JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

MCA III Year I semester

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(17F00501) CLOUD COMPUTING

Objectives

- To introduce the basis of Cloud Computing
- To educate the cloud working function
- To allow computer system resources to be used in an efficient manner
- Makes the environment to the cloud.

Outcomes

On successful completion of the course, students will be able to:
- Understand the concepts of cloud computing and its related techniques.
- Provide a pleasant and effective user interface.

UNIT-I

Introduction to cloud computing – The Evolution of cloud computing – Hardware Evolution- Internet Software Evolution – Server Virtualization – Web Services Deliver from the cloud– Communication-as-a-service–Infrastructure-as-a-service–Monitoring-as-a-service–Platform- as-a-Service - Software-as-a-service – Building Cloud Network.

UNIT-II

Federation in the cloud – presence in the cloud – Privacy and its Relation to cloud-Based Information Systems– Security in the cloud – Common Standards in the cloud-End-User Access to the cloud Computing.

UNIT-III

Introduction – Advancing towards a Utility Model – Evolving IT infrastructure – Evolving Software Applications – Continuum of Utilities- Standards and Working Groups- Standards Bodies and Working Groups- Service Oriented Architecture- Business Process Execution Language- Interoperability Standards for Data Center Management – Utility Computing Technology- Virtualization – Hyper Threading – Blade Servers- Automated Provisioning- Policy Based Automation- Application Management – Evaluating Utility Management Technology – Virtual Test and development Environment – Data Center Challenges and Solutions – Automating the Data Center.

UNIT-IV

Software Utility Application Architecture – Characteristics of a SaaS – Software Utility Applications – Cost Versus Value – Software Application Services Framework – Common Enablers – Conceptual view to Reality – Business profits – Implementing Database System for Multitenant Architecture.

UNIT-V

Other Design Consideration – Design of a Web Services Metering Interface – Application Monitoring Implementation – A Design for an update and Notification Policy – Transforming to Software as a Service – Application Transformation Program – Business Model Scenarios – Virtual Services for Organizations – The Future.

Text Books:

1. Guy Bunker and Darren Thomson, Delivering utiliy Computing, John Wiley & Sons Ltd, 2012.

References Books:

1. John W. Rittinghouse and Ames F. Ransome, Cloud Computing Implementation , Management and security, CRC press & Francis Group, Boca Raton London New York. 2010.

2. Alfredo Mendroza, Utility Computing Technologies, Standards, and Strategies Artech House INC, 2007.

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(17F00502) FUNDAMENTALS OF DATA SCIENCE

Objectives
The course gives you a set of practical skills for handling data that comes in a variety of formats and sizes, such as texts, spatial and time series data. These skills cover the data analysis lifecycle from initial access and acquisition, modeling, transformation, integration, querying, application of statistical learning and data mining methods, and presentation of results. This includes data wrangling, the process of converting raw data into a more useful form that can be subsequently analysed.

Outcomes

- Understand business intelligence and business and data analytics.

- To understand the business data analysis through the powerful tools of data application.

- Understand the methods of data mining.

- Apply basic tools (plots, graphs, summary statistics) to carry out EDA.

- Understand the key elements of a data science project

- Identify the appropriate data science technique and/or algorithm to use for the major data science tasks.

UNIT - I
Introduction, What Is Statistical Learning?, Why Estimate f?, How Do We Estimate f?, The Trade-Off Between Prediction Accuracy and Model Interpretability, Supervised Versus Unsupervised Learning, Regression Versus Classification Problems, Assessing Model Accuracy, Measuring the Quality of Fit, The Bias-Variance Trade-of, The Classification Setting, Introduction to R, Basic Commands, Graphics, Indexing Data, Loading Data, Additional Graphical and Numerical Summaries.

UNIT – II
Linear Regression, Simple Linear Regression, Multiple Linear Regression, Other Considerations in the Regression Model, Comparison of Linear Regression with K-Nearest Neighbours, Linear Regression.

UNIT-III
Classification, Logistic Regression, Linear Discriminant Analysis, A Comparison of Classification Methods, Logistic Regression, LDA, QDA, and KNN.

UNIT- IV
Programming for basic computational methods such as Eigen values and Eigen vectors, sparse matrices, QR and SVD, Interpolation by divided differences.
Data Wrangling: Data Acquisition, Data Formats, Imputation, The split-apply-combine paradigm.

