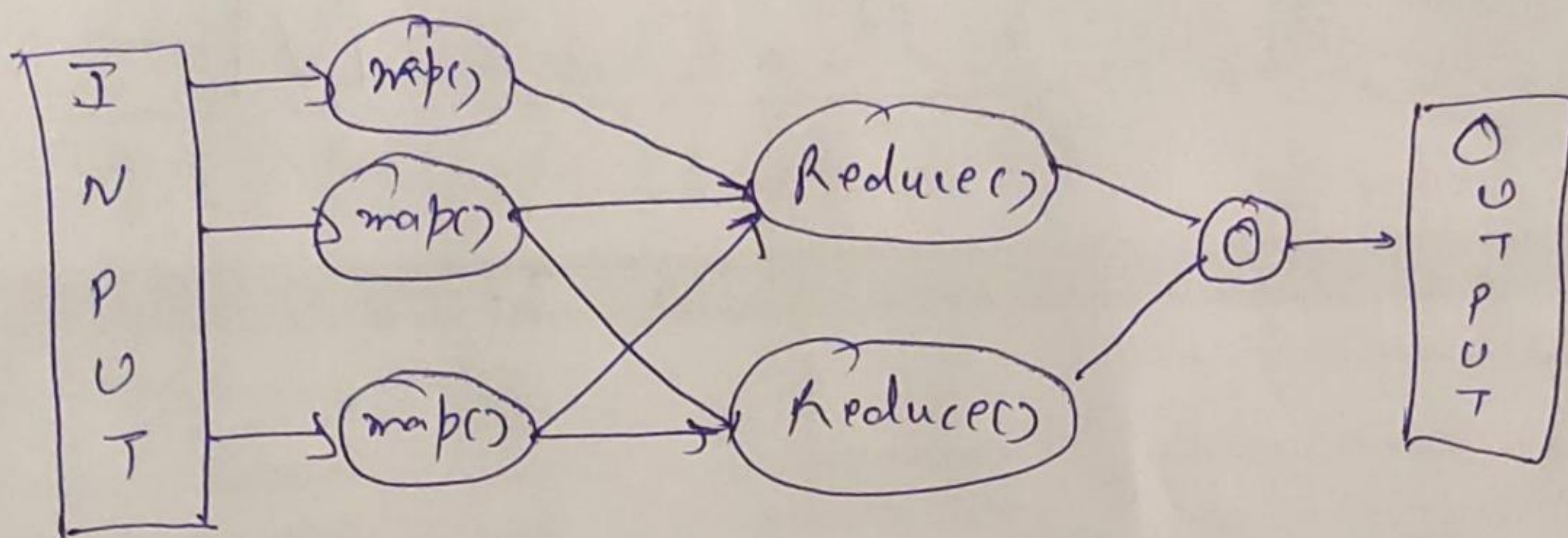
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Hadoop Architecture



Map Reduce



map() → This function's output is tuples, these are key/value pairs.

Reducer() → It combines various tuples on the bases of keys, and ~~perform~~ ^{Combine} set of tuples.

one

Master Job Tracker

- ① Managing Resources
- ② Resource Mgmt
- ③ Scheduling Task
- ④ Monitoring Task

Many

Slave Task Tracker

- 1) Executes the task
- 2) Provide Task status.





