CSE308:COMPUTING PRACTICUM-IV

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

Course Outcomes: Through this course students should be able to

CO1 :: understand Bash scripts to schedule types of tasks

CO2 :: apply ACLs on files and enhance system security using SELinux

CO3 :: analyze the process priority and tune system performance

CO4 :: contrast various methods to manage partitions, file systems, swap spaces from the command line

CO5 :: demonstrate compressing and deduplicating the storage and determine network -attached storage using the NFS protocol

CO6 :: analyze the boot process to control services offered and to troubleshoot and repair problems

List of Practicals / Experiments:

Improving Command-line productivity

- Writing Simple Bash Scripts
- Running commands More Efficiently Using Loops
- Matching Text in Command Output with Regular Expressions

Scheduling Future Tasks

- Scheduling a Deferred User Job
- Scheduling Recurring User Jobs
- Scheduling Recurring System Jobs
- Managing Temporary Files

Tuning System Performance

- Adjusting Tuning Profiles
- Influencing Process Scheduling

Controlling Access to Files with ACLs

- Interpreting File ACLs
- Securing Files with ACLs

Managing SELinux Security

- Changing the SELinux Enforcement Mode
- Controlling SELinux File Contexts
- Adjusting SELinux Policy with Booleans
- Investing and Resolving SELinux Issues

Managing Basic Storage and Logical Volumes

- Adding Partitions, File Systems, and Persistent Mounts
- Managing Swap Space
- Creating Logical Volumes
- Extended Logical Volumes

Implementing Advanced Storage Features

- Managing Layered Storage with Stratis

- Compressing and Deduplicating Storage with VDO

Accessing Network-Attached Storage

- Mounting Network-Attached Storage with NFS
- Automounting Network-Attached Storage

Controlling the Boot Process

- Selecting the Boot Target
- Resetting the Root Password
- Repairing File System Issues at Boot

Managing Network Security

- Managing Server Firewalls
- Controlling SeLinux Port Labeling

Installing Red Hat Enterprise Linux

- Installing RedHat EnterpriseLinux
- Automating Installation with Kickstart
- Installing and Configuring Virtual Machines

Manage Containers

- Find and retrieve container images from remote registry.
- Inspect container images.
- Perform container management using commands such as podman and skopeo.
- Perform basic container management such as running, starting, stopping and listing running containers.
- Run a service inside a container.
- Configure a container to start automatically as a systemd service.
- Attach persistent storage to a container.

Text Books:

1. RED HAT RHCSA/RHCE 7 CERT GUIDE: RED HAT ENTERPRISE LINUX 7 (EX200 AND EX300) by SANDER VAN VUGT, PEARSON

References:

1. RHCSA/RHCE RED HAT LINUX CERTIFICATION STUDY GUIDE EXAMS EX200 & EX30 by ORSARIA JANG, Tata McGraw Hill, India

CSE423:VIRTUALIZATION AND CLOUD COMPUTING

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

Course Outcomes: Through this course students should be able to

CO1 :: illustrate the main aspects, key technologies and mechanisms of Virtualization technology

CO2 :: examine the appropriate technologies, algorithms and approaches for the provisioning of various resources and implementation of cloud computing

CO3 :: understand the main issues involved in cloud computing such as cloud architecture, capacity planning and service level agreement

CO4 :: evaluate the economical cloud solution by considering appropriate cost estimation strategy and laws of cloudonomics

CO5 :: enumerate the core aspects of cloud security, privacy and reliable cloud environment

CO6 :: understand the emerging technologies of cloud computing and how it bring changes in the traditional cloud computing models

Unit I

Virtualization techniques : virtualization technology, overview of x86 virtualization, types of virtualization, concept of VLAN , SLAN and VSAN and benefits, concept of VLAN ,VSAN and benefits

Overview of Distributed computing : Parallel and Distributed Systems, Parallel Computing, Parallel Computer Architecture, Distributed Systems, Differences and Similarities among Different Types of Computing

Unit II

Introduction to Cloud Computing : Cloud Computing in a Nutshell, Roots of Cloud Computing., Layers and Types of Clouds., Desired Features of a Cloud, Cloud Infrastructure Management., Examining the Characteristics of Cloud Computing, cloud types