UNIT-V
Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Visualization, Measuring Data Similarity and Dissimilarity.
Data Warehouse: Basic Concepts, Data Warehouse Modeling: Data Cube and OLAP, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-Oriented Induction.

Text Books:
1. Gareth James Daniela Witten Trevor Hastie, Robert Tibshirani, An Introduction to Statistical Learning with Applications in R, February 11, 2013, web link: www.statlearning.com.
2. Mark Gardener, Beginning R The statistical Programming Language, Wiley, 2015.
3. Han , Kamber, and J Pei, Data Mining Concepts and Techniques, 3rd edition, Morgan Kaufman, 2012.

References:
1. Sinan Ozdemir, Principles of Data Science, Packt Publishing Ltd Dec 2016.
2. Joel Grus, Data Science from Scratch, Oreilly media, 2015.

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(17F00503) SOFTWARE TESTING

Course Objectives:

- Fundamentals for various testing methodologies.
- Describe the principles and procedures for designing test cases.
- Provide supports to debugging methods.
- Acts as the reference for software testing techniques and strategies.

Course Outcomes:

- Understand the basic testing procedures.
- Able to support in generating test cases and test suites.
- Able to test the applications manually by applying different testing methods and automation tools.
- Apply tools to resolve the problems in Real time environment.

UNIT I
Introduction: Purpose of Testing, Dichotomies, Model for Testing, Consequences of Bugs, Taxonomy of Bugs.
Flow graphs and Path testing: Basics Concepts of Path Testing, Predicates, Path Predicates and Achievable Paths, Path Sensitizing, Path Instrumentation, Application of Path Testing.

UNIT II
Transaction Flow Testing: Transaction Flows, Transaction Flow Testing Techniques.
Dataflow testing: Basics of Dataflow Testing, Strategies in Dataflow Testing, Application of Dataflow Testing.

UNIT III
Domain Testing: Domains and Paths, Nice & Ugly Domains, Domain testing, Domains and Interfaces Testing, Domain and Interface Testing, Domains and Testability.

UNIT IV
Paths, Path products and Regular expressions: Path Products & Path Expression, Reduction Procedure, Applications, Regular Expressions & Flow Anomaly Detection.
Logic Based Testing: Overview, Decision Tables, Path Expressions, KV Charts, Specifications.

UNIT V:
State, State Graphs and Transition Testing: State Graphs, Good & Bad State Graphs, State Testing, Testability Tips.
Graph Matrices and Application: Motivational Overview, Matrix of Graph, Relations, Power of a Matrix, Node Reduction Algorithm, Building Tools.

Text Books:

1. Software testing techniques – Boris Beizer, Dreamtech, second edition.

Reference Books :

1. The craft of software testing - Brian Marick, Pearson Education.

2. Software Testing- Yogesh Singh, Camebridge

3. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
4. Software Testing, N.Chauhan, Oxford University Press.
5. Introduction to Software Testing, P.Ammann & J.Offutt, Cambridge Univ. Press.
6. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
7. Software Testing Concepts and Tools, P.Nageswara Rao, dreamtech Press
8. Win Runner in simple steps by Hakeem Shittu,2007 Genixpress.
9. Foundations of Software Testing, D.Graham & Others, Cengage Learning.

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(17F00504) DESIGN PATTERNS
Elective-III

Course Objectives:
- To understand design patterns and their underlying object oriented concepts.
- To understand implementation of design patterns and providing solutions to real world software design problems.
- To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

Course Outcomes:
- Know the underlying object oriented principles of design patterns.
- Understand the context in which the pattern can be applied.
- Understand how the application of a pattern affects the system quality and its tradeoffs.

UNIT-I
Introduction to Design Patterns
Design Pattern Definition, Design Patterns in Small Talk MVC, Describing Design Patterns, Catalog of Design Patterns, Organizing the Catalog, Solving of Design Problems using Design Patterns, Selection of a Design Pattern, Use of Design Patterns.

UNIT-II
Designing A Document Editor: A Case Study
Design problems, Document structure, Formatting, Embellishing the User Interface, Supporting Multiple Look and Feel standards, Supporting Multiple Window Systems, User Operations, Spelling Checking and Hyphenation.
Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

UNIT-III
Structural Patterns-1: Adapter, Bridge, Composite.
Structural Patterns-2: Decorator, Façade, Flyweight, Proxy, Discuss of Structural Patterns.

UNIT-IV
Behavioral Patterns-1: Chain of Responsibility, Command, Interpreter, Iterator.
Behavioral Patterns-2: Mediator, Memento, Observer.

