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(Midterm)

Sec- C

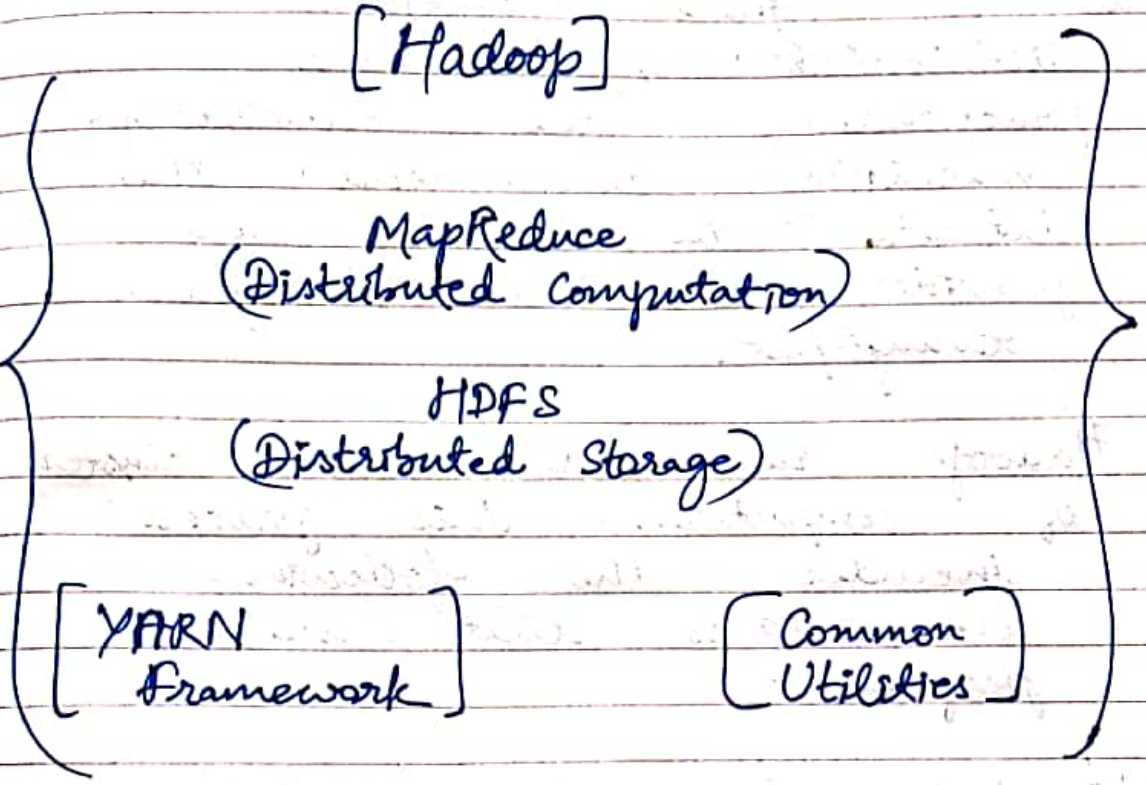
Ans①. Hadoop is an Apache open source framework written in java that allows distributed processing of large datasets across clusters of computers using simple programming models.

Hadoop framework works in an environment that provides distributed storage and computation across clusters of computers.

* Hadoop Architecture :-

At its core, Hadoop has two major layers namely -

↳ Processing / Computation layer (MapReduce), and
↳ Storage layer (Hadoop Distributed File System).



* MapReduce :- The Map-Reduce program runs on the Hadoop which is an Apache open-source framework.

* How Does Hadoop Work?

It is quite expensive to build bigger servers with heavy configurations that handles large scale processing, but as an alternative, you can tie together many comodity computers with single-CPU,

as a single functional distributed system and practically, the clustering machines can read the datasets in parallel and provides a much higher throughput.

Hadoop run code across clusters of computers. This process includes the following core tasks that hadoop performs —

↳ Data is initially divided into directories and files. Files are directories into uniform sized blocks of 128M and 64M (preferable 128M).

↳ These files are then distributed across various clusters nodes for further processing.

↳ HDFS, being on top of the local file system, supervises the processing.

↳ Blocks are replicated for handling hardware failure.

↳ Checking that the code was executed successfully.

↳ Performing the sort that takes place between the map and reduce stages.

* Advantages of Hadoop :-

↳ Hadoop framework allows the user to quickly write and test distributed systems.

