CSE427:VIRTUALIZATION AND CLOUD COMPUTING LABORATORY

L:0 T:0 P:2 Credits:1

Course Outcomes: Through this course students should be able to

CO1 :: define key technologies and capabilities required for setting up IT virtualization and cloud computing infrastructure

CO2 :: enumerate the ultimate goal of assessing, measuring and planning for the deployment of cloud-based IT resources

CO3 :: understand the knowledge of cloud computing technology architectures based on Softwareas- a-Service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS) delivery models.

CO4 :: observe the applications of tools used in Cloud environment

CO5 :: articulate the IT resource optimization with cloud-based algorithms

CO6 :: illustrate the usage of microservices and cloud-based resources

List of Practicals / Experiments:

Container technology

- installation
- Working with containers
- Configuring containers

Understanding virtualization

- Virtualization and Cloud Computing
- Virtualizing servers
- Virtualizing desktops
- Virtualizing applications
- BIOS setting of Physical machine for virtualization technology

Understanding hypervisors

- Exploring the hypervisors
- Understanding type 1 hypervisor
- Understanding type 2 hypervisor
- Resource allocation

Understanding virtual machines

- Examining CPU’s in a virtual machine
- Examining memory in a virtual machine
- Examining network resources in a virtual machine
- Examining storage in a virtual machine
- Understanding how a virtual machine works
- Understanding virtual machine clones
- Understanding templates
- Understanding snapshots
- Understanding OVF

Creating a virtual machine

- VM configuration
- Full and Linked Clone in VMware Workstation
- Exploring VMware Workstation
- Installation of VMware Workstation

Installing a guest OS

- Installing windows on a virtual machine
- Loading windows into a virtual machine
- Installing vmware tools
- Understanding configuration options
- Optimizing a new virtual machine
- Installing linux on a virtual machine

Protecting virtual machine

- Cloning a virtual machine
- Saving a virtual machine state
- Creating a snapshot

Management With vCenter Server

- vCenter 6 Overview
- Creating a Virtual Machine in HOL
- Cloning VMs and using Templates
- Tagging and Search to find objects quickly
- Monitoring events and creating alarms
- Migrating VMs with VMware vMotion
- vSphere Monitoring and Performance

Introduction to vSphere Network and Security

- Understanding Single Sign On

Simulation using cloudsim

- Installation of cloudsim
- Setup of cloudsim
- Working with Cloudsim core package
- Understanding Entity Classes
- Simulate a cloud scenario using CloudSim and run a scheduling algorithm

Text Books:

1. VIRTUALIZATION ESSENTIALS by MATTHEW PORTNOY, WILEY

2. CLOUD COMPUTING: PRINCIPALS AND PARADIGMS by JAMES BROBERG, RAJKUMAR BUYYA, WILEY

References:

1. CLOUD COMPUTING: PRINCIPLES AND PARADIGMS by RAJKUMAR BUYYA, JAMES BROBERG, ANDRZEJ GOSCINSKI, WILEY