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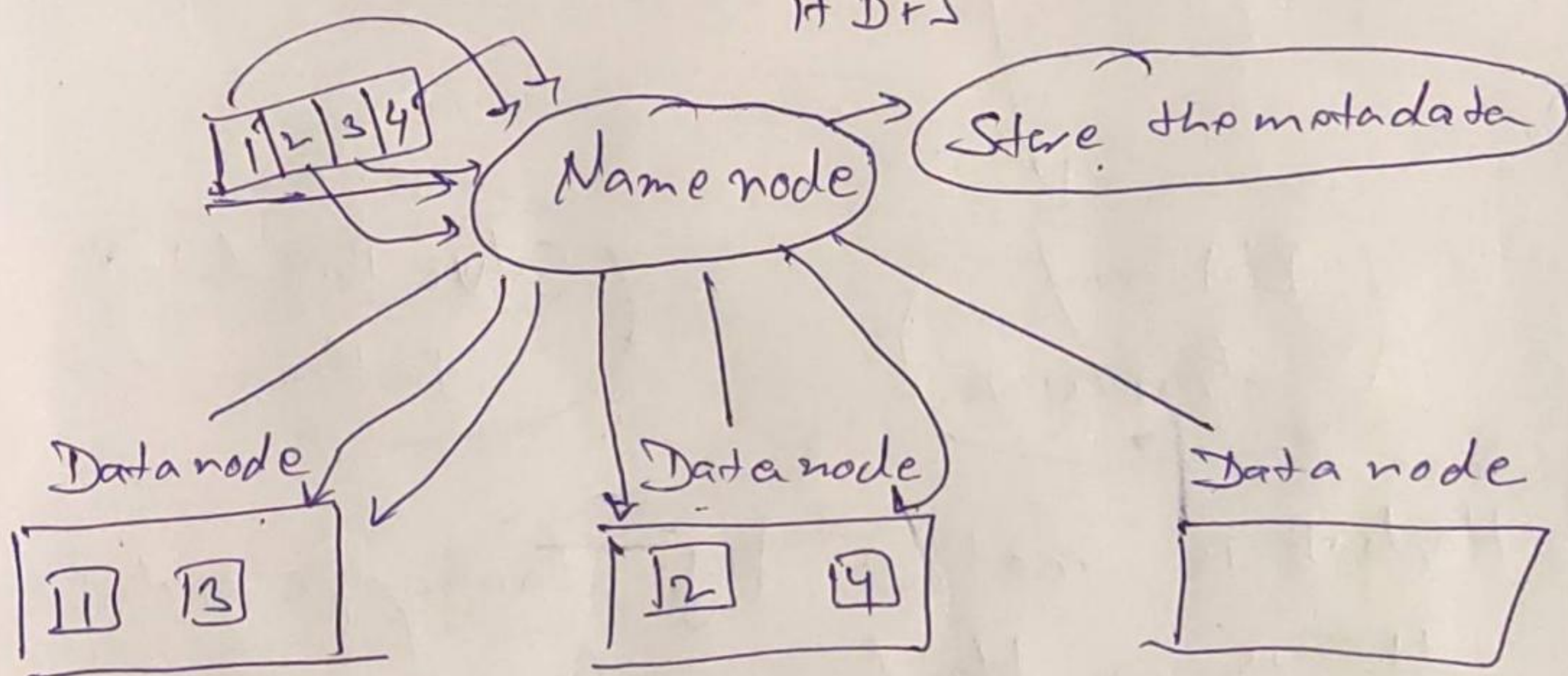
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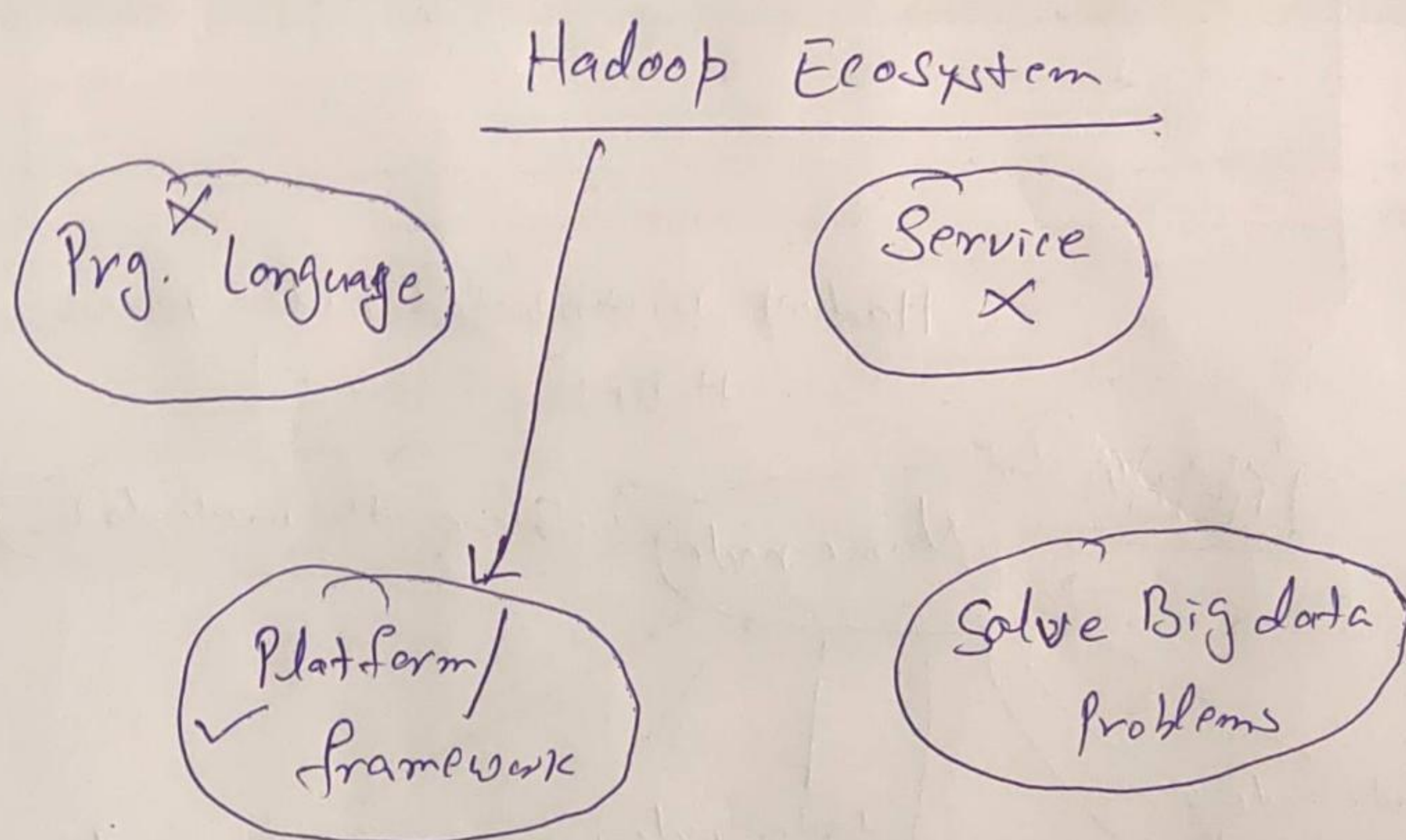
Hadoop Distributed File System HDFS



