

“Education for knowledge, science and culture”
- Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha”s
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR
B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2020
Semester - V Computer Science DSE-1305E
Core Java and Operating system
Theory: 72 Hours (90 Lectures) credits -6

Course Outcome

After learning the course the students should be able to:

- Understand structure of java program,jvm,type conversion
- Explain and implements programs in java using control statements, method overloading,constructors,array of objects,keywords this and static,
- Write program on inheritance, package ,abstract class and interfaces
- Implement multithreading in object oriented programs. Understand concept of checked and unchecked exception and write exception handling programs.
- To tell what is an operating system, its objectives and functions
- To classify types of operating system and explain operating system services.
- To explain protection, system calls, system programs and application programs
- To understand the concept of process management, memory management and file management and deadlocks.

Section-I

Unit 1: An Introduction to Java

[10]

- A Short History of Java, Features of Java, Java tools-JDK, JRE.
- structure of java program –compilation and execution of program
- JVM, Types of Comments, Data Types, Final Variable
- Type Conversions -implicit and explicit conversion
- Accepting input from console (Using scanner class and command line arguments)

Unit 2: Control statements, Classes and objects

[10]

- Control statements, For-each loop, Varargs , Declaring 1D, 2D array
- Defining Classes, objects and method -method overloading
- Array of Objects
- Constructor, Overloading Constructors and use of ‘this’ Keyword
- static keyword-static block, static Fields and Methods ,methods (equals(), toString())
- Wrapper Classes
- finalize() Method

Unit 3: Package, Inheritance and Interface [15]

- Package- Introduction to all predefined packages, User Defined Packages. Access Specifiers
- Inheritance -Types of Inheritance-single, multilevel, hierarchical inheritance
- Method Overriding
- Super Keyword, final keyword
- abstract class and abstract methods
- Defining and Implementing Interfaces

Unit 4: Exception Handling and Multithreading [10]

- Exception Handling- Concept, types- Checked and unchecked, try and catch block, multiple catch, Try-catch –finally block,throw and throws clause, finally clause.
- Multithreading- What are threads?, difference between process and thread, Life cycle of thread, methods of thread class, runnable interface, isAlive() and join() methods, Thread priorities , Running multiple threads ,Synchronization and interthread communication wait() , notify(),notifyAll() methods

Section II

Unit 1: Operating System overview [10]

- Introduction and definition of operating system
- Objectives and function
- Types of operating system
- Operating system services
- Protection: input output, memory and CPU protection
- System calls: types of system calls and system call implementation
- System programs and application programs

Unit 2: Process Management [11]

- Process concept, Process states, Process control block (PCB)
- Context switching
- Threads, concept of multithreads, benefits of threads and types of threads
- Process scheduling: scheduling objectives, types of schedulers, scheduling criteria, scheduling algorithms- Preemptive and non-preemptive. FCFS, SJF, priority, round robin, multiple queue, multilevel feedback queue
- Process synchronization, critical section problem, semaphores.

Unit 3: Memory Management [12]

- Logical and physical address map
- Swapping
- Memory allocation- contiguous memory allocation- fixed and variable partition, internal and external fragmentation and compaction.
- Paging and virtual memory, demand paging, locality of reference, page fault, dirty page/ dirty bit, page replacement policies FIFO, optimal, LRU, MFU
- Disk structure, Disk scheduling-FCFS, SSTF, SCAN, LOOK, CSCAN, CLOOK

Unit 4: File management and Deadlocks

[12]

- File concept, access methods- sequential and direct, file types and operations
- Directory structure- single level, two level, tree structure, acyclic graph, general graph directory structure
- Allocation method- contiguous, linked and indexed
- Definition of deadlock, characteristics
- Deadlock prevention, detection and recovery

References:

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Operating System Concepts – Silberschatz, Galvin and Gagne (8th edition)
- 5) System Programming and Operating System – D. M. Dhamdhare
- 6) Operating System by a God bole Tata Mcgraw-Hill Publishing

Practical Program List

Core Java

1. Program on type conversion
2. Program on Control Structure
3. Program on method overloading and overriding
4. Program on Packages
5. Program on constructor
6. Program on Inheritance
7. Program on Arrays
8. Program on Exception Handling

