LAB-8

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/*
Name: Rohit Saini
Erp: 1032200897
Panel: C
RollNo: PC-41 */
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TITLE:
Case Study: Application of Cloud computing
AIM:
To create a presentation for any appropriate cloud computing application
OBJECTIVE:
To understand the importance of Cloud computing application
THEORY:

Introduction to Case:
Cloud computing has found widespread applications across various industries, and the healthcare sector is no exception. This case study explores the adoption of cloud computing in healthcare and the significant advantages it offers in terms of improving patient care, data management, and cost efficiency.

Client Profile:
Hospital XYZ, a medium-sized hospital located in a suburban area, has been providing healthcare services for several years. With increasing patient records, diagnostic data, and the need for secure and efficient information sharing, the hospital decided to transition to cloud computing.

Challenges:
Data Management: Hospital XYZ had accumulated a vast amount of patient data, including medical records, diagnostic images, and administrative information. Managing and securing this data was becoming increasingly complex.
Scalability: The hospital's IT infrastructure struggled to handle the growing volume of data and increasing demand for online services.
Cost Efficiency: Hospital XYZ aimed to reduce operational costs while improving the quality of patient care.

Solution:
Hospital XYZ decided to implement cloud computing solutions to address these challenges. They partnered with a reputable cloud service provider and adopted a multi-faceted approach:

Electronic Health Records (EHR): The hospital migrated its patient records to a cloud-based EHR system. This transition allowed authorized medical professionals to access patient data securely from any location, enhancing collaboration and reducing paperwork.

Medical Imaging Storage: Cloud storage was utilized to store and manage diagnostic images, such as X-rays and MRIs. This eliminated the need for physical film storage, reduced data retrieval times, and improved accessibility.
Scalable Infrastructure: The hospital's IT infrastructure was migrated to Infrastructure as a Service (IaaS) to ensure scalability. This ensured that resources could be easily adjusted to meet fluctuating demands, such as during the flu season or a public health crisis.
Telemedicine: Hospital XYZ embraced cloud-based telemedicine solutions, allowing doctors to conduct remote consultations with patients. This was particularly useful during the COVID-19 pandemic when in-person visits were restricted.
Security and Compliance: The cloud provider ensured that healthcare data remained compliant with the Health Insurance Portability and Accountability Act (HIPAA) regulations. Data encryption, access controls, and regular security audits were implemented.

Results:
The adoption of cloud computing brought about several notable results for Hospital XYZ:
Improved Patient Care: Healthcare providers gained quick and secure access to patient data, leading to more informed decisions and better patient care.
Cost Reduction: The hospital experienced significant cost savings due to reduced hardware maintenance, paperless operations, and optimized resource utilization.
Scalability: Hospital XYZ could easily scale its IT resources up or down, depending on demand, ensuring efficient resource utilization and cost management.
Data Security: Patient data remained secure and compliant with healthcare regulations, assuring patients of the safety of their information.
Accessibility: Doctors could provide telemedicine services, reaching patients in remote areas and during emergencies.