Migrating into a Cloud : Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud VM Migration, Cloud Middleware and Best Practices, Concept and Need of Cloud Middleware, QoS Issues in Cloud, Data Migration and Streaming in Cloud, Interoperability

Unit III

Understanding cloud architecture : exploring the cloud computing stack, Workload distribution architecture, Capacity planning, Cloud bursting architecture, Disk provisioning architecture, Dynamic failure detection and recovery architecture, Cloud Computing Architecture, Service Level Agreements, Service Oriented Architecture

Unit IV

Cloud Computing Technologies and Applications : Cloud Content Delivery Network Services, Multi-CDN, Features of Meta CDN, Mobile Cloud Computing, InterCloud Issues

Cloud Economics : Developing an Economic Strategy, Exploring the Costs, Laws of cloudonomics, Cost estimation, Economics of Cloud

Unit V

Cloud security : Cloud Security Fundamentals, Cloud Risk, Cloud Risk Division, Policy and Organizational Risks, Technical Risks, Legal Risks, Other Risks, Cloud Computing Security Architecture, VM Security Challenges

Cloud Database : Operational Model for Cloud Database, Types of Cloud Database, Cloud File System, Distributed File System Basics, Concept of GFS and HDFS, Comparison of Features

Unit VI

Container technology : Introduction to containers, container architectures, Docker containers, Kubernetes

Cloud Platforms in Industry : Amazon Web services, Google App Engine, Microsoft Azure, Case studies

Other aspects of Cloud : Edge Computing, Fog Computing, IIoT, Green Cloud computing practices, Complexity in Cloud-native systems

Text Books:

1. CLOUD COMPUTING: FUNDAMENTALS, INDUSTRY APPROACH AND TRENDS by RISHABH SHARMA, WILEY

References:

References:

1. MASTERING CLOUD COMPUTING by RAJKUMAR BUYYA,CHRISTIAN VECCHIOLA ,S.THAMARAI SELVI, MCGRAW HILL EDUCATION

2. CLOUD COMPUTING: A HANDS-ON APPROACH by ARSHDEEP BAHGA, VIJAY MADISETTI, UNIVERSITIES PRESS PVT. LTD

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

HMT801:TRAVEL AGENCY AND TOUR OPERATION

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

Course Outcomes: Through this course students should be able to

CO1 :: recognize the transformation of travel business

CO2 :: classify the business opportunities related to travel and tourism

CO3 :: relate the roles of different travel organizations in global environment

CO4 :: connect different components of tour packages for achieving leadership in travel business

CO5 :: reframe the travel business as per the latest technological trends

CO6 :: develop a tour itinerary using innovative skills for the ease of tourists

Unit I

Evolution of travel agency : travel business history, travel business concept and meaning, definition of travel agency, types of travel agency, tour operation definition and types, difference between travel agency and tour operator, case study of Thomas Cook

Unit II

Travel agency business : functions of travel agency, functions of tour operator, process of setting up a travel agency, documents required for opening a travel agency, scopes of travel agency, travel agency income sources

Unit III

Linkages in travel agency business : roles and responsibilities of TAAI, roles and responsibilities of IATO, roles and responsibilities of UFTAA, roles and responsibilities of PATA, case study of Spiti Ecosphere, roles and responsibilities of ATOAI

Unit IV

Tour operations management : concept of tour packaging, Group package tour and free independent traveller, types of package tour, guides and escort, cost components of tour package, distribution of package tour

Unit V

Customer service using technology : latest technological trends, online travel agents, global distribution system, customer relationship management, customer service definition and importance, issues in customer service

Unit VI

Creating an innovative itinerary : definition of a tour itinerary, components of a tour itinerary, types of tour itinerary, prerequisites of itinerary preparation, considerations while crafting an itinerary, do's and don'ts of preparing an itinerary

Text Books:

1. THE BUSINESS OF TRAVEL AGENCY AND TOUR OPERATIONS MANAGEMENT by A.K.BHATIA, STERLING PUBLISHING

References:

1. TOURISM OPERATIONS AND MANAGEMEN by SUNETRA RODAY, ARCHANA BIWAL & VANDANA J, OXFORD UNIVERSITY PRESS

2. TRAVEL AGENCY MANAGEMENT & OPERATIONS by ARVIND KUMAR, Walnut Publication

INT232:DATA SCIENCE TOOLBOX : R PROGRAMMING

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

Course Outcomes: Through this course students should be able to

CO1 :: Analyze and configure R software for statistical programming environment and describe generic programming language concepts implemented in a high-level statistical language

CO2 :: Demonstrate the programs in the R environment to create custom analytical models to meet the dynamic business needs

CO3 :: Evaluate and verify the analysis findings by using various packages in R programming

CO4 :: Visualize and customize the various graphical packages for creating various types of graphs, plots and charts.

