Class Test 2 Topics

Topics: CSE 4267 - Cloud Computing

DNS (Amazon Route 53)

1. What is Amazon Route 53, and how does it facilitate domain name resolution in AWS?
2. Differentiate between Public Hosted Zones and Private Hosted Zones in Route 53. When would you use each?
3. What are the different routing policies in Route 53, and how do they impact traffic distribution?
4. How do Route 53 health checks contribute to application availability?
5. A company wants to implement a multi-region failover strategy using Route 53. Design a routing policy that ensures high availability and minimal downtime.

Amazon SQS and SNS

1. What is Amazon Simple Queue Service (SQS), and how does it decouple application components?
2. Differentiate between Standard Queues and FIFO Queues in SQS. When should you use each?
3. How does Amazon Simple Notification Service (SNS) facilitate message broadcasting?
4. Explain message filtering in SNS and how it optimizes message delivery.
5. A ride-sharing company needs a messaging system that sends trip updates to drivers in real time while ensuring reliable processing of ride requests. Design a solution using SQS and SNS.

Amazon Simple Email Service (SES)

1. What is Amazon Simple Email Service (SES), and how does it help businesses send emails at scale?
2. Differentiate between Transactional Emails and Marketing Emails in SES. How does SES optimize delivery for each?
3. What are SES Sending Quotas, and how do they impact email-sending limits?
4. Explain SPF, DKIM, and DMARC authentication mechanisms in SES and their role in improving email deliverability.
5. An e-commerce company wants to send automated order confirmations and promotional campaigns while ensuring high email deliverability. Design an SES-based solution for this requirement.

Virtualization

1. What is virtualization in cloud computing, and how does it optimize resource utilization?
2. Differentiate between Type 1 and Type 2 hypervisors. Provide examples of each.
3. How does virtual machine (VM) migration work, and what are the challenges associated with it?
4. Explain how virtualization supports Infrastructure as a Service (IaaS) in cloud computing.
5. A company wants to reduce physical hardware costs and enable better scalability by migrating workloads to a virtualized environment. Design a virtualization strategy to achieve this.

Containerization (Docker)

1. What is containerization, and how does it differ from traditional virtual machines (VMs)?
2. Explain how Docker enables efficient application deployment using containers.
3. What is Kubernetes, and how does it help manage containerized applications at scale?
4. Differentiate between Containers and virtual machines. When would you choose one over the other?
5. A fintech startup wants to deploy its microservices-based application with high scalability and reliability. Design a containerization solution using Docker and Kubernetes.

CDN (Amazon CloudFront)

1. What is Amazon CloudFront, and how does it enhance web content delivery?
2. Differentiate between an **origin**, an **edge location**, and a **cache behavior** in CloudFront.
3. What are signed URLs and signed cookies in CloudFront, and how do they help secure content delivery?
4. How does CloudFront integrate with AWS Shield and AWS WAF to improve security?
5. A global media streaming company wants to optimize video delivery while ensuring content is protected from unauthorized access. Design a CloudFront distribution strategy for this use case.

Database(Amazon RDS)

1. What is Amazon RDS, and how does it simplify database management in AWS?
2. Differentiate between RDS Multi-AZ Deployment and Read Replicas. When should each be used?
3. What database engines are supported by Amazon RDS, and how do you choose the right one for your application?
4. Explain how RDS backup and snapshot features help with database recovery.
5. A high-traffic e-commerce platform needs a scalable and highly available relational database solution. Design an RDS architecture to handle this requirement.