Operating System

1. Write a program to implement copy command of DOS.
2. Write a program to display date and time of system
3. Write a program to implement pwd command of linux.
4. Write a program to implement wc command of linux.
5. Write a program to implement string function without using library functions.
6. write a program to count number of vowels and consonants.
7. Write a program to implement md,cd,rd command.
8. Write a program to implement type command.
9. Write a program to implement rename command.
10. Write a program to implement cat command

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B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2020
Semester - V Computer Science DSE-1306E
Data Communication and Software Engineering with UML
Theory: 72 Hours (90 Lectures) credits -6**

Course Outcomes:

1. To understand the fundamental concept and components of Data Communication system.
2. To explain Concept of network, advantages and disadvantages, categories and architectures of network.
3. To explain types of transmission media and types of transmission modes.
4. Understand multiplexing and switching techniques. Explain network devices, protocols and elements of protocol and standards.
5. Understand functions of physical layer, digital to analog conversion methods, analog to digital conversion methods.
6. Understand Data link layer design issues, Framing, Error detection, and Error correction and flow control.
7. To understand the basics of software and software engineering
8. To learn what is system’s development life cycle.
9. To learn and understand what are traditional and latest process models
10. To learn and know what is agile development.
11. To learn different fact finding techniques, which serve as a basis for requirements analysis and gathering.
12. To understand the importance of SRS in s/w development.
13. To study use of Unified modeling language.
14. To learn how to draw UML diagram.
15. To understand and learn to select suitable UML diagram for our software system.
16. To understand the basics of software testing.

Section -I

Unit 1: Basics of Data communication

[10]

- Concept of data communication
- Components-sender, receiver, message
- Transmission media
- Data Representation
- Data Flow- Simplex, Half-duplex, and Full-duplex.
- Networks: Definition, Advantages and disadvantages
- Categories of Networks-LAN, WAN, MAN.
- Network Architecture-Client-Server and Peer to Peer

- Unit 2: Transmission media and modes** [11]
- Transmission Media Guided Media- Twisted-Pair Cable, Coaxial Cable and Fiber Optic Cable, Unguided Media: Radio Waves, Microwaves, Infrared Waves. Transmission Modes: Parallel, Serial- Asynchronous, Synchronous, Isochronous

- Unit 3: Multiplexing, Switching and Network Devices** [11]
- Multiplexing: Frequency-Division Multiplexing, Wavelength-Division Multiplexing Time Division Multiplexing
 - Switching: Circuit switching- data gram and virtual Switching, Packet Switching and Message Switching
 - Network Devices: Repeater, Hub, Bridge, Switch, Router, Gateway, **Brouter, Modem**. Protocols and Standards.
 - Protocols: concept, syntax, semantics, Timing
 - Standards.

- Unit 4: Physical Layer and Data Link Layer** [13]
- Physical layer: Digital-to-analog conversion: concept, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying. Analog-to-digital conversion: Pulse Code Modulation (PCM), Delta Modulation (DM).Data link layer: Design issues, Framing, error Detection and Correction.

Section – II

- Unit 1: Introduction to software engineering and process models** [12]
- Definition of software, definition of software engineering, characteristics of software
 - System Development Life Cycle (SDLC), phases of SDLC
 - Software process models: Traditional models-Waterfall model, Prototyping model, Spiral Model, Introduction to Agile software development-concept, advantages, types- scrums, extreme programming(XP).

- Unit 2: Introduction to Requirements Analysis** [10]
- Requirement anticipation and investigation
 - Fact finding methods- Interviews, Questionnaires, observation, record review.
 - Software requirements specification (SRS)- need of SRS, characteristic of SRS, structure of SRS, Types of requirements - functional and non- functional

- Unit 3: Introduction to UML and UML Diagrams- I** [11]
- Introduction to UML- concept of UML, advantages of UML, applications of UML.
 - Classification of UML diagrams, Use case diagrams-overview, identifying actors and use cases, communication and relationships, example.
 - Class diagrams: classes and objects, association and links, multiplicity, inheritance, example. State machine diagram-states, event, composite state, transition, activity, and example.