UNIT-V
Behavioral Patterns-2(cont'd): State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns.
What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOK :

    1. Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOKS:

1. Pattern's in JAVA Vol-I By Mark Grand, Wiley DreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand, Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand, Wiley DreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd
5. Design Patterns Explained By Alan Shalloway,Pearson Education.
6. Pattern Oriented Software Architecture, F.Buschmann &others, John Wiley & Sons.

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(17F00505) HUMAN COMPUTER INTERACTION
Elective-III

Course Objectives:

- Gain an overview of Human-Computer Interaction (HCI), with an understanding of user interface design in general, and alternatives to traditional "keyboard and mouse" computing
- Become familiar with the vocabulary associated with sensory and cognitive systems as relevant to task performance by humans
- Be able to apply models from cognitive psychology to predicting user performance in various human-computer interaction tasks and recognize the limits of human performance as they apply to computer operation
- Be familiar with a variety of both conventional and non-traditional user interface paradigms

Course Outcomes:
- Find innovative ways of interacting with computers
- Help the disabled by designing non-traditional ways of interacting
- Use cognitive psychology in the design of devices for interaction

UNIT- I
Introduction: Importance of user Interface – definition, importance of good design, Benefits of good design, A brief history of Screen design.
The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics
Web user Interface - popularity, characteristics- Principles of user interface.

UNIT- II
Design process – Understanding how people interact with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business functions.
Screen Designing: Design goals – Screen meaning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT- III
System menus: Structures of Menus, Functions of Menus, Content of Menus, Kinds of Graphical menus
Windows: Window characteristics, Components of a window, Window presentation styles, Types of windows, Windom management

UNIT- IV
Controls: Characteristics of device based controls, Selecting the proper device based controls, Operable controls, Text Entry/Read-only controls, Selection controls, Combination Entry/selection controls, Selecting the proper controls.

UNIT- V

Graphics: Icons, Multimedia, Color-what is it, Color uses, Color and Human vision, Choosing colors
Testing: The purpose and importance of usability testing, Scope of testing, Prototypes, Kinds of Tests, Developing and conducting the test.

Text books:

1. "The essential guide to user interface design", Wilbert O Galitz,, Wiley, 2nd edition, 2013.

References:

1. "Designing the user interface", 3rd Edition Ben Shneidermann, Pearson Education Asia.
2. "Human –Computer Interaction", D.R.Olsen, Cengage Learning.
3. "Human – Computer Interaction", I.Scott Mackenzie, Elsevier Publishers.
4. "Interaction Design", Prece, Rogers, Sharps, Wiley Dreamtech.
5. "User Interface Design", Soren Lauesen , Pearson Education.
6. "Human –Computer Interaction", Smith - Atakan, Cengage Learning.

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(17F00506) PYTHON PROGRAMMING
Elective-III

OBJECTIVES:

- To understand why Python is a useful scripting language for developers.
- To learn how to design and program Python applications.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To learn how to identify Python object types.

OUTCOMES:

- Making Software easily right out of the box.
- Experience with an interpreted Language.
- To build software for real needs.
- Prior Introduction to testing software

UNIT – I:
Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT – II:
Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass.

UNIT – III:
Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.

UNIT – IV:
Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions(Function Returning Values), Scope of the Variables in a Function - Global and Local
Variables.
Modules: Creating modules, import statement, from. Import statement, name spacing,
Python packages, Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNIT-V:

Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Datahiding,

Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

Brief Tour of the Standard Library - Operating System Interface - String Pattern Matching, Mathematics, Internet Access, Dates and Times, Data Compression, Multithreading, GUI Programming, Turtle Graphics

Testing: Why testing is required ?, Basic concepts of testing, Unit testing in Python, Writing Test cases, Running Tests.

