VIT Vidyalankar Institute of Technology
Accredited A+ by NAAC

# Cloud Computing Oral Practical Exam Problem Statements
## Batch on 3rd May, 2024

| Sr No. | Problem Statement | Group Members Assigned |
|---|---|---|
| 1. | A startup is launching a new web application and expects varying levels of traffic. They want to ensure their application remains responsive without overspending on resources.<br>Problem: Design a solution using IaaS that automatically scales the infrastructure based on traffic demand.<br>Hints:<br>1. Research IaaS platforms that offer auto-scaling capabilities.<br>2. Consider metrics like CPU usage, memory usage, or incoming requests to trigger scaling actions.<br>3. Explore documentation or tutorials on setting up auto-scaling policies.<br>4. Test the solution by gradually increasing traffic and observing how the infrastructure scales up. | 1. Chaitanya Mandale<br>2. Shantanu Lagvankar<br>3. Shreya Ingle<br>4. Harshali Bhoye |
| 2. | A small business relies on cloud storage for critical data. They want to implement a backup and recovery strategy to protect against data loss.<br>Problem: Develop a plan using IaaS to regularly back up data and ensure quick recovery in case of accidental deletion or system failure.<br>Hints:<br>1. Investigate backup solutions provided by IaaS providers, such as snapshots, replication, or backup services.<br>2. Define a backup schedule and retention policy based on the business's needs.<br>3. Practice restoring data from backups to verify the recovery process.<br>4. Consider data encryption and access controls to secure backups | 1. Noel Lawrence<br>2. Sukant Thombare<br>3. Rohit Bhandwalkar<br>4. Aarushi Bose |
| 3. | An e-commerce website experiences high traffic during sales events and wants to ensure continuous availability for customers.<br>Problem: Design a high availability architecture using IaaS to minimize downtime and handle traffic spikes.<br>Hints:<br>1. Distribute the application across multiple availability zones or regions offered by the IaaS provider.<br>2. Set up load balancers to distribute incoming traffic evenly across instances.<br>3. Implement auto-scaling to dynamically adjust resources based on demand.<br>4. Test failover mechanisms to ensure seamless transition in case of instance or zone failures. | 1. Bhavesh Limbare<br>2. Kartik Gokhale<br>3. Rajashree Shingne<br>4. Ashutosh Gupta |
| 4. | A small team of developers updates their web application frequently and wants to automate the process to save time and reduce errors.<br>Problem: Use a PaaS platform to create a system that automatically deploys updates to the web application whenever changes are made to the code.<br>Hints:<br>1. Look for PaaS platforms with built-in continuous deployment features. | 1. Vanashree Pinjari<br>2. Aaditya Shewale<br>3. Prathamesh Swar<br>4. Prathamesh Palatshaha |

| | | |
|---|---|---|
| | 2. Set up a Git repository to store the application code.<br>3. Configure the PaaS platform to monitor the repository for changes and automatically deploy the updated code.<br>4. Test the system by making changes to the code and verifying that the updates are deployed automatically. | |
| 5. | A student-run blogging platform needs a database to store articles, comments, and user information securely.<br>Problem: Select a suitable database service provided by a PaaS platform and configure it to store and retrieve blog data efficiently.<br>Hints:<br>1. Look for a PaaS platform that offers managed database services.<br>2. Choose a database type (e.g., SQL, NoSQL) based on the blogging platform's requirements.<br>3. Set up the database with tables for articles, comments, and users.<br>4. Test the database by adding sample data and querying it to ensure it works correctly. | 1. Soham Pashte<br>2. Prachet Pandav<br>3. Akash Mendke<br>4. Ritesh Tiwari |
| 6. | A group of students is building a collaborative note-taking application for their class project. They require a database to store user-generated notes, comments, and user profiles securely.<br>Hints: Explore PaaS platforms that provide managed database services suitable for collaborative applications.<br>1. Decide on the type of database (SQL or NoSQL) based on the application's requirements for scalability and flexibility.<br>2. Design database schemas for storing notes, comments, and user profiles efficiently.<br>3. Populate the database with sample data and run queries to verify data integrity and performance. | 1. Mayur Hile<br>2. Premanshu Chaudhari<br>3. Gauri Naik<br>4. Deep Salunkhe |
| 7. | A company is using a Storage as a Service (STaaS) provider to store their data. They want to ensure that each department within the company has a specific storage quota allocated to them. However, they're facing difficulties in tracking and managing these quotas effectively.<br>Hints to Solve:<br>1. Allocate Quotas: Create a system where each department is allocated a specific amount of storage space based on their requirements and usage patterns.<br>2. Monitoring Tools: Implement monitoring tools or scripts that regularly check the storage usage of each department.<br>3. Alert Mechanism: Set up alerts to notify administrators when a department is approaching or exceeding their allocated storage quota.<br>4. Automated Actions: Develop automated actions to either restrict further storage allocation or notify department heads to optimize their storage usage if they exceed their quota.<br>5. Adjustment Mechanism: Create a mechanism for administrators to adjust storage quotas based on changing departmental needs. | 1. Shreekant Pukale<br>2. Vedant Rane<br>3. Swaraj Andhale<br>4. Anvi Borse |

| | | |
|---|---|---|
| 8. | A medium-sized e-commerce company uses a Storage as a Service provider to store product images and other media files. However, they're experiencing slow loading times for their website due to the latency in accessing these files.<br>Hints to Solve:<br>1. Content Delivery Network (CDN): Utilize a CDN to cache and deliver static content, such as images, to users from edge servers located closer to their geographic location, reducing latency.<br>2. Data Sharding: Implement data sharding to distribute the storage workload across multiple servers or data centres, improving read and write performance.<br>3. Compression: Compress files before storing them in the STaaS platform to reduce storage costs and improve data transfer speeds.<br>4. Cache Mechanism: Implement a caching mechanism at the application level to store frequently accessed files in memory, reducing the need to fetch them from the STaaS provider repeatedly.<br>5. Load Balancing: Use load balancing techniques to distribute incoming traffic evenly across multiple servers, preventing any single server from becoming a bottleneck in accessing stored data. | 1. Nikhil Dhumal<br>2. Aayush Srivastava<br>3. Sayali Tawade<br>4. Sahil Pokharkar |
| 9. | A company is using a cloud-based platform for its operations, but they're concerned about unauthorized access to sensitive data. They need a way to detect and respond to any suspicious activity promptly.<br>Hints to Solve:<br>1. Identity Verification: Implement multi-factor authentication (MFA) to ensure that only authorized users can access the cloud platform.<br>2. Activity Monitoring: Use logging and monitoring tools to keep track of who accesses what data and when.<br>3. Anomaly Detection: Set up alerts for unusual login patterns or access attempts, such as logins from unusual locations or at odd times.<br>4. Automated Response: Develop automated responses to block suspicious activities or revoke access if unauthorized access is detected.<br>5. Regular Audits: Conduct regular audits of user access rights and permissions to ensure they're up-to-date and appropriate. | 1. Pranav Redij<br>2. Diksha Vodnala<br>3. Omkar Patil<br>4. Rutuja Gujare<br>5. Digvijay Mawale |