INT364:CLOUD ARCHITECTURE AND IMPLEMENTATION-II

L:2 T:0 P:2   Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: Recall the core concepts of cloud computing and identify the various AWS cloud services available.

CO2 :: Explain the purpose and functionalities of essential AWS services like EC2, S3, Redshift, and CloudFront.

CO3 :: Identify the appropriate AWS service for specific tasks within a cloud environment.

CO4 :: Design a simple data pipeline using AWS services to store, transform, and analyze data.

CO5 :: Evaluate the cost implications of different monitoring and logging solutions in AWS.

CO6 :: Analyze the trade-offs between different cloud solution architectures for a specific scenario.

Unit I

Introduction to Cloud Services : AWS Cloud services overview, AWS account setup and management, Designing and building web applications on AWS, Amazon EC2 for web server instances, Scaling web applications with Auto Scaling, Load balancing with Elastic Load Balancing (ELB)

Unit II

Cloud Data Pipelines : Introduction to data pipelines, Amazon S3 for object storage, AWS Glue for data transformation, Amazon Redshift for data warehousing, Use AWS services to analyse clickstream data, Clickstream data analysis, Adjust the data analytics pipeline

Unit III

Website Environment and other services : Distribution with CloudFront, Introduction to additional AWS services, Building serverless applications, Automating tasks with AWS Lambda, Choosing the right AWS services

Unit IV

Monitoring and Security services : Versioning and object-level logging, VPC flow log, route table and security group settings, network ACL, network firewall, AWS KMS key policy, encryption, Amazon CloudTrail, Configuration of AWS resources, Cost assessment for monitoring and logging

Unit V

Building Microservices with CI/CD Pipelines : Microservices architecture principles, Containerization with Docker, CI/CD pipeline concepts and tools, Deploying microservices to AWS, Serverless Architectures, AWS Cloud9 IDE, ECR repositories and cluster, CodeDeploy and CodePipeline

Unit VI

Exploring Advanced Cloud Solutions : Sustainability in cloud, Case studies, System management, Troubleshooting in cloud, Datacentre maintenance, Storing and archiving data

List of Practicals / Experiments:

List of Practicals

- Hands-on practical on scalable website deployment
- Hands-on practical on dynamic auto scaling website deployment
- Hands-on practical on data warehousing and transformation
- Working on data analytics in websites
- Create an application environment with Cloudfront and Lambda
- Working on website logs and monitoring
- Hands-on practical with securing an application environment
- Working on integration of microservices with AWS
- Code deployment in microservices

- Working on case-studies with cloud environment

References:
1. WELCOME TO AWS DOCUMENTATION by AMAZON, NA