Cloud Security Essentials

1-How to configure, develop and maintain Security and Privacy in cloud?

Ans- **Configuration:**

- Set up **firewalls, encryption, and access controls**.
- Use **multi-factor authentication (MFA)** and secure APIs.
- Configure **data backups and disaster recovery** plans.

Development:

- Follow **secure coding practices** and **compliance standards** (like GDPR, ISO, HIPAA).
- Implement **encryption** for data in transit and at rest.
- Use **tokenization and anonymization** for sensitive data.

Maintenance:

- Regularly **update software** and **patch vulnerabilities**.
- Monitor cloud systems with **security tools (SIEM, IDS/IPS)**.
- Conduct **security audits**, **penetration testing**, and **user training**.

2-What is Portability in cloud?

Ans- **Portability in cloud** refers to the ability to **move applications, data, and services** easily from one cloud environment to another (e.g., from AWS to Azure) **with minimal changes**.

In short:

- It means **"no vendor lock-in."**
- Ensures flexibility to **switch providers** or run apps on **multiple platforms**.
- Example: Running the same containerized app on **AWS, Azure, or Google Cloud** using **Docker or Kubernetes**.

3-What is Reliability and high Availability in cloud?

Ans- **Reliability:**

- The ability of a cloud system to **perform consistently** and **recover quickly** from failures.
- Ensures services run **smoothly without interruptions**.
- Example: Using **data replication** and **auto-recovery mechanisms**.

High Availability (HA):

- Ensures that services are **always accessible**, even if some components fail.
- Achieved using **redundancy, load balancing, and failover systems**.
- Example: Hosting your app on **multiple servers/zones** to avoid downtime.

In short:

- **Reliability** = Consistent performance
- **High Availability** = Minimum or no downtime

4-Describe Mobility Cloud Computing

Ans-**Mobility in cloud computing** refers to the ability to **access cloud services, applications, and data anytime, anywhere, and from any device** (like smartphones, tablets, or laptops) using the internet.

In short:

- Enables **remote access** to cloud resources.
- Supports **BYOD (Bring Your Own Device)** environments.
- Ensures **real-time collaboration and productivity**.

Example:

Using **Google Drive** or **Microsoft 365** on your phone or laptop from any location.

Mobility makes cloud flexible and user-friendly, especially for **on-the-go users and remote work**.

5-Describe AWS, Azure, Google cloud Platforms

Ans- **1. AWS (Amazon Web Services):**

- **Launched by:** Amazon in 2006
- **Key Services:** EC2 (compute), S3 (storage), RDS (database), Lambda (serverless)
- **Strengths:** Market leader, **wide range of services**, global presence, strong security
- **Used by:** Netflix, Airbnb, NASA

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2. Microsoft Azure:

- **Launched by:** Microsoft in 2010
- **Key Services:** Azure Virtual Machines, Azure Blob Storage, Azure SQL Database
- **Strengths: Integration with Microsoft tools** (Windows, Office, Active Directory), hybrid cloud support
- **Used by:** Adobe, LinkedIn, Samsung

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3. Google Cloud Platform (GCP):

- **Launched by:** Google in 2011
- **Key Services:** Compute Engine, Cloud Storage, BigQuery, Kubernetes Engine
- **Strengths: AI/ML capabilities**, data analytics, fast networking, Kubernetes leader
- **Used by:** Spotify, PayPal, Twitter

In short:

- **AWS** = Most mature and feature-rich
- **Azure** = Best for Microsoft ecosystem
- **GCP** = Best for data, AI, and innovation

6-Accessing AWS, Azure and Google cloud Platforms (any one portal)

1. Ans- **Go to AWS Console:**
    - Open your browser and visit: https://aws.amazon.com/console
2. **Sign In / Create Account:**
    - Click **"Sign in to the Console"**.
    - If new, choose **"Create a new AWS account"** and follow the steps to register.
3. **Access Services:**
    - After login, you'll land on the **AWS Management Console**.
    - From here, you can access services like:
        - EC2 (Virtual Servers)
        - S3 (Storage)
        - RDS (Databases)
        - Lambda (Serverless Functions), etc.
4. **Free Tier:**
    - AWS offers a **Free Tier** for 12 months with limited usage—great for learning.

You can similarly access:

- **Azure:** https://portal.azure.com
- **Google Cloud (GCP):** https://console.cloud.google.com

7-Create compute, create network, create storage on AWS , Azure and GCP

Ans- **1. AWS (Amazon Web Services)**

- **Create Compute**:
    - Go to EC2 → Launch Instance → Choose OS → Set instance type → Configure → Launch.
- **Create Network**:

    - Go to VPC → Create VPC → Add CIDR block → Create Subnet → Add Internet Gateway → Route table setup.
- **Create Storage**:
    - Go to S3 → Create Bucket → Name it → Choose region → Set permissions → Create.

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2. Microsoft Azure

- **Create Compute**:
    - Go to Azure Portal → Virtual Machines → Create → Select image, size, region → Review + Create.
- **Create Network**:
    - Go to Virtual Networks → Create → Set address space → Create Subnet → Attach to VM if needed.
- **Create Storage**:
    - Go to Storage Accounts → Create → Set name, region, and performance → Create.

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3. Google Cloud Platform (GCP)

- **Create Compute**:
    - Go to Compute Engine → VM Instances → Create Instance → Select machine type, region → Create.
- **Create Network**:
    - Go to VPC Network → Create VPC → Add Subnet → Configure firewall rules if needed.
- **Create Storage**:
    - Go to Cloud Storage → Create Bucket → Set name, location, and permissions → Create.

8-Compare Cloud pricing of resources and services on all platform Amazon Web Services (AWS)

Ans-

Platform	Compute (Basic)	Storage (1 GB)	Outbound Transfer
AWS	$0.0116/hr	$0.023	$0.09/GB
Azure	$0.009/hr	$0.0208	$0.087/GB
GCP	$0.010/hr	$0.020	$0.12/GB