TEXT BOOKS

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Learning Python, Mark Lutz, Orielly

Reference Books:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage

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(17F00507) SOFTWARE PROJECT MANAGEMENT
Elective-IV

Course Objectives:

The main goal of software development projects is to create a software system with a predetermined functionality and quality in a given time frame and with given costs. For achieving this goal, models are required for determining target values and for continuously controlling these values. This course focuses on principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management). The goals of the course can be characterized as follows:

- Understanding the specific roles within a software organization as related to project and process management
- Describe the principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management).
- Understanding the basic infrastructure competences (e.g., process modeling and measurement)
- Understanding the basic steps of project planning, project management, quality assurance, and process management and their relationships

Course Outcomes:
- Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
- Compare and differentiate organization structures and project structures
- Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools

UNIT I
Conventional Software Management: The waterfall model, conventional software Management performance. Evolution of Software Economics: Software Economics, pragmatic software cost estimation
UNIT II
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.
The old way and the new: The principles of conventional software engineering, principles of modern software management, transitioning to an iterative process

UNIT III
Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts. Model based software architectures: A Management perspective and technical perspective.
UNIT IV
Work Flows of the process: Software process workflows, Inter Trans workflows. Checkpoints of the Process: Major Mile Stones, Minor Milestones, Periodic status assessments. Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Interaction planning process, Pragmatic planning.

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building Blocks, The Project Environment

UNIT V

Project Control and Process instrumentation: The server care Metrics, Management indicators, quality indicators, life cycle expectations pragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminates, Example.

Future Software Project Management: Modern Project Profiles Next generation Software economics, modern Process transitions.

Case Study: The Command Center Processing and Display System-Replacement (CCPDS-R)

Text Books:

1. Software Project Management, Walker Royce, Pearson Education.
2. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition,Tata Mc-Graw Hill

Reference Books :

1. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O"Reilly, 2006
2. Head First PMP, Jennifer Greene & Andrew Stellman, O"Reilly,2007
3. Software Engineering Project Managent, Richard H. Thayer & Edward Yourdon, second edition,Wiley India, 2004.
4. Agile Project Management, Jim Highsmith, Pearson education, 2004
5. The art of Project management, Scott Berkun, O"Reilly, 2005.
6. Software Project Management in Practice, Pankaj Jalote, Pearson Education,2002

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(17F00508) MOBILE APPLICATION DEVELOPMENT
Elective-IV

Objectives:
- To understand fundamentals of android operating systems.
- Illustrate the various components, layouts and views in creating android applications
- To understand fundamentals of android programming.

Out comes:
- Create data sharing with different applications and sending and intercepting SMS.
- Develop applications using services and publishing android applications.
- To demonstrate their skills of using Android software development tools

Unit 1:
Basics of Mobile Applications Development:
Tools: Eclipse ADT, Android Studio.
Understanding the Role of Android Application Components, Understanding the Utility of Android API, Overview of the Android Project Files, Understanding Activities, Role of the Android Manifest File, Creating the User Interface, Commonly Used Layouts and Controls, Event Handling, Displaying Messages Through Toast, Creating and Starting an Activity, Using the Edit Text Control, Choosing Options with Checkbox, Choosing Mutually Exclusive Items Using Radio Buttons

Unit 2: Building Blocks for Android Application Design:
Introduction to Layouts, Linear Layout, Relative Layout, Absolute Layout, Using Image View, Frame Layout, Table Layout, Grid Layout, Adapting to Screen orientation.
Utilizing Resources and Media Resources, Creating Values Resources, Using Drawable Resources, Switching States with Toggle Buttons, Creating an Images Switcher Application, Scrolling Through Scroll View, playing Audio, Playing Video, Displaying Progress with Progress Bar, Using Assets

Unit 3: Using Selection widgets and Debugging:
Using List View, Using the Spinner control, Using the GridView Control, Creating an Image Gallery Using the ViewPager Control, Using the Debugging Tool: Dalvik Debug Monitor Service(DDMS), Debugging Application, Using the Debug Perspective.
Displaying And Fetching Information Using Dialogs and Fragments: What Are Dialogs?, Selecting the Date and Time in One Application, Fragments, Creating Fragments with java Code, Creating Special Fragments

Unit 4: Building Menus: Creating Interface Menus and Action Bars, Menus and Their Types, Creating Menus Through XML, Creating Menus Through Coding, Applying a Context Menu to a List View, Using the Action Bar, Replacing a Menu with the Action Bar, Creating a Tabbed Action Bar, Creating a Drop-Down List Action Bar

Unit 5 Storing Data & Communicating with SMS and Emails:
Using the SQLiteOpenHelperclasss, Accessing Databases with the ADB, Creating a Data Entry Form.
Understanding Broadcast Receivers, Using the Notification System, Sending SMS Messages with Java Code, Receiving SMS Messages, Sending Email, Working With Telephony Manager.