Unit 4: UML Diagrams- II and introduction to Software Testing**[12]**

- Interaction diagrams - overview,
- Sequence Diagram-concept, activation, example.
- Activity diagram-concept, activities, actions, decisions, control nodes, fork and join node, example.
- Software Testing overview - concept, Testing fundamentals, Types of testing –Unit testing, Acceptance testing (α / β), Integration testing, Black box testing, White box testing.

Reference Books:

1. James F. Kurose, University of Massachusetts, Amherst Keith W. Ross, Polytechnic University, Brooklyn -Computer Networking: A Top-Down Approach, 4th Edition, Pearson.2008
2. Behrouz A. Forouzan- Data Communications And Networking - (4th edition) McGraw-Hill.2007.
3. Tanenbaum A.S. “computer Network”, 3rd Edition, Prentice Hall of India .2004.
4. Stalling W,“computer communication Network”.(4th edition). Prentice hall of India 1993
5. System Analysis and design and Introduction to Software Engineering – Parthasarathi, B.W. Khalkar.
6. UMLTM 2 Toolkit By Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado
7. An Integrated Approach To Software Engineering by Pankaj Jalote edition 3
8. Fundamentals of Software Engineering - Rajib Mall edition 3
9. 9.Software Engineering - R.S. Pressman edition 3
10. The Unified Modeling Language Reference Manual by James Rumbaugh, Ivar Jacobson, Grady Booch second edition by Addison-Wesley
11. Object Oriented Software Engineering using UML, Patterns and Java third edition pearson publication
12. Object Oriented Software Engineering by Ivar Jacobson (Pearson Edu. INC)

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B. Sc. Part – III (Computer science Entire) CBCS Syllabus with effect from June, 2020
Semester - V Computer Science DSE-1307E
C# Programming and E-Commerce
Theory: 72 Hours (90 Lectures) credits -6

Course Outcome

After learning the course the students should be able to:

- 1) To understand the Event driven & sequence driven programming, to explain .net framework architecture, understand assembly, namespace, garbage collector & JIT Compilers
- 2) Understand data types, operators, conditional, unconditional & looping statements. To understand how to write function & procedures
- 3) Understand class, object, & OOP concepts
- 4) Understand different controls in window application, events & properties of controls.
- 5) To understand the process of Electronic commerce and Business strategy involved in it and security concerns while doing online businesses.
- 6) Appreciate ethical implications of professional practice.
- 7) Be aware of global perspectives.
- 8) Analyze features of existing e-commerce businesses, and propose future directions or innovations for specific businesses

Section-I

Unit -1: Introduction

[10]

- Event driven & sequence driven programming
- Introduction to c#, .net framework architecture
- Assembly Namespace, Garbage collector JIT compilers

Unit -2: Data Types & Control Structure

[12]

- Variables, expressions, constants, Data Types , Operators, implicit & explicit conversions
- Conditional statements
- Loop statements
- Unconditional statements
- Functions, Procedures

Unit – 3: Working with Classes

[12]

- Class & objects
- Constructors
- Inheritance
- Polymorphism

Unit – 4 Developing GUI applications with Win Form

[11]

- Different controls in win form – Forms, textbox, labels, buttons, radio buttons, check box, combo box, list box, Date time picker
- Important properties of controls, Important events of each control
- Menus, built in dialog box – input box, message box, Mouse events – click, double click, enter, hover, leave, move, Keyboard events – key press, key down, key-up

Section-II

Unit 1: Introduction

[10]

- History, Overview, Definition of E-commerce.
- Scope & Goals of E- Commerce.
- Advantages and Disadvantage of E-commerce. Applications of E- commerce.
- Challenges of E-commerce. Roadmap of e-commerce in India.
- Traditional commerce Vs E-commerce.

Unit 2: Electronic Data Interchange (EDI)

[15]

- Meaning of EDI. History of EDI.
- EDI Working Concept. EDI Model.
- EDI Standards.
- Implementation difficulties of EDI. Advantages and Disadvantage of EDI.
- E Commerce Business Models (B2B, B2C, C2C,C2B,B2G,G2G,G2C)
- E-commerce marketing and business strategies, Social networks and online communities.
- History and Development, Use of Internet. Domain Names.
- Internet Service provider. World Wide Web.
- Uniform Resource Locator. Web Browsers.
- Email, Voicemail, Web Search Engines

Unit 3: E-Payment Systems

[10]

- Electronic Payment concept. Steps for Electronic Payment.
- Types of E-Payment Systems- Prepaid, Postpaid.
- Electronic fund Transfer. Net Banking.
- Case Study :
 1. List out the Web sites dealing with E- Commerce.
 2. Survey of ATM Center.
 3. Create a Website with minimum details.
 4. Log on to trade Website and make a trial order for purchase of an item.

