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Subject : Adv Devops Exp No 01

Aim: To understand the benefits of cloud infrastructure and set up AWS Cloud9 IDE, launch it, and perform a collaboration demonstration.

Theory:
Cloud Infrastructure: Cloud infrastructure refers to the combination of hardware, software, networking, and storage that together create a cloud computing platform. It allows businesses to leverage resources like computing power, storage, and networking as per demand, without investing in physical infrastructure. Key cloud infrastructure providers include AWS, Google Cloud, and Microsoft Azure.

Benefits of Cloud Infrastructure:

1. **Scalability:** Easily scale resources up or down based on demand without upfront investment in hardware.
2. **Cost Efficiency:** Pay-as-you-go model reduces capital expenses, paying only for what you use.
3. **Flexibility and Accessibility:** Access services and resources from anywhere with an internet connection, promoting remote work and global reach.
4. **Reliability:** High availability and disaster recovery options ensure that services are available with minimal downtime.
5. **Security:** Cloud providers offer advanced security measures, including data encryption, compliance certifications, and continuous monitoring.
6. **Innovation:** Rapid deployment of new services and features accelerates innovation and business agility.

AWS Cloud9 IDE: AWS Cloud9 is a cloud-based integrated development environment (IDE) that allows developers to write, run, and debug code with just a browser. It supports a variety of programming languages, including JavaScript, Python, PHP, and more, making it an ideal tool for collaborative software development.

Benefits of AWS Cloud9:

1. **Collaborative Development:** Multiple developers can work on the same project in real-time, making it ideal for pair programming and team collaboration.
2. **Preconfigured Environment:** No need for complex setup; Cloud9 comes pre-installed with tools, libraries, and compilers needed for most development tasks.
3. **Accessible from Anywhere:** As a web-based IDE, it can be accessed from any device with an internet connection.
4. **Integrated with AWS:** Deep integration with AWS services allows developers to work seamlessly with cloud resources.

5. **Built-in Terminal:** Direct access to a terminal with full sudo privileges to manage AWS resources and run shell commands.

Collaboration Demonstration in AWS Cloud9: AWS Cloud9 allows multiple users to simultaneously edit code, chat, and review changes in real-time.

To demonstrate collaboration:
- Invite team members via email or link.
- Collaborate on code, view changes in real-time, and chat within the IDE.
- Use version control systems like Git integrated within Cloud9 for better collaboration and tracking of changes.
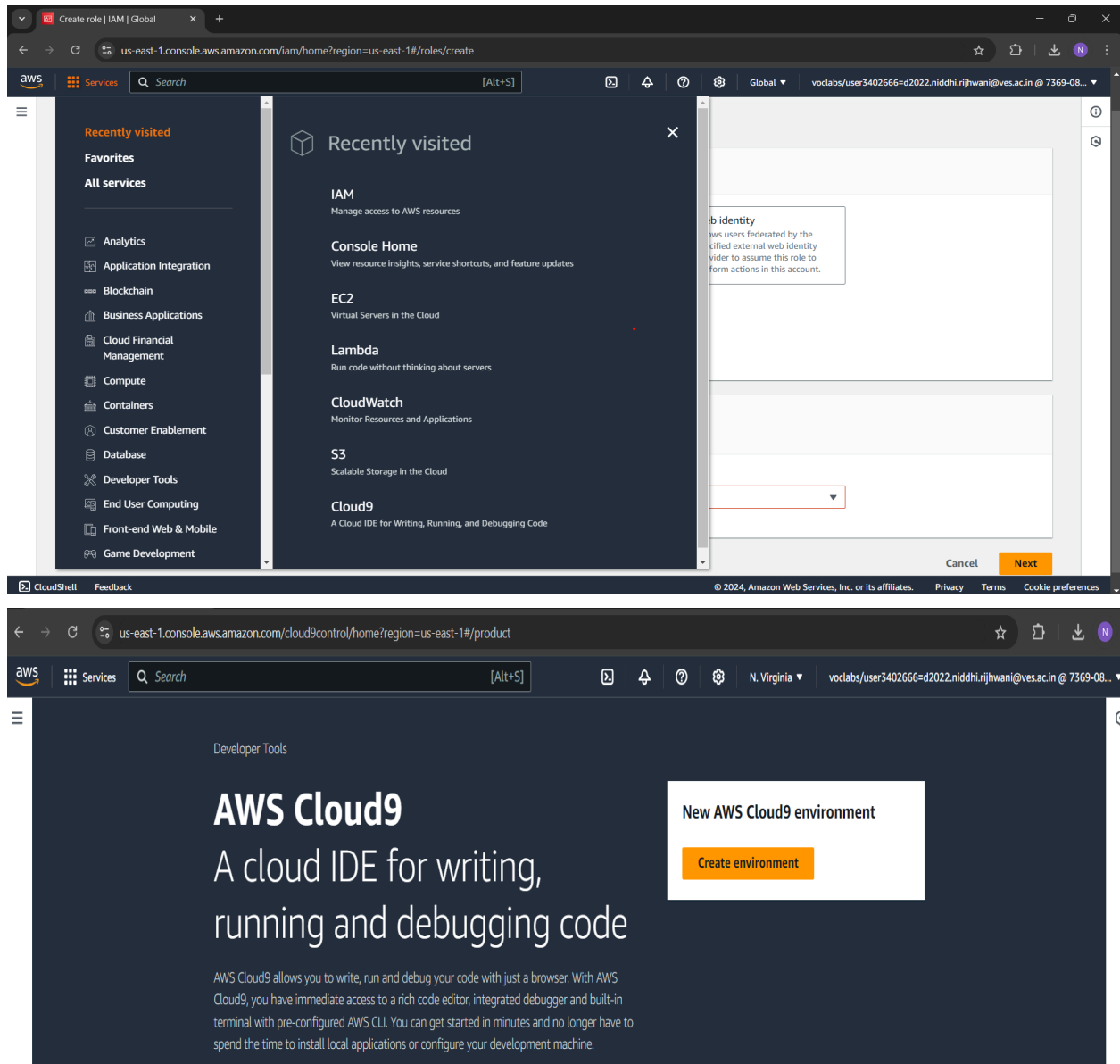
ⓘ For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. Find out more ↗ ✕

