

Cloud Computing and IoT Lab

Course Code: PCCCS692

Semester: VI



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Course Objectives:**The student should be made to:**

- Be exposed to tool kits for grid and cloud environment.
- Be familiar with developing web services/Applications in grid framework
- Learn to run virtual machines of different configuration.
- Learn to use Google Cloud Platform

Course Outcomes:

- On completion of this course, the students will be able to:
- Configure various virtualization tools such as Virtual Box, VMware workstation.
- Design and deploy a web application in a PaaS environment.
- Learn how to simulate a cloud environment to implement new schedulers.
- Install and use a generic cloud environment that can be used as a private cloud.
- Manipulate large data sets in a parallel environment.

Cloud Computing Lab Assignments

1. Install Virtualbox/VMware Workstation with different flavours of linux or windows OS on top of windows 7 or 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Creating Public Cloud Account in AWS, GCP, Azure, OCI (Free tier) and do a comparative analysis of the similar services.
4. Creating one GCP instance (Free tier) and login into it with Key.
5. Configuring the security policies of that GCP EC2 instance and login to that server using SSH with password.
6. Host your own web-based project to that GAE launcher.
7. Host and connect your project database using GCP bucket.
8. Store and access the required information to and from GCP buckets.
9. Create Image from Snapshots of the instance and create another server with that image in GCP.
10. Live VM migration in different GCP accounts of the live projects.
11. Building machine learning models with GCP.
12. Install and configure Aneka 5.0 with master node and worker nodes.
13. Run Inbuilt Application top of Private Aneka Cluster.
14. Run your own application top of Private Aneka Cluster.

IOT Lab Assignments

1. Introduction to Arduino platform and programming
2. Introduction to Raspberry PI platform and Python Programming
3. Simple program digital read/write using LED and Switch -Analog read/write using sensor and actuators.
4. Upload data from environmental sensor to cloud server.
5. Introduction to MQTT/ CoAP and sending sensor data to cloud using Raspberry-Pi/Arduino
6. Design a web interface to control connected LEDs remotely using Raspberry-Pi/Arduino.
7. Install, configure XMPP server and deployed an application on Raspberry Pi/ Arduino. Write client applications to get services from the server application.