Unit 4: E-Security Issues and Threats

[10]

- Secure Transaction concept – Authentication & Authorization.
- Privacy on Internet.
- Computer Crime Types and laws. Viruses -Types of Attacks.
- Vulnerability of Internet Sites. Denial-of-Service attacks.
- Cryptography-Encryption, Decryption. SSL –SET.
- Firewall.
- Digital Certificates. Digital signatures

References:

- 1) E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill
- 2) Kenneth C. Laudon, E-Commerce : Business, Technology, Society, 4th Edition, Pearson
- 3) C.S.V. Moorthy E-Commerce concepts, Models, Strategies – Himalaya Publications, New Delhi.
- 4) e- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill International
- 5) E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
- 6) E-Commerce by S .Jaiswal-Galgotia Publications.
- 7) C# 4.0 The Complete Reference Schildt H.Edition – 2010 Publication – Tata mcGrawHill
- 8) .Net 4.5 programming BlackBook Kogent Edition – 2013 Publication – dreamTech press

Practical list:

1. Program to find no. of denominations of a given amount
2. Program to find sum of numbers between 200 to 600 which are divisible by 6
3. Program to read number 'n' and digit d & check whether d is present in n, and if yes check how many times
4. Program. to read number 'n' & print out digit by digit as a series of words using function.
5. Program to find area of rectangle, triangle & circle using interface.
6. Program. to find volume of cube, cylinder & rectangle using method overloading.
7. Program to perform following operations on form.
 - Form – size-maximum, minimum & restore
 - Color – Blue, yellow & green
 - Exit
8. Create a window application for employee. Following information should be accepted Empid, name, birth date, joining date, basic, hra%, da% & following information should be calculated & displayed in appropriate control. Age, retirement date, total HRA, total DA & total salary.

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B. Sc. Part – II (Computer science Entire)
CBCS Syllabus with effect from June, 2019
Semester: V Skill Enhancement course-II
PHP Programming
Theory: 30 Hours (38 Lectures) credits -2**

Course outcome:

1. To earn skill set to develop online information system using the open source PHP.

Unit 1: Introduction to PHP

[10]

- What does PHP do?
- A walk through PHP-forms, databases, graphics
- Language basics- lexical structure- case sensitivity, statements and semicolons, whitespaces and line breaks, comments, literals, identifiers, keywords
- Data types- integers, floating point numbers, strings, Booleans, arrays
- Variables- variable references, scope, garbage collection
- Expressions and operators
- Flow control statements- if, switch, while, for, foreach, try...catch, declare, exit and return, goto

Unit 2: Functions and strings

[10]

- Calling a function, defining a function
- variable scope, function parameters, Return values
- Variable functions, Anonymous functions
- Quoting string constants
- Printing strings, cleaning strings
- Comparing, manipulating and searching strings
- Regular expressions

Unit 3: Arrays and objects

[10]

- Indexed versus associative arrays, Identifying elements of an array
- Storing data in arrays, Multidimensional arrays
- Extracting multiple values, Converting between arrays and variables
- Traversing arrays
- Objects- terminology, creating an object, accessing properties and methods
- Declaring a class- methods, properties, constants, inheritance, interface

Unit 4: Web technique and databases

[10]

- HTTP Basics, variables, processing forms, setting response headers
- Using PHP to access a database, PHP data objects
- MySQLi object interface
- SQLite
- MongoDB
- Case study

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B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2020
Semester - VI Computer Science DSE-1305F
Advanced Java and Data warehousing and mining
Theory: 72 Hours (90 Lectures) credits -6