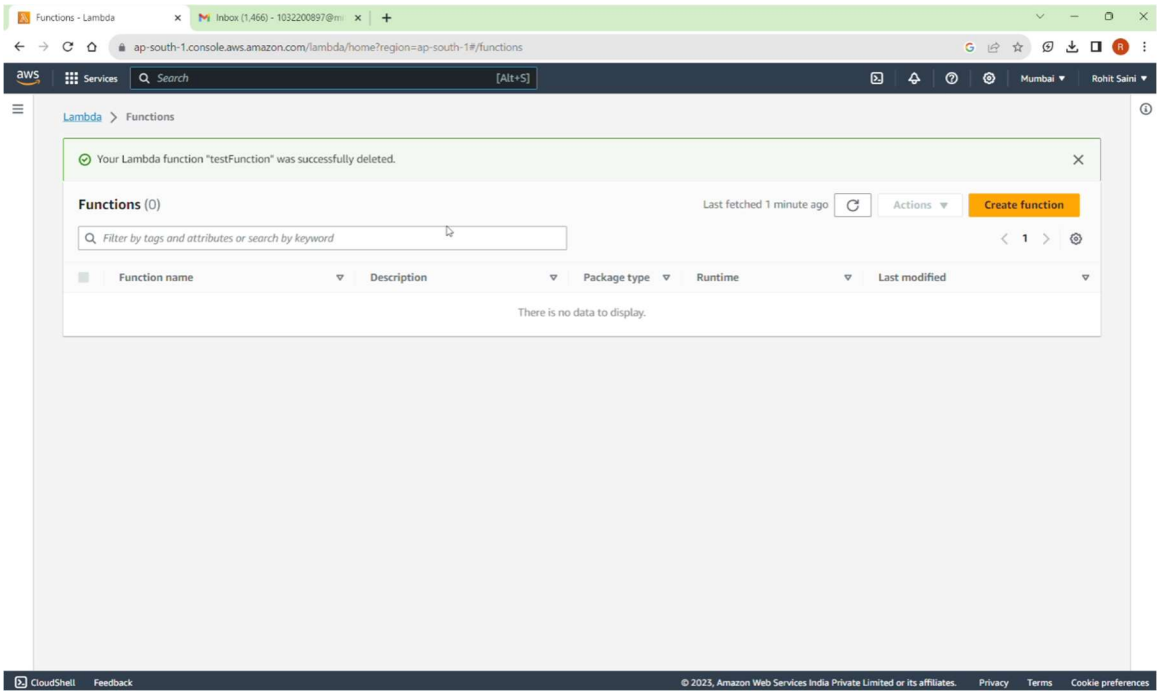
Conclusion:
The adoption of cloud computing has transformed Hospital XYZ's operations, leading to better patient care, cost efficiency, and streamlined data management. The cloud's scalability and accessibility have enabled the hospital to provide high-quality healthcare services even during challenging times, making it a valuable application of cloud computing in the healthcare industry.

