DataBases

Visit Class notes for 15 June

- Relational databases are not scaled, this can be replicated. the replicated servers will accept only read.
- if you have two server , the second is replication server of 1st server , incase 1st server goes down the write operation fails we need to make server 2 to accept writes this is called as **Failover**

AWS Relational Databases

Check notes for understanding concepts

Brief Revew :

- Types of Databases:
    - Structured
    - Unstructured
- Structured:
    - RDBMS(Relational databases)
        - MYSQL
        - Oracle
        - MSSQL
        - Postgres
- UnStructured:(These are not strict on schema)
    - NO SQL
- For this, cloud offered service named Database as a service, here we just need to maintain data
    - AWS:
        - AWS has a service named RDS, here in RDS they support 5 engines
            - MYSQL
            - MS SQL
            - Oracle
            - Postgres
            - IBM DB2
        - Aws re-written databases engines and started giving as Aurora Databases, Main advantages using this is your throughput will be faster(Accessing data is faster, your quires will be faster)
        - For No Sql
            - Aws has a propritery Database which is widely used called 'Dynamo Db', amazon created for themselves to store their data
            - Dynamo Db is very fast in creation and very fast in quering
            - select *(All) operation is a costliest option, the way you design the data chnage

        - Mongo Db-(Document Db)
        - Cassandra (Keyspaces)
        - For running Graph databases we have Neptune
    - Cache :
        - Aws has two things
            - Elstic cache(this runs on opensources of Redis cache software)
            - Mem Cache(Enterprice editions of Redis)

- Azure:

    - Azure Sql(This support three types of databases)
        - MS SQL
        - Postgres
        - MY SQL
    - Here some databases will be your part of network and some not
        - Azure SQL is not part of Our network
    - Since microsoft SQL gives you a cheaper way of SQL server they gave three options

        - Azure SQL Database:(it is not a complete sql sever but it have all features of database) A fully managed, scalable, and intelligent relational database service in the cloud, ideal for modern app development.

        - Azure SQL Managed Instance: A fully managed SQL Server instance that offers near-complete SQL Server compatibility with all the benefits of a managed service.

        - SQL Server on Azure Virtual Machines: A cloud-based virtual machine running SQL Server, providing full control over the SQL Server instance and operating system, ideal for custom configurations and legacy applications.

    - For NO SQL
        - Azure has CosmosDB
            - in cosmosdb they will provide APi's to create differernt types of no Sql databases
            - Cassandra APi
            - Mongo APi
            - etc..
    - Cache:
        - In azure we have Azure Redis Cache

- Backups:

    - If you want to take backups of any Database, generally there is automatic
    - you can also take by centralizing from backup service
        - in Azure(Azure backup center)
        - In AWs(AWS backup service)
    - Here you need to create a vault with some plan based on how frequently is has been used.

- Recovery

    - recovery do not exist for databases, all you need to do is restore

- for virtual machines Azure has Recovery services Vault, here you can recover
- Aws has Disaster recovery services.