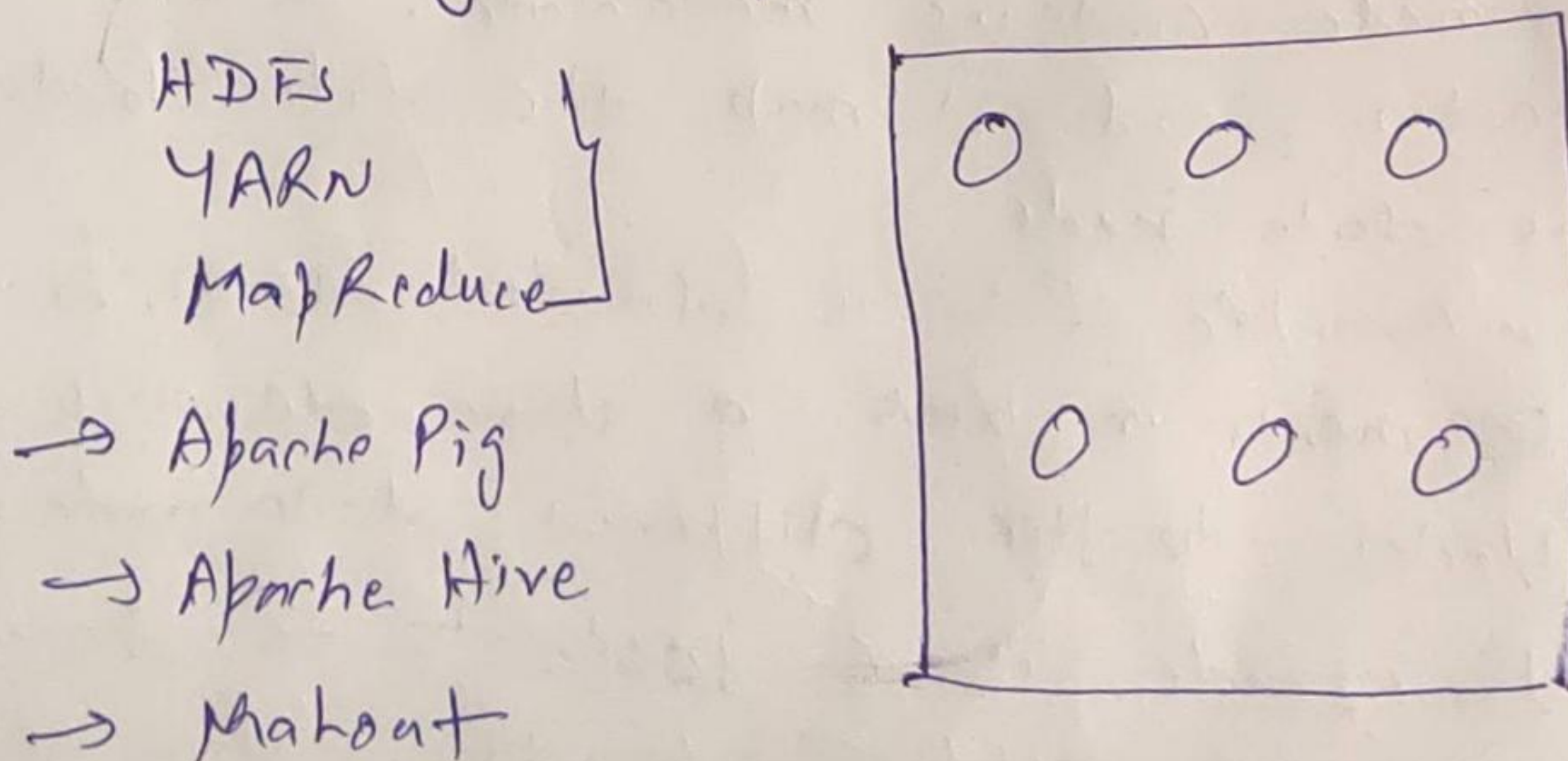
64 MB → Default Size

- ① Name node contains metadata. It acts as a master, and it maps the file's blocks to the data node.
- ② For example, a file is divided into 1, 2, 3, 4 segments or blocks. The Name node maps the blocks to the different data nodes.
- ③ Name node ~~is~~ instructs the data node to make replicas of the file's segments, and it also suggests the data node that the file segment is not very useful in the particular time instant delete that file's segment.

(4) So opening the file ~~seg~~ segment, make replica of file segment, deleting the file segment all are maintain by name node.



Hadoop is not a prg. language and Service.
It is a platform or framework to
Solve big data problems.





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HBase → Is a database

- ① It is distributed database, no SQL based system. It stores data in form of columns and rows in a table.

