Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2024-25

Class:	BE	Semester:	VII
Course Code:		Course Name:	BDA

Name of Student:	Hitesh. A. Moota
Roll No. :	32
Assignment No.:	03
Title of Assignment:	
Date of Submission:	
Date of Correction:	

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Completeness	5	3
Demonstrated Knowledge	3	2
Legibility	2	2
Total	10	7

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Completeness	5	3-4	1-2
Demonstrated Knowledge Legibility	3	2	1
Legibility	2	1	0

Checked by

Name of Faculty   :

Signature   : 7/10/24

Date   :

Assignment no - 3

Q) Apply the Concept of column family Store & graph Store of NoSQL architectural pattern on Employee management System.

→ NoSQL databases designed to handle large datasets & unstructured data, offer flexible Schema distributed architecture. Two prominent pattern are column family Store & concept Graph Store

Column family Store (CFS) for Employee management CFS database, like cassender or HBase, organize data into column & rows. This is particularly beneficial for Employee management, where data is often hierarchical & queries frequently involve Specific columns

Example:
- Column families :- Employee, Department, Project Salary
- Rows : Each Employee record
- Columns :- Employee ID, Name, Department, Salary, project, etc

Benefits :
- Efficient for querying Specific data points
- scalable for large datasets
- Handles high, write, loads.

Graph Store for Employee Management

Graph Store, such as Neo4j or Amazon Neptune, represent data data as nodes and relationship. This is ideal for modeling complex relationship written an employee management System

Example:
Nodes :- Employee, Department, Projects

Relationships :- works in, report to, Collaborates on

Benefits :- Efficient for logging relationship, key findings Employee who worked on a specific project with a particular manager
flexible for modelling complex network
Supports graph algorithm for insights

Q) Consider NoSQL Amazon Dynamo Case Study & show how business problems have been successfully solved faster, cheaper & more effectively. State the business drivers & the findings in it

→ Amazon DynamoDB case study: overcoming Scalability Challenges

Business problem:
A large online going company was struggling to handle the massive influx of users &

data generated by their popular mobile game. Their existing relational database was unable to scale efficiently, leading to performance bottlenecks & latency issues.

Business Drivers

Scalability :- The company needed a database that could handle rapid growth & fluctating workloads.

Performance The game required low-latency responses to ensure a smooth user experience.

Cost Efficiency :- The company wanted to optimize costs while maintaining high performance.

Solution :- Amazon DynamoDB

The company migrated their database to Amazon DynamoDB, a fully managed, serverless NoSQL database. DynamoDB offered the following key benefits.

Scalability :- It automatically scales to handle increasing workloads ensuring consistent performance even during peak traffic

- **Performance** - DynamoDB provides low latency reads & writes. Essential for a real time gaming experience

- **Cost-Efficiency :-** As a Serverless service, DynamoDB eliminates the need for upfront infrastructure costs & only charges for the resources consumed.

findings :-

- **Improved Performance :-** The company experienced a significant reduction in latency & improved response time for users

- **Increased Scalability :-** DynamoDB effortlessly handled the growing number of users & data without requiring manual intervention

- **Cost Savings :-** By eliminating the need for managing & maintaining their own database infrastructure, the company realized significant cost savings.