CO5 :: Review advanced data science concepts using predictive analytics fundamentals

CO6 :: Appraise and verify the analysis findings by conducting various statistical tests

Unit I

Installation and development environment overview : downloading and installing R from CRAN, installing R on your windows computer, installation Rstudio, libraries in R and R studio, installing packages,, using R reference card

Introduction to basics : discover the basic data types and operators in R

Unit II

Vectors and matrices : learn how to work with vectors and matrices in R

Factors : R stores categorical data in factors, learn how to create subset and compare categorical data

Data frames : creating, merging, naming, filtering, indexing and selection in data frames

Lists : naming, extracting, adding, deleting components from lists, subsetting a list

Unit III

R syntax : conditional statements, loops, functions and packages in R

Data input and output in R : CSV files, excel files and SQL with R

Unit IV

Advanced R programming : mathematical functions, apply family of functions, regular expressions, dates and timestamps

Data manipulation with R using : data filters, handling missing data, dplyr, tidyr, pipe

Unit V

Text mining in R : Text mining functions, string functions used in R,, analyzing text data for mining

Social media data mining : Facebook data analysis, twitter data analysis

Unit VI

DATA VISUALIZATION WITH R : Explanation and Implementation of Basic types of graphs (SCATTER PLOT, LINE CHART, BAR CHART, PIE CHART), Explanation and Implementation of Advanced types of graphs (Word Cloud, Heat Map, Bollinger Band, Donot Chart etc.), Dynamic Visualization using GGPLOTS, Advanced Visualization using PLOTLY, Implementation of DASHBOARDS using RMARKDOWN

List of Practicals / Experiments:

List of Practicals

- Programs to define basic data types.
- Program to demonstrate different operators.
- Program to implement vector and matrices.
- Program to implement factors, data frame and list

- Program to demonstrate the type of loops.
- Program to implement the different types of functions.
- Program to perform different SQL queries.
- Program to demonstrate the different built in statistical, date and timestamp functions.
- Program to demonstrate the concept of data wrangling.
- Program to perform data manipulation using built in packages.
- Program to demonstrate the concept of text mining.
- Program to extract and analyze social media data.
- Program to demonstrate basic visualization methods.
- Program to implement advanced visualization methods.
- Program to demonstrate dashboard in R.

Text Books:

1. DATA ANALYTICS USING R by SEEMA ACHARYA, Tata McGraw Hill, India

References:

1. DATA ANALYSIS : USING STATISTICS AND PROBABILITY WITH R LANGUAGE by BISHNU PARTHA SARATHI, BHATTACHERJEE VANDANA, PHI Learning

2. DATA SCIENCE AND MACHINE LEARNING IN R by REEMA THAREJA, Tata McGraw Hill, India

3. DATA ANALYTICS by ANIL MAHESHWARI, Tata McGraw Hill, India

INT233:DATA VISUALIZATION

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

Course Outcomes: Through this course students should be able to

CO1 :: illustrate the role of data visualization for analytics in an organization

CO2 :: use data visualization principles to help you to design dashboards that enlighten and support business decisions

CO3 :: explore knowledge of data representation and subsetting techniques for real time datasets

CO4 :: use and customize the various graphical packages for creating various types of graphs, plots and charts

CO5 :: analyze real life business problems by using various visualization techniques

CO6 :: integrate data to provide mashed-up dashboards

Unit I

DATA VISUALIZATION FUNDAMENTALS : Basics of Data visualization, Data types, Exploratory versus explanatory visualizations, Design principles for charts and graphs, Value of Visualization, Data and Image Models, Common tools for creating data visualizations, Excel vs SPSS vs R vs Tableau

Unit II

INTRODUCTION TO TABLEAU : Introduction to tool, Installing Tableau, Tableau features, Connecting data with tableau, Joining data sources, Live data connections vs data extracts, Basic functions of tableau, Operations of tableau, Usage of Menus and Toolbar, Usage of Data Pane, Analytics Pane, Sheet Tabs, Shelves and Cards, Marks Card, Legends, Layout for dashboard and stories, Difference between Green and Blue pills