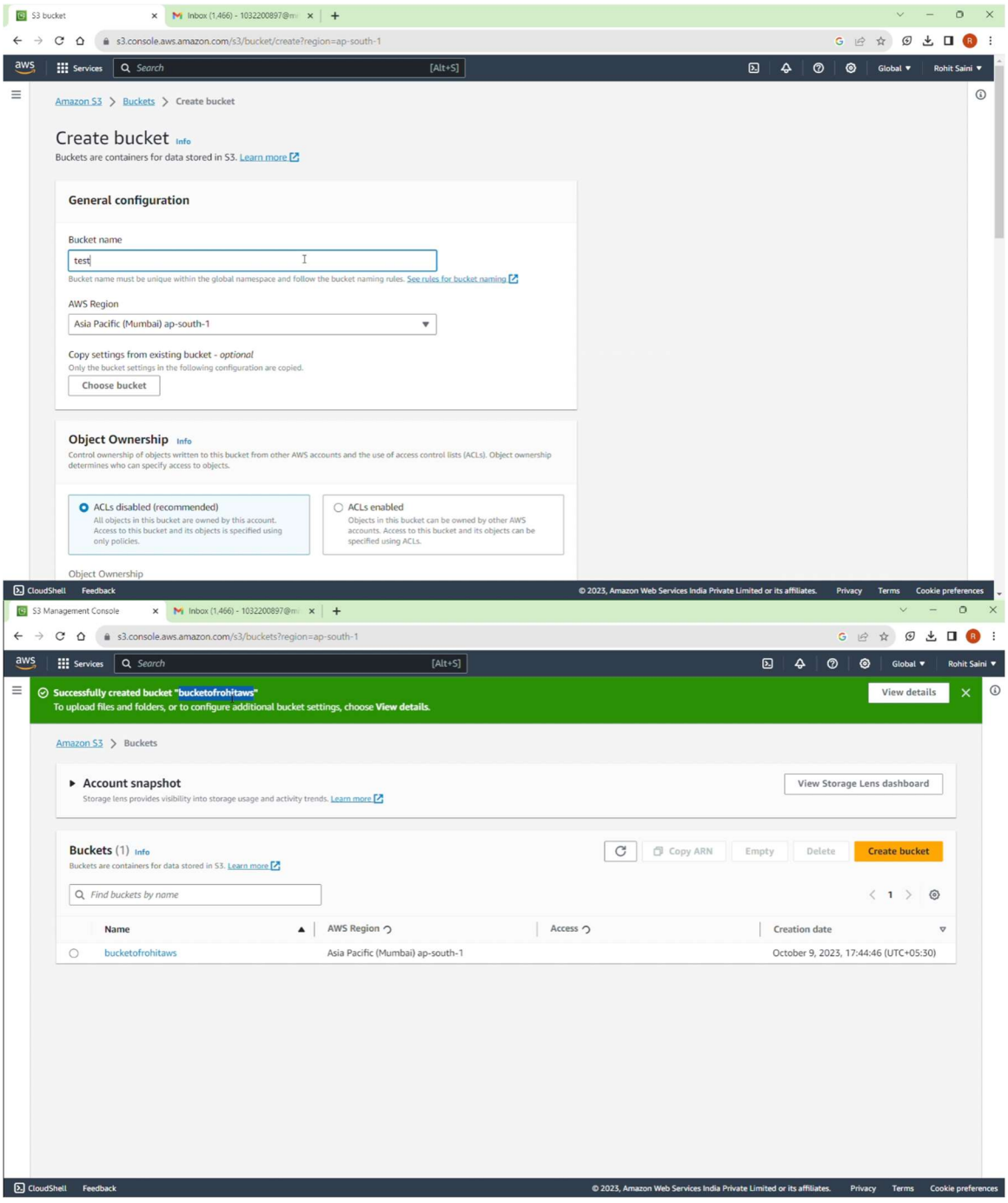
Creating a Lambda Function on AWS:
1. AWS Lambda is a serverless computing service for running code without managing servers.
2. Lambda functions can be created through the AWS Management Console, AWS CLI, or SDKs.
3. Functions have triggers that define when and how they execute, such as Amazon S3 bucket events.
4. Each function has a handler function, the entry point for your code.
5. AWS Lambda provides an execution environment, including memory allocation and CPU power.