AWS Cloud9 > Environments > Create environment

Create environment Info

Details

Name

WebAppIDE

Limit of 60 characters, alphanumeric and unique per user.

Description – optional

creating env.

Limit 200 characters.

Environment type Info

Determines what the Cloud9 IDE will run on.

● **New EC2 instance**
Cloud9 creates an EC2 instance in your account. The configuration of your EC2 instance cannot be changed by Cloud9 after creation.

○ **Existing compute**
You have an existing instance or server that you'd like to use.

New EC2 instance

Instance type Info

The memory and CPU of the EC2 instance that will be created for Cloud9 to run on.

● **t2.micro (1 GiB RAM + 1 vCPU)**
Free-tier eligible. Ideal for educational users and exploration.

○ **t3.small (2 GiB RAM + 2 vCPU)**
Recommended for small web projects.

○ **m5.large (8 GiB RAM + 2 vCPU)**
Recommended for production and most general-purpose development.

○ **Additional instance types**
Explore additional instances to fit your needs.

Platform Info

This will be installed on your EC2 instance. We recommend Amazon Linux 2023.

Amazon Linux 2023 ▼

Timeout

How long Cloud9 can be inactive (no user input) before auto-hibernating. This helps prevent unnecessary charges.

30 minutes ▼

Network settings Info

Connection

How your environment is accessed.

● **AWS Systems Manager (SSM)**
Accesses environment via SSM without opening inbound ports (no ingress).

○ **Secure Shell (SSH)**
Accesses environment directly via SSH, opens inbound ports.

▶ VPC settings Info

▶ **Tags – optional** Info

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

ⓘ **The following IAM resources will be created in your account**

- **AWSServiceRoleForAWSCloud9** – AWS Cloud9 creates a service-linked role for you. This allows AWS Cloud9 to call other AWS services on your behalf. You can delete the role from the AWS IAM console once you no longer have any AWS Cloud9 environments. Find out more ↗
- **AWSCloud9SSMAccessRole** and **AWSCloud9SSMInstanceProfile** – A service role and an instance profile are automatically created if Cloud9 accesses its EC2 instance through AWS Systems Manager. If your environments no longer require EC2 instances that block incoming traffic, you can delete these roles using the AWS IAM console. Find out more ↗