Unit III

MANAGING, ORGANIZING AND ENHANCING DATA IN TABLEAU : Splitting data, Pivoting & Transforming data, Blue & green pills Filters, Blue & green pills affect on dates, Cleaning data by Bulk Re-aliasing, Setting data defaults to save time later on, Create hierarchies to drill down into data, Creating groups for data, Creating and Using Sets, Create data filters, Create calculated fields, Combine data sources using data blending, Creating & using Parameters, Bringing in More data with Joins

Unit IV

CHART TYPES AND THEIR USAGE IN TABLEAU : Defining data and their different visualization ways, Building various charts, Visualizing data using Bar Chart, Lines Charts, Scatterplots, Heat maps, Histograms, Maps, Dual Axis Charts ,Pie Charts, Visualization data with advanced analytics Polygon Maps, Bump Charts, Control charts, Funnel charts, Pareto charts, Waterfall charts, Usage and filtration of data with charts, Visualizing categorical data, Visualizing time series data, Visualizing multiple variables, Visualizing geospatial data, Mapbox integrations, Web Mapping Services, Background Images

Unit V

MATHEMATICAL AND VISUAL ANALYTICS IN TABLEAU : Math and data, Aggregate calculations, Date calculations, Logic calculations, Number calculations, String calculations, Type calculations, Conceptual Topics with LOD Expressions, Nested LOD Expressions Showing change instead of raw numbers, Summary statistics in visualizations, Annotations and pre-attentive attributes, Use visual analytics to find answers in your data, Adding annotations to visualization, Add reference lines and trend lines, Visualizing forecasting data, Clustering, Drag and drop analytics, Analysis with cube and MDX

Unit VI

INTERACTIVE DASHBOARDS AND STORY POINTS IN TABLEAU : Creating a dashboard, Designing dashboard, Add motions, Adding interactivity with actions, Dashboard layout and formatting, Add extra detail to visualization using Marks Shelf, Add Size, Shape, Labels, Details, Tooltips in visualization, Sharing and collaborating dashboards, Story Points and how to create them, Designing effective slide presentations to showcase data story, Publish online business dashboards with Tableau, Exporting Pdfs, Sharing Dashboard Securely

List of Practicals / Experiments:

List of Practicals

- Create a visualization to demonstrate the concepts of parameters in Tableau.

- Create a visualization to demonstrate the concepts of filters in Tableau.
- Create a visualization to demonstrate the concepts of groups in Tableau.
- Create a visualization to demonstrate the concepts of sets in the Tableau.
- Create a visualization to demonstrate the concepts of joins in Tableau.
- Create a visualization to demonstrate the concepts of data blending in Tableau.
- Create a visualization to demonstrate the various charts in the Tableau.
- Create a visualization to demonstrate the concept of clustering in Tableau.
- Create a visualization to demonstrate mathematical functions in Tableau.
- Create a visualization to demonstrate LOD expressions in Tableau.
- Create a visualization to demonstrate animations in Tableau.
- Create a visualization to demonstrate dashboard in Tableau.
- Create a visualization to demonstrate story telling in Tableau.
- Create a visualization to demonstrate the difference between live and extract connection in Tableau.

Text Books:

1. TABLEAU DESKTOP POCKET REFERENCE: ESSENTIAL FEATURES, SYNTAX AND DATA VISUALIZATIONS by RYAN SLEEPER, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD

References:

1. PRACTICAL TABLEAU: 100 TIPS, TUTORIALS, AND STRATEGIES FROM A TABLEAU ZEN MASTER (COLOR EDITION) by RYAN SLEEPER, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD

2. HANDS-ON DATA VISUALIZATION: INTERACTIVE STORYTELLING FROM SPREADSHEETS TO CODE by JACK DOUGHERTY, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD

PEA308:ADVANCED ANALYTICAL SKILLS-II

L:2 T:1 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: apply the concepts learned to solve the problems related to time and work

CO2 :: select an appropriate approach for solution of time, speed and distance related problems

CO3 :: learn the various logical reasoning techniques to rechat appropriate conclusions and solve the question related to logarithm and ranking.