Text Books

1. Android Programming by B.M Harwani, Pearson Education, 2013.

References Text Books:

1. Android application Development for Java Programmers, James C Sheusi, Cengage Learning
2. Android In Action by w.Frank Ableson, Robi Sen, Chris King, C. Enrique Ortiz., Dreamtech.
3. Professional Android 4 applications development, Reto Meier, Wiley India, 2012.
4. Beginning Android 4 applications development, Wei- Meng Lee, Wiley India,2013
5. PawPrints Learning Technologies, Beginning Android Development: Create Your Own Android Apps Today, 2014.
6. Erik Hellman, Android Programming: Pushing the Limits, John Wiley and sons ltd, 2014.
7. Neil Smyth, Android Studio Development Essentials.
8. Joseph Annuzzi,Jr, Lauren Darcey, Introduction to Android Application Development, Addison-Wesley, Fourth Edition.

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(17F00509) DATA WAREHOUSING & MINING
Elective-IV

Course Objectives:
- To know the basic concepts and principles of data warehousing and data mining
- Learn pre-processing techniques and data mining functionalities
- Learn and create multidimensional models for data warehousing
- Study and evaluate performance of Frequent Item sets and Association Rules
- Understand and Compare different types of classification and clustering algorithms

Course Outcomes:
- Understand the basic concepts of data warehouse and data Mining
- Apply pre-processing techniques for data cleansing
- Analyze and evaluate performance of algorithms for Association Rules
- Analyze Classification and Clustering algorithms

UNIT I
Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II
Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining. Data Cube Computation and Data Generalization: Efficient Methods for Data Cube Computation, Further Development of Data Cube and OLAP Technology, Attribute-Oriented Induction.

UNIT III
Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining, Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Support Vector Machines, Associative Classification, Lazy Learners, Other Classification Methods, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor, Ensemble Methods

UNIT IV
Cluster Analysis Introduction :Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Clustering High-Dimensional Data, Constraint-Based Cluster Analysis, Outlier Analysis.

UNIT V

Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases, Mining Sequence Patterns in Biological Data, Graph Mining, Social Network Analysis and Multi relational Data Mining, Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web.

TEXT BOOKS:

1. Data Mining: Concepts and Techniques, Jiawei Han and Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006.
2. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson Education.

REFERENCES:

1. Data Mining Techniques, Arun KPujari, Second Edition, Universities Press.
2. Data Warehousing in the Real World, Sam Aanhory& Dennis Murray Pearson EdnAsia.
3. Insight into Data Mining, K.P.Soman, S.Diwakar,V.Ajay, PHI,2008.

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(17F00510) CLOUD COMPUTING LAB

Course Objectives:
- The student should be made to:
- Be exposed to tool kits for cloud environment.
- Learn to run virtual machines of different configuration.

Course Outcomes:

The student should be able to
Design and Implement applications on the Cloud.
Use the cloud tool kits.

Programs on SaaS

1   Create an word document of your class time table and store locally
    and on the cloud with doc,and pdf format . (use **www.zoho.com** and
    docs.google.com)

2   Create a spread sheet which contains employee salary information and
    calculate gross and total sal using the formula
    DA=10% OF BASIC
    HRA=30% OF BASIC
    PF=10% OF BASIC IF BASIC<=3000
    12% OF BASIC IF BASIC>3000
    TAX=10% OF BASIC IF BASIC<=1500
    =11% OF BASIC IF BASIC>1500 AND BASIC<=2500
    =12% OF BASIC IF BASIC>2500
    (use **www.zoho.com** and *docs.google.com)*
    NET_SALARY=BASIC_SALARY+DA+HRA-PF-TAX

3   Prepare a ppt on cloud computing –introduction , models, services ,and
    architecture
    Ppt should contain explanations, images and at least 20 pages
    (use **www.zoho.com** and *docs.google.com)*

4   Create your resume in a neat format using google and zoho cloud
    Programs on PaaS

1   Write a Google app engine program to generate n even numbers and deploy it
    to google cloud

2   Google app engine program multiply two matrices

3   Google app engine program to validate user ; create a database
    login(username, password) in mysql and deploy to cloud

4   Write a Google app engine program to display nth largest no from the given
    list
    of numbers and deploy it into google cloud

5   Google app engine program to validate the user
    Use mysql to store user info and deploy on to the cloud

6   Implement Prog 1-5 using Microsoft Azure

CASE STUDY- cloud computing

Sr. No.	Title of Experiment	Aim of the Experiment	Demonstration Equipments/ Components to be required	Type of Experiment/ Demonstration (Lab/Classroom)
1	Case Study of Amazon	To understand the services of Amazon elastic cloud.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
2	Case Study of Azure	To understand the services of Microsoft azure.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
3	Case Study of Hadoop	To understand the services of hadoop.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
4	Case Study of Aneka	To understand the services of aneka elastic cloud.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
5	Case Study of Google Apps	To understand the services of google apps engine.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
6	**Google apps business solution for data access and data upload**	To understand the business solution application of Google apps.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.
7	**Control panel software manager Application of hypervisors**	To understand the application of hypervisors.	Computers with Internet Connection	Experiment: Student perform practical under supervision of faculty and Lab technician.