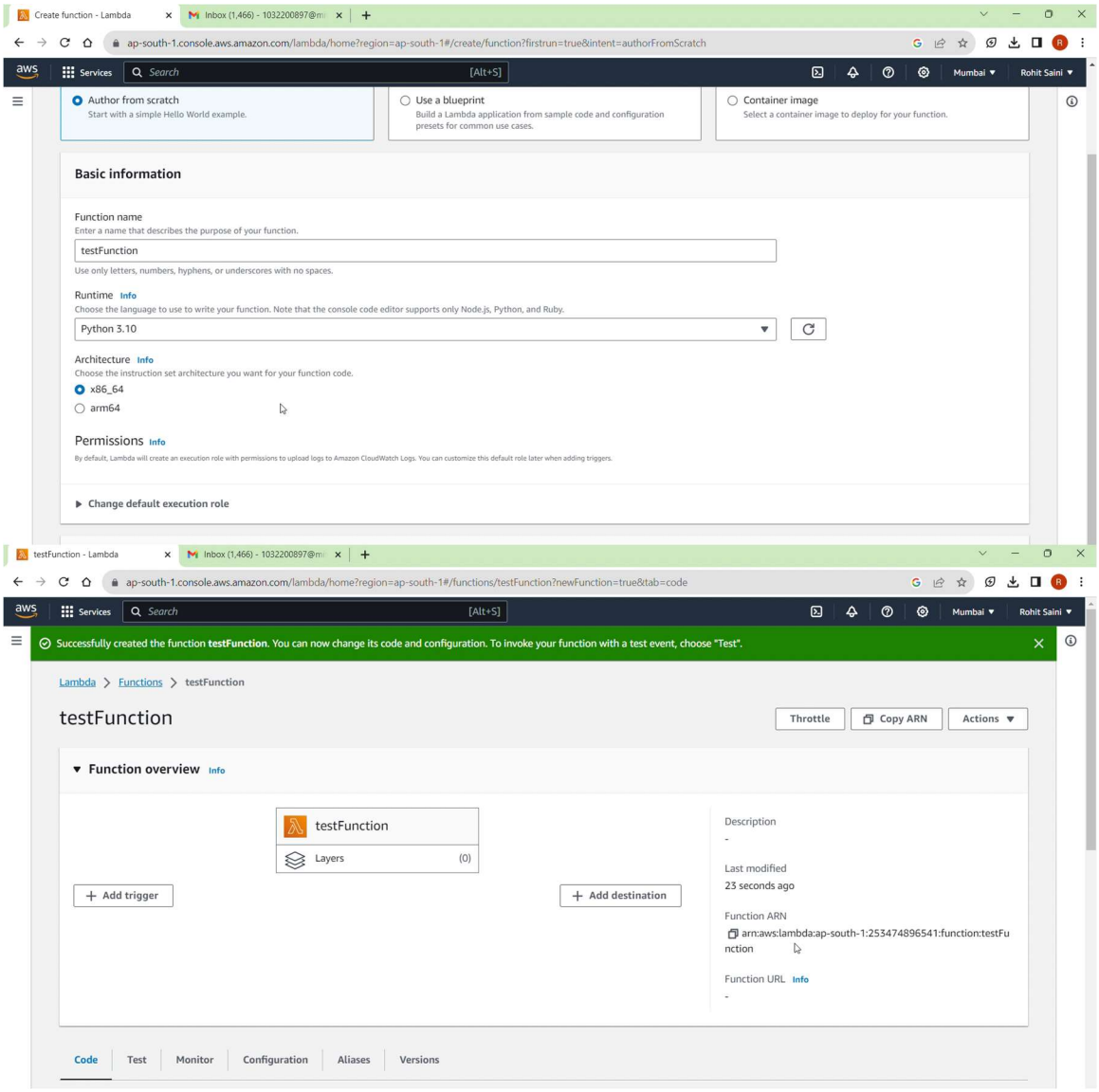
6. Lambda scales automatically based on incoming requests and is priced based on requests and execution time.

Using Amazon S3 Buckets:
1. Amazon S3 (Simple Storage Service) is a scalable and highly available object storage service by AWS.
2. S3 buckets, the containers for data storage, can be created through the AWS Management Console, AWS CLI, or SDKs.
3. Objects, such as files and data, are stored inside S3 buckets and have unique keys.
4. Bucket policies and access control lists (ACLs) are used to control access to objects in buckets.
5. S3 buckets can be configured to generate events based on object-related activities, like object creation.
6. Amazon S3 offers data lifecycle management, versioning, and high durability by replicating data across Availability Zones.
7. Events in S3 buckets can trigger Lambda functions, enabling serverless automation of tasks.
8. S3 is scalable, durable, and suitable for storing and retrieving data efficiently.

INPUT:
Creation of presentation on Cloud Computing
OUTPUT:
Lambda Function:




S3 bucket
Inbox (1,466) - 1032200897@m
s3.console.aws.amazon.com/s3/bucket/create?region=ap-south-1
aws
Services
Search
[Alt+S]
Global
Rohit Saini
Amazon S3 > Buckets > Create bucket
Create bucket Info
Buckets are containers for data stored in S3. Learn more
General configuration
Bucket name
test
Bucket name must be unique within the global namespace and follow the bucket naming rules. See rules for bucket naming
AWS Region
Asia Pacific (Mumbai) ap-south-1
Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.
Choose bucket
Object Ownership Info
Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.
ACLs disabled (recommended)
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.
ACLs enabled
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.
Object Ownership
CloudShell
Feedback
© 2023, Amazon Web Services India Private Limited or its affiliates.
Privacy
Terms
Cookie preferences
S3 Management Console
Inbox (1,466) - 1032200897@m
s3.console.aws.amazon.com/s3/buckets?region=ap-south-1
Successfully created bucket "bucketofrohitaws"
To upload files and folders, or to configure additional bucket settings, choose View details.
View details
Amazon S3 > Buckets
Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
Buckets (1) Info
Buckets are containers for data stored in S3. Learn more
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
AWS Region
Access
Creation date
bucketofrohitaws
Asia Pacific (Mumbai) ap-south-1
October 9, 2023, 17:44:46 (UTC+05:30)


Create function - Lambda
Inbox (1,466) - 1032200897@mi
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/create/function?firstrun=true&intent=authorFromScratch
aws
Services
Search
[Alt+S]
Mumbai
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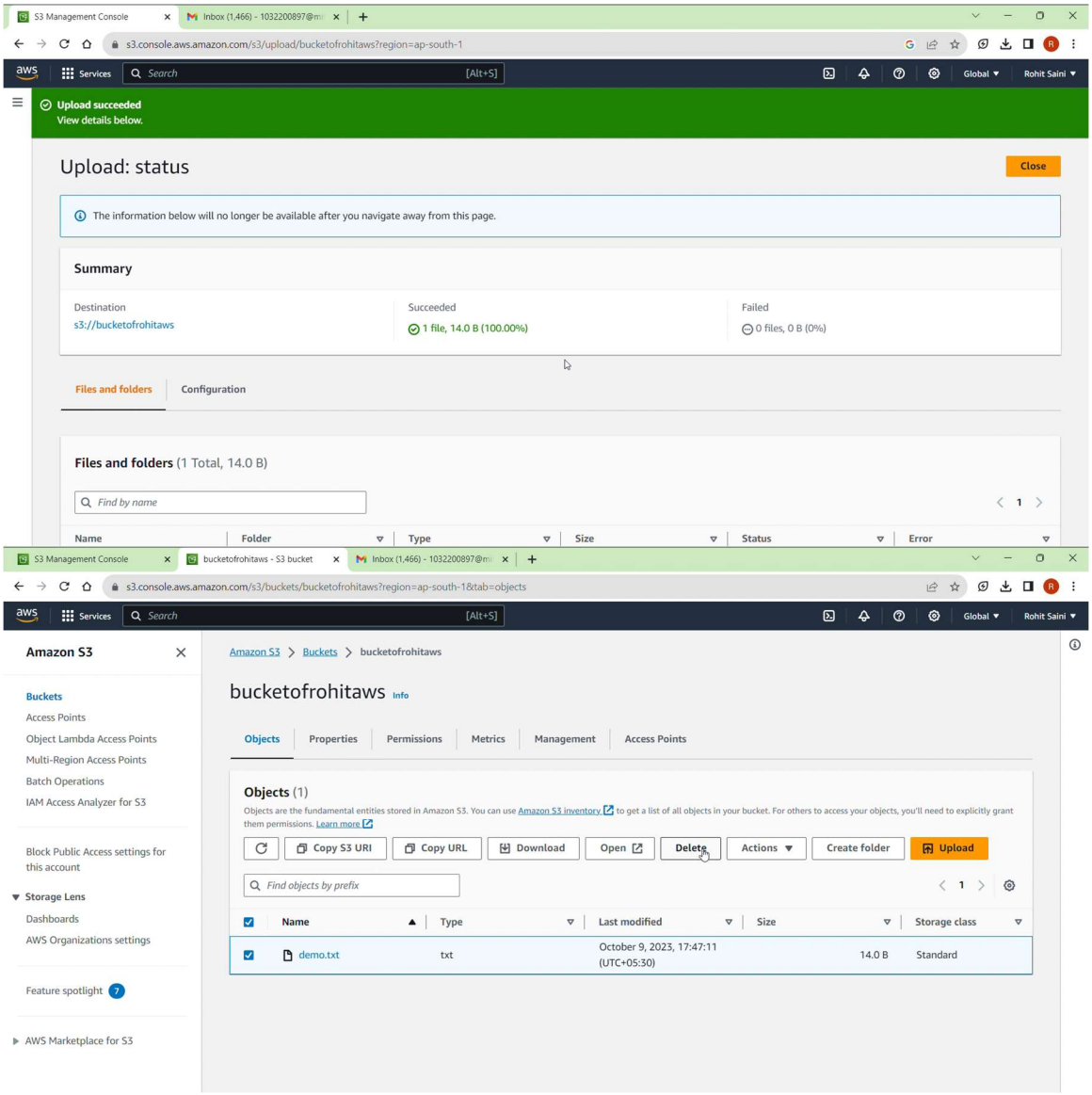
Author from scratch
Start with a simple Hello World example.
Use a blueprint
Build a Lambda application from sample code and configuration presets for common use cases.
Container image
Select a container image to deploy for your function.
Basic information
Function name
Enter a name that describes the purpose of your function.
testFunction
Use only letters, numbers, hyphens, or underscores with no spaces.
Runtime Info
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.
Python 3.10
Architecture Info
Choose the instruction set architecture you want for your function code.
x86_64
arm64
Permissions Info
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.
Change default execution role

