CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY & RESEARCH (DEPSTAR)

Department of Computer Science & Engineering

ACADEMIC YEAR: 2022-23

Semester: 7th
Subject Code: CS451
Subject Name: Advance Computing

Course Outcomes (COs):

CO1	Assess and examine advantages and disadvantages of cloud computing and virtualization technology.
CO2	Compose services in a distributed computing environment to achieve tasks relevant to a knowledge-based business or public service
CO3	Evaluate a set of business requirements to determine suitability for a cloud computing delivery model.
CO4	Explore the various cloud computing architectures and paradigms.
CO5	Deployment of cloud and identify security implications in cloud computing.

Practical List

Sr No	Aim	Hrs.	CO
1	To implement Cloud-based infrastructures and services, it is required to set up the complete system requirements. Researchers & industry-based developers can focus on specific system design issues that they want to investigate, without taking more concerned about the low-level details so the Cloudsim is very much useful for these activities and it can support simulation environment to implement cloud-based infrastructure solutions. Overview of Cloudsim functionalities: Support for modeling and simulation of large-scale Cloud computing data centers support for modeling and simulation of virtualized server hosts, with customizable policies for provisioning host resources to virtual machines support for modeling and simulation of data center network topologies and message-passing applications support for dynamic insertion of simulation elements, stop and resume of simulation support for user-defined policies for allocation of hosts to virtual machines and policies for allocation of host resources to virtual machines **Perform Cloud Computing Set up using Cloudsim Tool:** 1. Introduction to Cloudsim tool. 2. Perform Installation steps of Cloudsim on NetBeans.	2	CO4
2	Cloud Computing aims for Internet based application services to deliver reliable, secure, fault-tolerant, scalable infrastructure. It is a tremendous challenging task to model and schedule the different applications and services on real cloud infrastructure which requires to handle different workload and energy performance parameters. Consider the real-world analogy into cloudsim and **Perform following Programs:** (1)Write a program in cloudsim using **NetBeans IDE** to create a datacenter with one host and run four cloudlets on it. **(2)**Write a program in cloudsim using **NetBeans IDE** to create a datacenter with three hosts and run three cloudlets on it.	2	CO2
3	**Perform following using Cloud Analyst:** **1.** Install a Cloud Analyst and Integrate with NetBeans. Monitor the performance of an Existing Algorithms given in Cloud Analyst. Modify or propose a new load balancing algorithm compatible with Cloud Analyst.	2	CO4

4	**Perform following using Google Cloud Platform:** 1. Introduction to Google Cloud. 2. Perform Google Cloud Hands-on Labs. Link: https://www.cloudskillsboost.google/focuses/2794?parent=catalog Create and setup a Virtual Machine, GCP Essentials and Compute Engine: Qwik Start - Windows on Google Cloud Platform. Virtual Machine Link: https://www.cloudskillsboost.google/focuses/3563?parent=catalog **2.**Compute Engine: Qwik Start – Windows Link: https://www.cloudskillsboost.google/focuses/560?parent=catalog	2	CO1, CO4
5	Introduction to cloud Shell and gcloud on Google Cloud. Perform Following task: Practice using gcloud commands. Connect to compute services hosted on Google Cloud. Link: https://www.cloudskillsboost.google/focuses/563?parent=catalog	2	CO2
6	Perform Cluster orchestration with Google Kubernetes Engine. Link: https://www.cloudskillsboost.google/focuses/878?parent=catalog	2	CO2
7	Set Up Network and HTTP Load Balancers on Google Cloud Platform. Link: https://www.cloudskillsboost.google/focuses/12007?parent=catalog	2	CO3
8	Create and Manage Cloud Resources: Challenge Lab on Google cloud Platform. Link: https://www.cloudskillsboost.google/focuses/10258?parent=catalog	2	CO2
9	1. Create and Setup Amazon Elastic Compute Cloud (EC2) on Amazon cloud Platform. Link: https://explore.skillbuilder.aws/learn/course/external/view/elearning/49/introduction-to-amazon-elastic-compute-cloud-ec2 2. Create and setup monitoring service for AWS cloud resources and the applications you run on AWS (Amazon CloudWatch). Link: https://explore.skillbuilder.aws/learn/course/external/view/elearning/203/introduction-to-amazon-cloudwatch 3. Create an AWS Identity and Access Management (IAM) group and user, attach a policy and add a user to a group. Link: https://explore.skillbuilder.aws/learn/course/external/view/elearning/120/introduction-to-aws-identity-and-access-management-iam	2	CO2
10	Create and setup Amazon Simple Storage Service (Amazon S3) Block Public Access on Amazon Cloud Platform. Link: https://explore.skillbuilder.aws/learn/course/external/view/elearning/146/amazon-simple-storage-service-amazon-s3-block-public-access	2	CO3
11	Create and deploy project using AWS Amplify Hosting Service of AWS. Link: https://docs.aws.amazon.com/amplify/latest/userguide/getting-started.html	2	CO5
12	Simulating networks using iFogSim. Link: https://github.com/Cloudslab/iFogSim	2	CO4
13	A Comparative Study of Docker Engine on Windows Server vs Linux Platform Comparing the feature sets and implementations of Docker on Windows and Linux and Build and Run Your First Docker Windows Server Container Walkthrough installing Docker on Windows 10, building a Docker image and running a Windows container. Link: https://github.com/docker/labs/tree/master/beginner/	2	CO1