Cancel   Create
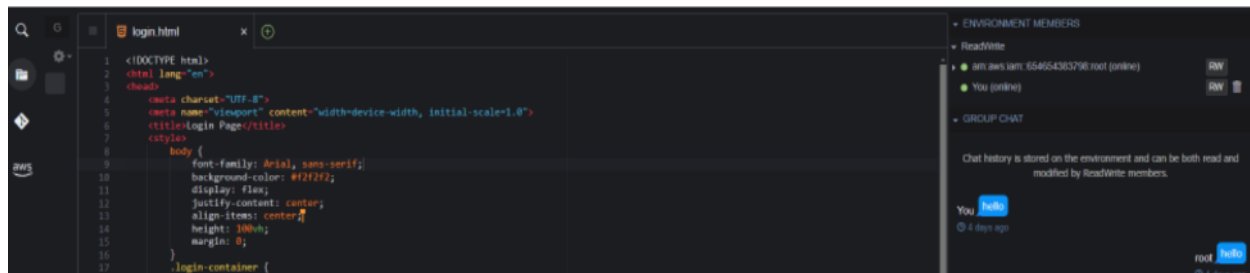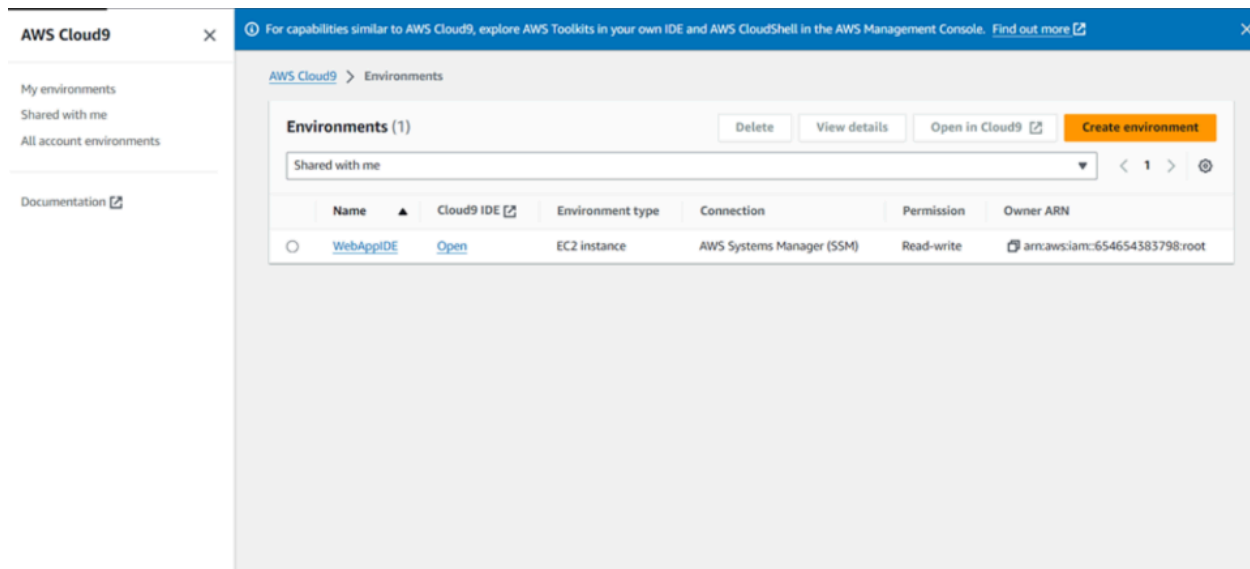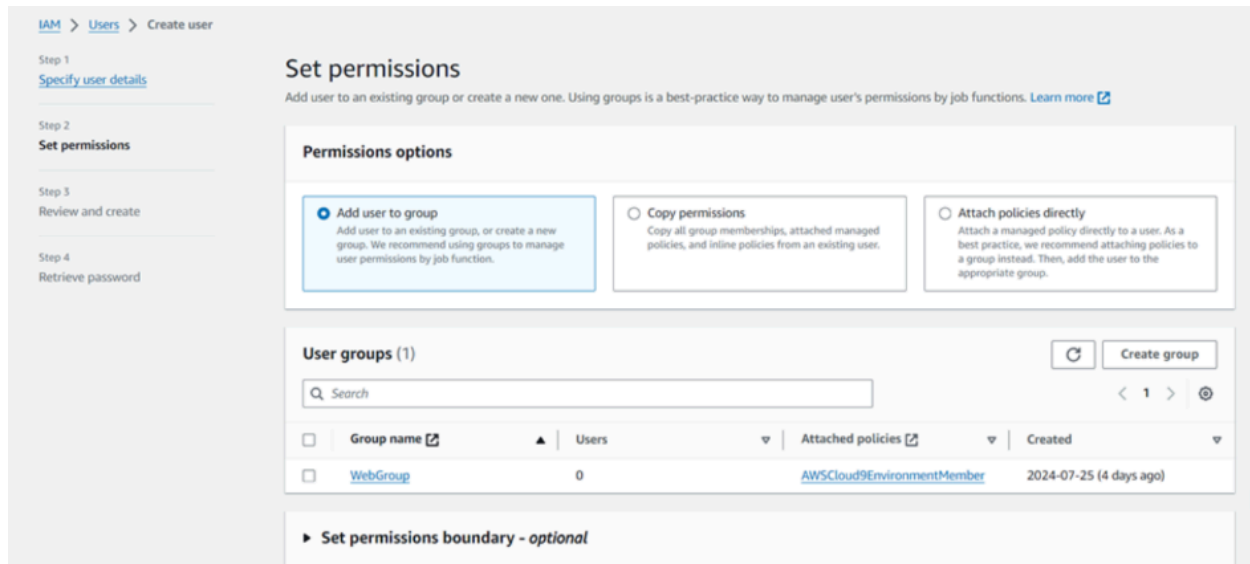
Conclusion: Understanding cloud infrastructure is essential for leveraging the power of modern computing. AWS Cloud9 provides a robust, cloud-based IDE that enhances the software development process by offering a pre-configured environment, accessibility, and collaborative features. Setting up AWS Cloud9 and demonstrating its collaborative capabilities shows how teams can efficiently work together, making the development process faster and more streamlined.