testFunction - Lambda
Inbox (1,466) - 1032200897@mi
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/testFunction?newFunction=true&tab=code
aws
Services
Search
[Alt+S]
Mumbai
Rohit Saini
Successfully created the function testFunction. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Lambda > Functions > testFunction
testFunction
Throttle
Copy ARN
Actions
Function overview Info
testFunction
Layers (0)
Add trigger
Add destination
Description
-
Last modified
23 seconds ago
Function ARN
arn:aws:lambda:ap-south-1:253474896541:function:testFunction
Function URL Info
-
Code
Test
Monitor
Configuration
Aliases
Versions



The presentation has been accomplished with important takeaways

CONCLUSION:

The presentation has been accomplished with knowledge gain

PLATFORM: Linux

LANGUAGE: C language.

FAQs

1. What are public and private clouds ?
2. What are the different types of services offered by clouds ?
3. How is distributed computing and cloud computing related ?

DS Lab 8

FAQ

Q1. What are public and private clouds?

Ans- Public cloud: A public cloud is a type of cloud computing where cloud resources, such as server, storage, and networking are owned and operated by a third-party cloud service provider. Users typically pay on a pay-as-you-go or subscription basis.

Private cloud: A private cloud, is a cloud infrastructure that is exclusively used by a single organization. It can be hosted on-premises within the organization's data centers or provided by a third-party vendor.

Q2. What are the different types of services offered by clouds?

Ans- Cloud computing services are categorized into several models, often referred to as the 'cloud service model'.

1. Infrastructure as a Service (IaaS): Provides virtualized computing resources over the internet, including servers, storage and networking.

2. Platform as a Service (PaaS): Offers a platform and environment for developers to build, deploy and manage applications.

3. Software as a Service (SaaS): Delivers software applications over the internet on a subscription basis. Users can access these applications via a web browser without the need for local installations.

Q3. How is distributed computing and cloud computing related?

Ans- Distributed computing: Distributed computing is a broader concept

that involves solving computational problems using a network of interconnected computers. It encompasses various models and technologies for distributing workloads across multiple machines often in a network or cluster.

- Cloud computing : Cloud computing is specific subset of distributed computing. It involves delivering computing services, including servers, storage, databases, networking, software and more, over the internet. Cloud computing relies on virtualization and shared resources provided by cloud services providers. It offers scalability, flexibility, and on demand access to resources. Cloud computing can be seen as a more structured and commercialized form of distributed computing, where resources are managed and delivered as services by cloud providers.