1. **What is Amazon EC2?**

   Amazon EC2 (Elastic Compute Cloud) is a web service that provides resizable compute capacity in the cloud, enabling users to run applications on virtual servers.

2. **What are the main features of EC2?**

   Features include scalable instances, Elastic IPs, Auto Scaling, security groups, and integration with AWS services

3. **What are the different types of EC2 instances?**

   - **General Purpose**: Balanced performance (e.g., t2, t3)

   - **Compute Optimized**: High-performance processing (e.g., c5).

   - **Memory Optimized**: Large-scale in-memory applications (e.g., r5).

   - **Storage Optimized**: High I/O storage (e.g., i3).

   - **Accelerated Computing**: GPU-based workloads (e.g., p3).

4. **What is an AMI, and why is it important?**

   An AMI (Amazon Machine Image) is a pre-configured template that includes the OS, application server, and software, allowing instances to launch with predefined configurations.

5. **What is the default storage for EC2 instances?**

   Elastic Block Store (EBS) for persistent storage, or Instance Store for temporary storage.

6. **What is the difference between On-Demand, Reserved, and Spot Instances?**

   - **On-Demand**: Pay-as-you-go with no long-term commitment.

   - **Reserved**: Discounted rates with upfront payment and long-term usage.

   - **Spot**: Discounted prices for unused capacity but may be terminated.

7. **What is an Elastic IP in EC2?**

   A static IPv4 address that you can allocate to an instance for consistent access.

8. **What is the purpose of EC2 Security Groups?**

   Security Groups act as virtual firewalls, controlling inbound and outbound traffic to instances.

9. **What operating systems are supported by EC2?**

EC2 supports Windows, Linux distributions (e.g., Ubuntu, CentOS), and macOS.

10. **How do you access an EC2 instance remotely?**

By using SSH for Linux instances and RDP (Remote Desktop Protocol) for Windows instances.

11. **What is an Instance Type in EC2?**

Instance types define the virtual hardware of the instance, such as CPU, memory, and storage

capacity.

12. **What is the difference between EBS and Instance Store?**

- **EBS**: Persistent storage that remains after instance termination.

- **Instance Store**: Temporary storage tied to the lifecycle of the instance.

13. **What happens when you stop or terminate an EC2 instance?**

- **Stop**: The instance is shut down, but data on EBS persists.

- **Terminate**: The instance is deleted, and attached EBS volumes (not marked for retention) are

  removed.

14. **What is Auto Scaling, and how does it work with EC2?**

Auto Scaling automatically adjusts the number of EC2 instances based on demand. It ensures

high availability and cost-efficiency.

15. **What is the difference between EC2 and AWS Lambda?**

- **EC2**: Offers full server control for applications.

- **Lambda**: A serverless service where code runs without provisioning or managing servers.

16. **What is EC2 User Data, and when is it used?**

User Data scripts are executed during instance launch to automate tasks like software

installation or configuration.

17. **What is the role of IAM roles in EC2?**

    IAM roles grant temporary permissions to EC2 instances, allowing them to securely access AWS

    resources without storing credentials.

18. **What is the difference between public and private IP addresses in EC2?**

    - **Public IP**: Accessible from the internet.

    - **Private IP**: Used for internal communication within a VPC.

19. **What is a Placement Group in EC2, and what are its types?**

    A placement group determines how instances are placed across hardware:

    - **Cluster**: Instances are placed close for low latency.

    - **Spread**: Instances are distributed across hardware for fault tolerance.

    - **Partition**: Instances are grouped into partitions for big data applications.

20. **What are EC2 Reserved Instances, and when should you use them?**

    Reserved Instances offer discounted pricing for predictable workloads requiring long-term usage.

21. **How does EC2 handle high availability?**

    EC2 ensures high availability by deploying instances across multiple Availability Zones (AZs)

    within a region.

22. **How can you ensure data security for EC2 instances?**

    - Use Security Groups and Network ACLs.

    - Encrypt data in transit (SSL/TLS) and at rest (EBS encryption).

    - Use IAM roles for secure access to AWS resources.

23. **How do you monitor EC2 instance performance?**

    AWS CloudWatch provides metrics like CPU utilization, disk I/O, and network performance.

24. **What are the advantages of using Spot Instances?**

    - Cost savings of up to 90%.

- Suitable for fault-tolerant or batch processing workloads.

25. **What tools can you use to automate EC2 deployments?**

- AWS CloudFormation

- AWS Elastic Beanstalk

- Terraform

26. **What is Elastic Load Balancing, and how does it work with EC2?**

   Elastic Load Balancing distributes incoming traffic across multiple EC2 instances to ensure high

   availability and fault tolerance.

27. **How do you troubleshoot an EC2 instance that is not reachable?**

- · Check security group rules for SSH/RDP access.

- Verify the network ACL and routing table.

- Ensure the correct key pair and IP address are used.

28. **What is a Nitro Hypervisor in EC2?**

   Nitro is an advanced hypervisor that improves performance, security, and resource isolation for

   EC2 instances.

29. **How do you manage multiple EC2 instances at scale?**

   Use Auto Scaling Groups, AWS Systems Manager, and third-party tools like Ansible or Chef.

30. **What is the significance of Lifecycle Manager for EC2 instances?**

   Lifecycle Manager automates the creation, retention, and deletion of EBS snapshots to manage

   backup policies.

.