Course outcomes

On successful completion of the course, the students will be able to,

1. Create a full set of UI Widgets using Abstract Windowing Toolkit (AWT) & Swings
2. Learn to access database through Java programs, using Java Data Base Connectivity (JDBC).
3. Create dynamic web pages using Servlets
4. Create dynamic web pages using JSP.
5. To understand Data Warehousing, Working of data warehouse, Data Warehouse applications.
6. To understand types of data Warehouse, Difference between Data Warehouse (OLAP) and Operational Database (OLTP).
7. To understand and explain concept of data mining, Process of knowledge discovery in databases (KDD)
8. To Explain Data Objects and Attribute Types.
9. To Understand Data Preprocessing and Data Quality.
10. To explain major tasks in Data Preprocessing.
11. To understand market basket analysis and explain Apriori algorithm.
12. To understand concept of Classification
13. To understand regression analysis, Concept of clustering and explain K-means Clustering algorithm

Section –I

Unit 1: User Interface Components with AWT and Swing

[19]

- Awt-What is AWT ? classes hierarchy, windows fundamentals Frame Windows Event Classes
- Mouse Event Class, Action Event Class, Window Event Class, Event Listener Interface: Mouse Listener, Action Listener, Window Listener and Key Listener
- AWT Controls: Labels, Text Field, Push buttons .
- Layout Managers (Flow Layout, Border Layout, Grid Layout, Card Layout)
- Swing- What is Swing? Difference between AWT and Swing., The MVC Architecture and Components – JFrame, JButton, JLabel, JText, JTextArea, JCheckBox and JRadioButton, JList, JComboBox, JMenu ,JtabbedPane , JScrollBar , Dialogs (Message, confirmation, input)

Unit 2: JDBC [7]

- What is JDBC ? Steps for connectivity between Java program and database.
- Type of drivers,
- Simple program-database operations like creating tables, CRUD(Create, Read, Update, Delete) operations using SQL

Unit 3: Servlet [10]

- Introduction of servlet: How servlet work, model diagram
- Uses of servlet, Life cycle of servlet, Servlet API: packages- javax. servlet and javax. servlet.http
- Session Tracking Mechanisms, HttpSession, Cookies, URL-Rewriting, Hidden-Form Fields

Unit 4: JSP [10]

- Introduction, Jsp LifeCycle, Jsp Implicit Objects & Scopes, Jsp Directives- 1.page 2.include 3.taglib
- Jsp Scripting Elements - 1.declaratives 2.scriptlets 3.expressions
- Simple application using JSP.
- Difference between JSP and Servlet

Section- II

Unit 1: Introduction to data warehousing [10]

- What is Data Warehousing?
- How Data warehouse works?
- Why a Data Warehouse is Separated from Operational Databases
- Data Warehouse Applications
- Types of Data Warehouse
- Difference between Data Warehouse (OLAP) and Operational Database(OLTP)

Unit II: Introduction to data mining [10]

- What is data mining?
- Process of knowledge discovery in databases (KDD)
- Getting to Know Your Data
- Data Objects and Attribute Types, What Is an Attribute, Nominal Attributes , Binary Attributes, Ordinal Attributes, Numeric Attributes , Discrete versus Continuous Attributes

Unit III: Data preprocessing and association rule mining [10]

- Data Preprocessing: An Overview
- Data Quality: Why Preprocess the Data?
- Major Tasks in Data Preprocessing, Data Cleaning (Missing Values, Noisy Data) , Data integration, Data Transformation , Data reduction, Data Discretization,
- Association Rule Mining, Market basket analysis, Apriori algorithm

Unit IV: Classification, prediction and clustering

[15]

- Classification, Classification Requirements, Classification vs Prediction, Issues related to Classification and Prediction
- Decision tree
- Prediction
- Regression analysis
- Clustering: What Is Cluster Analysis? Different Types of Clustering, K-means: The Basic K-Means Algorithm

Practical Program List

1. Program on Swing
2. Program on AWT
3. Program on Database Connection
4. Program on cookie and Session
5. Program on Servlet
6. Simple application using JSP.