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(17F00511) DATA SCIENCE LAB

Objectives:

Data Science is the study of the generalizable extraction of knowledge from data. Being a data scientist requires an integrated skill set spanning mathematics, statistics, machine learning, databases and other branches of computer science along with a good understanding of the craft of problem formulation to engineer effective solutions. This course will introduce students to this rapidly growing field and equip them with some of its basic principles and tools as well as its general mindset. Students will learn concepts, techniques and tools they need to deal with various facets of data science practice, including data collection and integration, exploratory data analysis, predictive modeling, descriptive modeling, data product creation, evaluation, and effective communication.

Outcomes:

- Demonstrate mastery of a body of knowledge that includes recent developments in computer science and information technology;
- Understand and use appropriate and relevant, fundamental and applied mathematical and statistical knowledge, methodologies and modern computational tools;
- Recognise and use research principles and methods applicable to data science.
- Extract an interpretation of data using exploratory data analysis
- Visualise and plot graphical representations of data.

Task1: Basic Statistics, Visualization, and Hypothesis Tests
1. Reload data sets into the R statistical package

2. Perform summary statistics on the data

3. Remove outliers from the data

4. Plot the data using R

5. Plot the data using lattice and ggplot

6. Test a hypothesis about the data

Task 2: Linear Regression
1. Use the R -Studio environment to code OLS models

2. Review the methodology to validate the model and predict the dependent variable for a set of given independent variables

3. Use R graphics functions to visualize the results generated with the model

Task 3: Logistic Regression

1. Use R -Studio environment to code Logistic Regression models

2. Review the methodology to validate the model and predict the dependent variable for a set of given independent variables

3. Use R graphics functions to visualize the results generated with the model

Task 4: Hadoop, HDFS, MapReduce and Pig Purpose

1. Run Hadoop and Hadoop fs and collect help information

2. Run a shell script to perform a word count activity

3. Run a MapReduce job to produce similar output

4. Investigate the UI for MapReduce/HDFS components to track system behavior

5. Run "Pig" statements to execute the same tasks done with MapReduce

REFERENCES

- R Commands - Quick Reference
- Surviving LINUX - Quick Reference
- Hadoop Commands
- HDFS Commands

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MCA III Year I semester

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(17F00512) SOFTWARE TESTING LAB

Course Objectives:

To learn to use the following (or Similar) automated testing tools to automate testing:

- o Win Runner/QTP for functional testing.

- o Load Runner for Load/Stress testing.

- o Test Director for test management.

- o   JUnit, HTMLUnit, CPPUnit.

- To study state-of-art tools for software testing and Middleware technologies

Course Outcomes:

- Test the software applications using standard tools available in the market

1. Write programs in C Language to demonstrate the working of the following constructs:

   i) do...while ii) while….do iii) if…else iv) switch v) for

2. A program written in C language for Matrix Multiplication fails. Introspect the causes for its failure and write down the possible reasons for its failure.

3. Consider ATM System and Study its system specifications and report the various bugs.

4. Write the test cases for Banking application.

5. Create test plan document for Library Management System.

6. Create test cases for Railway Reservation.

7. Create test plan document for Online Shopping.

Working with Tool's:

Understand the Automation Testing Approach, Benefits, Workflow, Commands and Perform Testing on one application using the following Tool's.

1. Win runner Tool for Testing.

2. Load runner Tool for Performance Testing.

3. Selenium Tool for Web Testing.

4. Bugzilla Tool for Bug Tracking.

5. Test Director Tool for Test Management.

6. Test Link Tool for Open Source Testing.

References:

1. M G Limaye, "Software Testing – Principles, Techniques and Tools", Tata McGraw Hill, 2009.

2. Edward Kit, "Software Testing in the Real World - Improving the Process", Pearson Education, 2004.

3. William E. Perry, "Effective methods for software testing", 2nd Edition, John Wiley, 2000.