

SEMESTER- I

COURSE: GUI PROGRAMMING IN JAVA

CODE:05BMCAR19161

CREDITS: 04

UNIT I –CORE JAVA OVERVIEW

Features of Java, Object Oriented Programming concepts, Creating classes and objects, Constructors, Static members, Wrapper classes, Method overloading, Inheritance, Method overriding, Interfaces, Exception handling, Packages, Creating custom packages, Stream classes, Graphics classes, Enums and Annotations.

UNIT II –GUI PROGRAMMING

Designing GUIs in Java, Components and Containers, Basics of Components, Using Containers, Layout Managers, AWT Components, Menus, Using Swing Components, Java Utilities (java.util Package), The Collection Framework: Collections of Objects, Collection Types, Sets, Sequence, Map, Understanding Hashing, Use of ArrayList & Vector, Event Driven Programming: Basics, event handling process, event handling mechanism, The Delegation Model of Event Handling, Event Classes, Event Sources, Event Listeners, Adapter Classes as Helper Classes in Event Handling.

UNIT III - APPLET PROGRAMMING

Introduction to Applets, How Applets differ from Applications, Applet Life Cycle, Including an applet on a web page Displaying images using Applet. Playing audio using applet, animations in applet, applying graphics methods in Applets, Introduction to JDBC, JDBC Drivers & Architecture, JDBC Statements, Result sets.

UNIT IV - JAVA SERVLETS

Java Web basics, Introduction to Servlets, Servlet Life Cycle, Servlet example and deployment. Managing form data, servlet client request and server response, servlet HTTP codes, Servlet Exceptions, Writing filters, File Uploading, Cookies handling, Session handling, Sending mails with servlets, Developing & Deploying Servlets, Descriptor file(web.xml).

COURSE TITLE: GUI PROGRAMMING IN JAVA LAB

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1. Create a java program to implement array of objects.
2. Create a java program to illustrate how values are passed to constructors to overload them.
3. Create a program in java to sort a list of numbers using bubble sort.
4. Write a Java Program to implement Wrapper classes and their methods.
5. Write a Java Program to implement inheritance and demonstrate use of method overriding.
6. Write a Java program to demonstrate use of implementing interfaces.
7. Write a Java program to implement the concept of Exception Handling using user defined exception.
8. Write a Java program to add two numbers using applets.
9. Write a program in Java implement graphics class and methods.
10. Create a GUI application in java to implement a calculator.
11. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired.
12. Create a GUI application for Human Resource Management that connects with database using JDBC and performs database operations. (INSERT, SELECT, UPDATE, DELETE).
13. Create a java application that uses servlets to track user sessions.

Référencés:

1. *Herbert Schildt, "The Complete Reference – Java" – Tata McGraw Hill, Seventh Edition.*
2. *E Balaguruswamy, "Programming with Java – A Primer" – Tata McGraw Hill, 5th Edition.*
3. *Donald Bales, "Java Programming with Oracle JDBC" – O'reilly, 2002.*
4. *William Crawford, Jason Hunter, "Java Servlet Programming" – O'reilly 2001.*

COURSE: ADVANCES IN DATABASE MANAGEMENT

CODE:05BMCAR19162

CREDITS: 04

UNIT I- INTRODUCTION TO DATABASE MANAGEMENT

Formal review of relational database, Purpose of Advance Database System- System, 3NF and BCNF, DE normalization, processing of joins, DB transaction states, ACID properties, Concurrency control. Locking and management of locks, 2PL, deadlocks.

UNIT II - NOSQL AND QUERY OPTIMIZATION:

Definition of NOSQL, History of NOSQL and Different NOSQL products, Exploring MongoDB Basics, CRUD operations with MongoDB. NOSQL Storage architecture, Modifying and Managing NOSQL Data stores, Indexing and ordering data sets, NOSQL in CLOUD, Parallel Processing with Map Reduce, Working with NOSQL, Query Optimization: Overview, Transformation of Relational Expressions. Materialized views.

UNIT III - INFORMATION STORAGE AND MANAGEMENT

Data Centre Infrastructure, Information Lifecycle Components of Storage System Environment, Disk Drive. Components, Disk Drive Performance, Fundamental Laws Governing Disk Performance, Logical Components of the Host, Application Requirements and Disk Performance, Intelligent Storage system: Implementation of RAID, RAID Array Components, RAID Levels, RAID Impact on Disk Performance, Data Warehouse Architecture, Data Warehouse Implementation. Various Kinds of Association Rules, Data Mining- Applications, Social Network Analysis.

UNIT IV - ADVANCED TOPICS IN DATABASES

Introduction to the Big Data problem. Current challenges, trends, and applications Algorithms for Big Data analysis, Statistical learning frame work, supervised and unsupervised learning. Big Data technology and tools - Hadoop ecosystem. Crawling and Indexing the Web, Map Reduce –Partitioning and Combining

PRACTICAL

Credits: 02

UNIT I- INTRODUCTION

CURD Operations in NoSQL

UNIT II - NOSQL AND QUERY OPTIMIZATION

Analysing queries with examples, create index and Materialised views in NoSQL

UNIT III - INFORMATION STORAGE AND MANAGEMENT

Designing of schemas and Transaction in NoSQL

UNIT IV - ADVANCED TOPICS IN DATABASES

Map-reduce operations and Model a Tree structure.