↳ Hadoop does not rely on hardware to provide fault tolerance and high availability (FTHA), rather than Hadoop library itself has been designed to detect and handled failure and application.

↳ Server can be added or removed from the clusters dynamically and Hadoop continues to operate without interruption.

Ans. ② ③ Virtualization is the creation of a virtualise rather than actual version

of something, such as operating system (OS), a server, a storage device or network resources.

Virtualization uses software that simulates hardware functionality in order to create a virtual system. This practice allows IT organization to operate multiple operating systems, more than one virtual system and various applications on a single server.

* How does Virtualization works :

Virtualization describes a technology in which an application, guest operating system (guest OS) or data storage is abstracted away from the true underlying hardware or software.

A key use of virtualization technology is server virtualization, which uses a software layer called a Hypervisor.

A Hypervisor is a form of virtualization software such as Cloud hosting to divide and allocate the resources on various piece of hardware.

Type 1 hypervisor offers much better performance than Type 2, once because there's no middle layer, making them the logical choice for mission-critical applications and workloads.

* Understanding your needs: The company and its applications are the ~~ass~~ reason for data centre (and your job) Besides your company's needs, you (and your co-workers in IT) also have your own needs.

* Needs of Hypervisor:

↳ Flexibility
↳ Scalability
↳ Usability
↳ Availability
↳ Reliability
↳ Efficiency
↳ Reliability support.

(Sec-B)

Ans ① Difference between IAAS & PAAS.

Basis of	IAAS	PAAS
Stands for	Infrastructure as a service.	Platform as a service.
Uses	IAAS is used by network architects.	PAAS is used by developer.
Access	IAAS give access to the resource like virtual machines and virtual storage.	PAAS give access to run time environment to deployment and development tools for application.
Model	It is service model that provides virtualized computing resources over Internet.	It is a cloud computing model that delivers tools that is used for development of application.
Technical Understanding	It is required as technical understanding or knowledge.	In which you required knowledge of subject to understand basic setup.

Ans (3) Community Cloud :-

Community clouds are a recent variation on the private cloud model that provide a complete cloud solution for specific business communities.

Community clouds are an attractive option for companies in the health, financial or legal spheres that are subjects to strict regulatory compliance.

The recent development of community clouds illustrates how cloud computing is evolving. CSPs can combine different type of clouds with different service models to provide businesses with attractive cloud solutions that meet a company's needs.

Public Cloud :-

In public cloud, individual business share on premise and access to basic computer infrastructure (servers, storage, networks, & development

platforms etc). provided by a CSP. Each company shares the of CSP's infrastructure with other companies that have subscribed to the cloud.
Payment is usually pay-as-you-go with no minimum time requirements.

Public clouds are highly cost effective because the business only pays for the computer resources it uses. In addition, the business has access to state-of-the-art computer infrastructure without having to purchase it and hire IT staff to install and maintain it.

Ans (5): A data centre is a physical facility that organisations use to house their critical applications and data.

A data centre's design is based on a network of computer and networking storage resources that enables

the delivery of shared application and data.

* The key components of data centre design include routers, switches, firewalls, storage systems, servers and application - delivery controllers.

* Why are data centers important to business ?

↳ Emails and file Sharing
↳ Productivity applications.
↳ Customers relationship management.
↳ Big data, artificial intelligence, and Machine learning.

* Core Components of data centre :-

↳ Network infrastructure.
↳ Storage infrastructure
↳ Computing resources.

* How do data centre operate ?

↳ Network securities appliances.
↳ Application delivery assurance.

Ans⑥ A service level aggrement (SLA) is documented aggrement between a service provider and a customer that identifies both the services required and the expected level of service.

The aggrement varies between vendors, services and industries.

* Writing SLAs: an SLA templates:-

↳ Review or Monitoring
↳ Service credits.
↳ Rider
↳ End of contract or liquidation terms.

* Purpose :-

↳ Requirements for SaaS service that will be provisioned to customer.

↳ Aggrement service targets.
↳ Criteria for target fulfillment evaluation.
↳ Roles and Responsibility of Service Provider.
↳ Duration, Scope and Renewal of this SLA contract.

(Sec-A)

Ans.

(1). — (C) Virtual

(2) — (D) Internet

(3) — (B) Private

(4) — (C) 3.

(5) — (C) Community.