CO4 :: use mathematical concepts learned to solve problems of mensuration, height and distance

CO5 :: understand the concepts of clock and calendar to solve competition based questions

CO6 :: remember various fast calculation techniques for quick and accurate data interpretation

Unit I

Time and work. : efficiency based problems, wages based problems, chain rule, alternate work problems, advanced time and work problems

Pipes and cistern : inlet-outlet, part of the tank filled, time-based problems

Unit II

Time, speed and distance : average speed concept, advanced time and speed based questions, ratio based problems, races

Problem on trains : relative speed concept & application

Boats and stream : downstream and upstream, two variable problems

Unit III

Syllogism : logical venn diagrams, possibility based problems, negative statement-based problems

Ranking test : ranking test problems

Logarithm : concepts of the logarithm

Unit IV

Mensuration : perimeter and area of 2-D figures, problems on surface area and volume of cube, cuboid, problems on surface area and the volume of sphere and hemisphere, problems on surface area and volume of cone and cylinder

Height and distance : problem based on height and distance, moving object based

Unit V

Calendar : finding the exact day, advanced concept of calendar

Clocks : concept of clock, gain and loss of time, angle based problems

Inequalities : advanced concepts of inequalities

Analytical reasoning. : linear seating arrangement, circular seating arrangement, combined problems

Unit VI

Data interpretation : bar graph-based problems, tabular based problems, pie-chart based problems, linegraph based problems, mixed graph-based problems, histogram based problems

Data sufficiency : check sufficiency of data

Text Books:

1. A MODERN APPROACH TO VERBAL & NON-VERBAL REASONING by DR. R. S. AGGARWAL, S Chand Publishing
2. QUANTITATIVE APTITUDE by DR. R. S. AGGARWAL, S Chand Publishing

References:

1. ANALYTICAL REASONING by MK PANDAY, BANKING SERVICE CHRONICLE
2. MAGICAL BOOK ON QUICKER MATHS by M.TYRA, BANKING SERVICE CHRONICLE

PES319:SOFT SKILLS-II

L:1 T:2 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: understand professional attitude and goal setting

CO2 :: develop communication skills with focus on personal branding

CO3 :: prepare CV keeping KYC in mind for better career prospects

CO4 :: practice idea generation and articulate effectively during group discussions

CO5 :: summarize answers with proper justification during interview

CO6 :: demonstrate professional ethics to showcase corporate congruence

Unit I

Professional attitude and goal setting : Aspiration building, using SWOT to build a career graph, goal setting, introduction to professional attitude, the importance of positive attitude at work, tips to create professional attitude at the workplace, adaptability

Unit II

Communication and personal branding : Introduction to communication, barriers to communication, personal branding and importance. Ways to enhance professional branding, impressive LinkedIn profiling, and role of social media in brand creation

Unit III

CV building and KYC : Types of CV, the 7 components of a CV, tips to make a video CV (script, filming, space, recording device, additional visuals). Introduction to KYC, the importance of knowing the company, discussion on KYCs and JDs of product and service-based companies, and the important aspects to consider in a KYC document

Unit IV

Group discussion : Recap for the concept of group discussions, types of group discussion, techniques to generate ideas - SPELT, KWA, 5Ws 1H, brainstorming, POPBEANS, VAP, SCAMPER, do's and don'ts of group discussion, virtual GD improvement tips

Unit V

Interviews : Pre-placement talks etiquette and engagement, waiting room decorum, interview preparation, re-cap of power dressing, interview etiquette in online and offline scenarios, types of interviews, various answering techniques, virtual interviews, do's and don'ts of virtual interviews, behavioral question handling

Unit VI

Professional ethics : Importance of integrity, confidentiality and data secrecy, efficient time management and decision-making skills, importance of emails and email etiquette

Text Books:

1. SOFT SKILLS: KNOW YOURSELF AND KNOW THE WORLD by DR. K. ALEX, S Chand Publishing

References:

1. PERSONALITY DEVELOPMENT AND SOFT SKILLS by BARUN K. MITRA, OXFORD UNIVERSITY PRESS

2. THE ACE OF SOFT SKILLS: ATTITUDE, COMMUNICATION AND ETIQUETTE FOR SUCCESS by GOPALASWAMY RAMESH AND MAHADEVAN RAMESH, PEARSON