EC2 (Elastic Compute Cloud)

Concept: Virtual servers for apps and services.

Steps:
1. Launch instance → Choose AMI (Amazon Linux/Ubuntu).
2. Select instance type (t2.micro).
3. Configure VPC/Subnet, Security Group (22/80).
4. Launch with Key Pair.
5. SSH: ssh -i key.pem ec2-user@.
6. Install Apache, test index.html.

Interview Notes:
- On-Demand vs Reserved vs Spot.
- EBS vs Instance Store.
- SG vs NACL.

S3 (Simple Storage Service)

Concept: Object storage.

Steps:
1. Create bucket.
2. Enable versioning.
3. Upload & make file public.
4. Set lifecycle rules.
5. Enable cross-region replication.

Interview Notes:
- Durability 11 nines.
- Strong consistency.
- Versioning & MFA Delete.

VPC (Virtual Private Cloud)

Concept: Private network.

Steps:
1. Create VPC CIDR 10.0.0.0/16.
2. Create public/private subnets.
3. Attach IGW & route public subnet.
4. NAT GW for private subnet.

Interview Notes:
- NAT = outbound only.
- SG stateful vs NACL stateless.
- Peering vs Transit Gateway.

RDS (Relational Database Service)

Concept: Managed SQL.

Steps:
1. Create DB (MySQL/Postgres).
2. Pick db.t2.micro.
3. Multi-AZ optional.
4. SG allow 3306.
5. Connect from EC2 via mysql.

Interview Notes:
- Multi-AZ = HA.
- Read Replica = scaling.
- IAM auth option.

DynamoDB

Concept: NoSQL DB.

Steps:
1. Create Table (Partition Key UserID).
2. Insert item.
3. Query.
4. Enable auto scaling.
5. Use DAX for cache.

Interview Notes:
- Partition key distributes load.
- Strong vs eventual consistency.
- TTL cleanup.

IAM (Identity & Access Management)

Concept: Security & access control.

Steps:
1. Create user + policy.
2. Create role (S3 access).
3. Attach to EC2.
4. Test aws s3 ls.

Interview Notes:
- Roles = temporary creds.
- Policies = JSON.
- MFA essential.

Monitoring (CloudWatch & CloudTrail)

CloudWatch Steps:
1. View metrics.
2. Alarm for CPU>70%.

CloudTrail Steps:
1. Enable trail to S3.
2. Check API events.

Interview Notes:
- CloudWatch = metrics.
- CloudTrail = audit.
- EventBridge automation.

Load Balancer + Auto Scaling

Concept: HA + scaling.

Steps:
1. Launch 2 EC2s.
2. Create ALB → register targets.
3. Test ALB DNS.
4. Create ASG (min 1, max 3).

Interview Notes:
- ALB = HTTP/HTTPS.
- NLB = TCP.
- Scaling types: manual/dynamic/predictive.

Lambda + API Gateway

Concept: Serverless compute.

Steps:
1. Create Lambda (Python hello).
2. Create API Gateway REST.
3. Deploy + test endpoint.

Interview Notes:
- Event-driven.
- 15 min limit.
- Cold start issues.

CloudFormation

Concept: Infrastructure as Code.

Steps:
1. Upload YAML template (S3 bucket).
2. Deploy stack.

Interview Notes:
- Repeatable infra.
- Drift detection.
- Compare with Terraform.

CodePipeline (CI/CD)

Concept: Deployment automation.

Steps:
1. Source (CodeCommit).
2. Build (CodeBuild).
3. Deploy (CodeDeploy).
4. Test auto trigger.

Interview Notes:
- Blue/Green vs Rolling.
- Rollback support.
- GitHub/Jenkins integration.