References:

1. Complete reference Java by Herbert Schildt(5th edition)
2. Java 2 programming black books, Steven Horlner
3. Programming with Java , A primer ,Forth edition , By E. Balagurusamy
4. Jiawei Han and Micheline Kamber, ” Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers, USA, 2006.
5. Berson, ”Data Warehousing, Data Mining and OLAP”, Tata McGraw Hill Ltd, New Delhi, 2004.
6. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, , Pearson Education
7. Arun K Pujari, ”Data mining techniques”, Oxford University Press, London, 2003.
8. Dunham M H, ”Data mining: Introductory and Advanced Topics”. Pearson Education, New Delhi, 2003
9. Mehmed Kantardzic, ” Data Mining Concepts, Methods and Algorithms”, John Wiley and Sons, USA, 2003.
10. Soman K. P., DiwakarShyam, Ajay V., Insight into Data mining: Theory and Practice, PHI,2006

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B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2020
Semester - VI Computer Science DSE-1306F
Computer Networks and C# and introduction to ASP.Net
Theory: 72 Hours (90 Lectures) credits -6

Course Outcomes:

After learning the course the students should be able to:

1. Understand Flow control protocols-Sliding window protocol, One bit sliding window protocol, protocol using go back N, Protocol using selective repeat.
2. Explain design issues, concept of routing, routing algorithms and Congestion Control algorithms.
3. Explain transport layer service primitives, TCP, UDP protocol.
4. Understand session layer services, Remote Procedure Call(RPC)
5. Explain Presentation layer services, Concept of cryptography and types of cryptography.
6. Explain Functions of application layer, application layer protocols (DNS, HTTP, SMTP, Telnet and FTP) and network security.
7. To get knowledge different types of errors, structured & unstructured exception, to understand how to trace errors.
8. To understand database connection, connected & disconnected architecture, data binding to controls, data validations.
9. Understand & Generate Reports from database using crystal report
10. Get Basic introduction to ASP.net, understand different ASP.net controls, understand concepts of Master Page

Section-I

Unit 1: Data Link Layer Protocols, Network Layer **[10]**

- Protocols- Sliding window protocol: one bit sliding window protocol, protocol using Go Back N, protocol using selective repeat.
- Network Layer: Design issues, Concept of Routing.

Unit 2: Network Layer and Transport Layer **[12]**

- Routing Algorithms (Shortest Path, Flooding, Distance Vector Routing).
- Congestion Control Algorithms: Leaky Bucket, Token Bucket
- Transport Layer: services: connection oriented and connection less services.
- Transport Layer Primitives: listen, connect, send, receive, disconnect. Protocols: TCP, UDP

Unit 3: Session and Presentation layer [11]

- Session layer: Services: dialog management, synchronization, activity Management, exception handling Remote procedure calls (RPC).
- Presentation Layer: Services- Translation, compression, encryption
- Cryptography- Concept, Symmetric key and Asymmetric key Cryptography.

Unit 4: Application layer and network security [12]

- Application layer: Function.
- Protocols- Domain name system (DNS), Hypertext transfer Protocol (HTTP), Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP).
- Network security: Security concept and services, Message Authentication, Digital Signatures and Entity authentication.

Section II

Unit 1:Exception Handling [10]

- Errors-types of errors
- Structured Exception – Try__Catch__End Try, finally, throw,
- Unstructured Exception – On error GoTo, resume ,resume next.
- Tracing Errors – Break Point, watch window, quick watch window, autos

Unit 2: Database Connectivity in C# [12]

- Database: Connections, command, Data adapters, and datasets
- Connection to database using MS-Access, SQL Server
- Data binding with controls like Text Boxes, List Boxes, Data grid etc. Data form wizard,
- Data validation

Unit 3: Using Crystal Report [12]

- Connection to Database, Table, Queries, Create and Modify Report,
- Formatting Fields and inserting Header, Footer, Group
- Details Working with formula fields, Parameter fields
- Working with Multiple Tables

Unit 4: Introduction to ASP.Net with c# [11]

- Introduction to ASP. NET
- Working with web forms: Buttons, Text Boxes, Labels, Check Boxes, Radio Buttons, Tables, Panels, Images, Image Buttons, List Boxes, Drop-Down Lists, Hyperlinks and Link Buttons

Program list

1. Create a login form with UserId, password, current date. Check the userId & password from table & give proper message.
2. Create a window application for saving account of a customer with a/c no, name, opdate, opbal, mode of payment. If mode of payment is check then get cheque number. Add data to saving transaction table with fields a/c no, debit amount, credit amount, balance, tdate, mode of payments, satus. Generate add, edit, delete operations
3. Create a window application that create debit & credit activities to the saving transaction table. Balance should be made. (e.g. check a/c no with the master file & display name). check balance before debit the amount.
4. Create crystal report for Saving Master list.
5. Create customer bill with master detail transactions
6. Generate customer bill with crystal report.

