CLOUD COMPUTING LAB

Course Code	23CS3651	Year	III	Semester	II
Course Category	PCC	Branch	CSE	Course Type	Practical
Credits	1.5	L-T-P	0-0-3	Prerequisites	DBMS,OS, PYTHON,JAVA
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

CO No.	Course Outcome	Bloom's Level
CO1	Apply cloud service models, deployment models, and core technologies to design cloud-based solutions for given problems.	L3
CO2	Implement cloud experiments using virtual machines, containers, and platform services in appropriate cloud environments.	L3
CO3	Develop an effective report documenting cloud experiments, configurations, and results.	L3
CO4	Apply technical knowledge for a given problem and express it with effective oral communication.	L3
CO5	Analyze performance, security, scalability, and system behavior of cloud-based applications.	L4

Syllabus

Exp No.	CONTENTS	Mapped CO
1.	Lab on web services	CO1,CO2,CO3, CO4, CO5
2.	Lab on IPC, messaging, publish/subscribe	CO1,CO2,CO3, CO4, CO5
3.	Install Virtual Box/VMware Workstation with different flavours of Linux or windows OS on top of windows8 or above.	CO1,CO2,CO3, CO4, CO5
4.	Install a C compiler in the virtual machine created using Virtual Box and execute Simple Programs.	CO1,CO2,CO3, CO4, CO5
5.	Create an Amazon EC2 instance and set up a web-server on the instance and associate an IP address with the instance. In the process, create a security group allowing access to port 80 on the instance.	CO1,CO2,CO3, CO4, CO5
6.	Install Google App Engine. Create a hello world app and other simple web applications using python/java.	CO1,CO2,CO3, CO4, CO5

7.	Start a Docker container and set up a web-server (e.g. apache2 or Python based Flask micro web framework) on the instance. Map the host directory as a data volume for the container.	**CO1,CO2,CO3, CO4, CO5**
8.	Find a procedure to transfer the files from one virtual machine to another virtual machine. Similarly, from one container to another container.	**CO1,CO2,CO3, CO4, CO5**
9.	Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)	**CO1,CO2,CO3, CO4, CO5**
10.	Install Hadoop single node cluster and run simple applications like word count.	**CO1,CO2,CO3, CO4, CO5**
11.	Utilize OpenFaaS – Serverless computing framework and demonstrate basic event driven function invocation.	**CO1,CO2,CO3, CO4, CO5**
12.	Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.	**CO1,CO2,CO3, CO4, CO5**

Learning Resources

Text Books

1. Mastering Cloud Computing, 2nd edition, Rajkumar Buyya, Christian Vecchiola, Thamarai Selvi, Shivananda Poojara, Satish N. Srirama, McGraw Hill, 2024.
2. Distributed and Cloud Computing, Kai Hwang, Geoffery C. Fox, Jack J. Dongarra, Elsevier, 2012.

Reference Books

1. 1 Cloud Computing, Theory and Practice, Dan C Marinescu, 2nd edition, MK Elsevier, 2018.
2. Cloud Computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, Wiley, 2011.
3. Online documentation and tutorials from cloud service providers (e.g. AWS, Google App Engine)
4. Docker, Reference documentation, https://docs.docker.com/reference/

OpenFaaS, Serverless Functions Made Simple, https://docs.openfaas.com/