

Innovative Practice

Faculty Name : Mrs.Sk.Sharmia , Mr.K.Srikanth
Course Name : Data Mining Techniques
Class : III B. Tech I Semester
Academic Year : 2024-2025
Activity Name : One-Minute Summary
Title of the Topic : Different types of clusters

Objective:

This title captures the essence of the activity, which is to give students a chance to reflect and summarize their understanding of different types of clusters and clustering techniques. The focus would be on how clustering applies in data mining and how students can consolidate key concepts in a short amount of time.

Activity Steps:

Introduction (5-10 minutes):

Objective: Provide students with a foundational understanding of clusters and their types in distributed computing or data storage contexts.

Content to Cover:

- **Cluster Overview:** Define what clusters are (groups of interconnected systems working together as a single system).
- **Importance of Clusters:** Explain their role in scalability, fault tolerance, and performance optimization.
- **Types of Clusters:** Briefly introduce the different types, such as high-availability clusters, load-balancing clusters, storage clusters, and computational clusters.

Multiple Choice Questions (MCQs):

1. Which type of cluster ensures system availability by automatically transferring tasks from a failed node to a functioning node?

- a) Load-balancing cluster
- b) High-availability cluster
- c) Storage cluster
- d) Computational cluster

Answer: b) High-availability cluster

2..Which cluster type is primarily used to distribute incoming network traffic across multiple servers?

- a) High-availability cluster
- b) Load-balancing cluster
- c) Storage cluster

d) Hybrid cluster

Answer: b) Load-balancing cluster

3. Which type of cluster is designed to handle intensive computational tasks, such as simulations or scientific research?

a) Storage cluster

b) Load-balancing cluster

c) High-performance computing (HPC) cluster

d) High-availability cluster

Answer: c) High-performance computing (HPC) cluster

4. What is the primary function of a storage cluster?

a) Minimizing system downtime

b) Distributing workloads across multiple servers

c) Managing and distributing large-scale data storage

d) Handling resource-intensive computations

Answer: c) Managing and distributing large-scale data storage

True/False:

1. High-availability clusters are unnecessary in systems where downtime is acceptable.

Answer: True

2. Storage clusters do not provide fault tolerance for data storage.

Answer: False

Fill-in-the-Blanks:

1 _____ clusters are used to distribute incoming network traffic evenly across multiple servers.

Answer: Load-balancing

2. Storage clusters improve performance by distributing data and workloads across multiple _____.

Answer: nodes

Short Answer Questions:

• **What is the main purpose of a high-availability cluster?**

High-availability clusters ensure minimal downtime by providing automatic failover when a node or system component fails.

• **How do load-balancing clusters improve system performance?**

Load-balancing clusters distribute incoming network traffic or workloads evenly across multiple servers to prevent overloading any single server and optimize performance.

• **Why are storage clusters important in large-scale data environments?**

Storage clusters allow the distribution and replication of data across multiple nodes, ensuring fault tolerance, high availability, and efficient data access.