References:-

- 1 Gehrke, Ramakrishnan. *Database Management Systems*. PHI.
2. Advanced Database Systems, Editors: Adam, Nabil R., Bhargava, Bharat K. (Eds.)
3. Advance Database Management System By Arihant Khicha, Neeti Kapoor
4. www.tutorialspoint.com/mongodb
5. www.nosql-database.org

COURSE: COMPUTER AIDED OPTIMIZATION TECHNIQUES

CODE: 05BMCAR19163

CREDITS: 04

UNIT-I INTRODUCTION TO OPTIMIZING TECHNIQUES AND LINEAR PROGRAMMING

Introduction, Basics definition, scope, objectives, Linear Programming Problem, Graphical solution of LPP, Simplex Method, Artificial variables, big-M method, two phase method, degeneracy and unbound solutions

UNIT-II TRANSPORTATION PROBLEM

Formulation, Solution, Unbalanced Transportation Problem. Northwest corner rule, least cost method and Vogel's approximation method, Optimality test: the stepping stone method and MODI method, Assignment Model: Formulation. Hungarian method. Traveling salesman problem and assignment problem, Data Envelopment Analysis.

UNIT-III NETWORK MODELS

Minimum Spanning Tree algorithm, Shortest Route problem, CPM & PERT: Network representation, Critical Path Computations. Linear Programming formulation.

UNIT-IV SEQUENCING AND INVENTORY MODEL

Introduction, processing N jobs through two machines, processing N jobs through three machines, processing N jobs through m machines, Introduction to inventory control, Deterministic inventory model, EOQ model with quantity discount.

References:

1. J K Sharma., "Operations Research Theory & Applications , 3e", Macmillan India Ltd, 2007.
2. P. Sankara Iyer, "Operations Research", Tata McGraw-Hill, 2008.
3. P. K. Gupta and D. S. Hira, "Operations Research", S. Chand & co., 2007
4. H.A. Taha, "Operations Research", PHI, New Delhi. - 1996
5. P.N Guptha & Gandhi " Quantitative Techniques" , University Science Press 2011

COURSE: RESEARCH METHODOLOGY

CODE: 05BMCAR19164

CREDITS: 04

UNIT-I RESEARCH METHODOLOGY

Introduction, Basics definition, scope, objectives, Linear Programming Problem, Graphical solution of LPP, Simplex Method, Artificial variables, big-M method, two phase method, degeneracy and unbound solutions

UNIT-II RESEARCH DESIGN

Principles of experimental design Working with Literature Importance, finding literature, using your resources, managing the literature, keep track of references, using the literature, literature review On-line Searching: Database – SciFinder – Scopus - Science Direct - Searching research articles - Citation Index –Impact Factor - H-index etc,

UNIT-III RESEARCH DATA AND STATISTICS

Measurement of Scaling: Quantitative, Qualitative, Classification of Measure scales, Data Collection, Data Preparation - Descriptive Statistics Measures of Central Tendency, Measures of Dispersion, Measure of Skewness, Kurtosis, Measure of Relationship Linear Regression Analysis: Dependent and Independent variables, Simple Linear Regression model

UNIT-IV REPORT WRITING

Scientific Writing and Report Writing: Significance, Steps, Layout, Types, Mechanics and Precautions, Latex: Introduction, text, tables, figures, equations, citations, referencing, and templates(IEEE style), paper writing for international journals, Writing scientific report.

References:

1. C. R. Kothari, *Research Methodology Methods and Techniques*, 3rd. ed. New Delhi: New Age International Publishers, Reprint 2014.
2. Zina O’Leary, *The Essential Guide of Doing Research*, New Delhi: PHI, 2005.
3. J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4th. ed. SAGE Publications, 2014.
4. Kumar, *Research Methodology: A Step by Step Guide for Beginners*, 3rd. ed. Indian: PE, 2010.

COURSE :CYBER SECURITY

CODE:05BMCAR191

CREDITS: 02

UNIT I: INTRODUCTION TO CYBERCRIME

Definition and Origins of the World – Cybercrime and Information Security. Classification of Cybercrimes – Legal Perspectives – Indian Perspective. Cybercrime and the Indian ITA 2000. A Global Perspective on Cybercrimes. Cybercrime Era.

UNIT II - CYBER OFFENCES, TOOLS, METHODS AND MOBILITY

Cybercrime: Categories and Attacks. Mobility and Security Challenges. Organizational Security Policies. Cybercrime: Tools and Methods. Attack on Wireless Networks.

UNIT III - CYBERCRIMES AND CYBER SECURITY

Need for Cyber Laws. Indian IT Act. Cyber Law and Technology. Cyber Forensics. Forensics Auditing.

UNIT IV - CYBERCRIME AND ETHICAL HACKING

Introduction to Ethical Hacking, Intellectual Property in the Cyberspace. Ethical Dimension of Cybercrimes. Sociology of Cybercriminals. Information Warfare, Real-Life Examples.

Références:

1. “Cyber Security: Understand Cyber Crimes, Computer Forensics and Legal Perspectives”, Nina Godbole and Sunit Belapure, Wiley Publications. 2016.
2. “ETHICAL HACKING AND PENETRATION TESTING GUIDE”, RAFAY BALOCH, CRC Press.
3. “Web Hacking: Attacks and Defense”, Stuart McClure, Saumilshah, Shreeraj Shah.
4. “Cyber Security and Cyber War”, P.W. Singer and Allan Friedman, Oxford University Press, 2014.
5. “HACKING: THE ART OF EXPLOITATION”, 2ND EDITION. C No Cratch Press (Online Edition) Hackers for Beginners, Manthan Desai, 2014. HT Hacking Tech.
6. “The Ethical Hacking Guide to Corporate Security”, Ankit Fadia (Author), Lakshmi Publications.