References:

1. Behrouz A. Forouzan- Data Communications And Networking - (4th edition) McGraw-Hill.2007
2. Tanenbaum A.S. “computer Network”, 3rd Edition, Prentice Hall of India.2004.
3. Stalling W, “computer communication Network”.(4th edition). Prentice hall of India 1993
4. C# 4.0 The Complete Reference Schildt H.Edition – 2010 Publication – Tata McGrawHill
5. .Net 4.5 programming Black Book Kogent Edition – 2013 Publication – DreamTech press
6. ASP.Net 4.0 Black Book Edition – 2010 Publication – DreamTech Press

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B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2020
Semester - VI Computer Science DSE-1307F
Linux OS and Artificial intelligence and Expert system
Theory: 72 Hours (90 Lectures) credits -6

Course Outcome:

After learning the course the students should be able to:

- 1) To understand the linux basics- shell, kernel, general purpose utilities, directory handling commands, file handling commands
- 2) To implement basic filters.
- 3) To understand environment variables.
- 4) To use VI editor and its different commands.
- 5) To write shell scripts and run them.
- 6) To write shell scripts using different conditional and looping statements.

Section-I

Unit 1: Linux Basics

[15]

- What is an OS? What is Linux, history of Linux, Linux distribution
- The shell, kernel, Linux file system, login, logout
- Different general purpose utility commands (GPU)- cal, date, bc, who
- Concept of directory, home directory, directory handling commands- PWD, cd, mkdir, rmdir, ls, relative and absolute path
- Basic file attributes metacharacters.
- Access permission chmod command
- File handling commands-cat, cp, mv, rm, lp, man, pipe

Unit 2: Basic filters

[10]

- What is a filter, head, tail, sort, grep, sed, awk
- regular expressions and its types
- environment variables-PATH, USER, HOME, UID, TERM, SHELL
- concept of process, PID, PS, KILL, FREE

Unit 3: VI editor

[7]

- What is the VI editor-command mode, insert mode, last line mode
- VI editing commands, moving within a file, saving and closing the file
- Command mode movement, command mode- making changes, repeating VI actions

Unit 4: Essential shell programming [13]

- Linux shells, shell scripting, running a shell script
- Statements- read, echo, exit, expr
- Conditional statements- test, if, case
- Looping statements- while, until, for
- Positional parameters- set, shift

Section-II

Unit 1: Introduction to Artificial Intelligence [09]

- Definition of Artificial Intelligence, History of Artificial Intelligence, Goals of A.I.
- Contributors of A. I., Branches of A.I., Applications of A.I.
- Why Artificial Intelligence, Advantages of A.I., Disadvantages of A.I., Types of Artificial Intelligence: Type1, Type2.

Unit 2: Introduction to Intelligent System [11]

- What is intelligence, Types of Intelligence,
- Components of Intelligence- Reasoning, Learning, Problem Solving, Perception, Linguistic Intelligence.
- A.I. Agents and environment – concept, definition of agent, definition of environment, Structure of A.I. agent, Rules for A.I. agent, Rational Agent- PEAS representation (Case study of Self Driving Car) examples. Turing test.

Unit 3: Problem Solving in A.I. [13]

- Concept, Search algorithm terminologies: i) Search- Search Space, Start State, Goal State. ii) Search Tree, iii) Actions, iv) Transition Model, v) Path Cost vi) Solution vii) Optimal Solution, viii) Problem and Problem Space.
- Types of Search Algorithms: Uninformed- Breadth First Search, Depth First Search, Informed: Heuristic Search – i) Generate and test method , ii) Hill Climbing
- Natural Language Processing: concept, definition, natural language processing and understanding, NLP analysis stages

Unit 4: Introduction to Expert System [12]

- What are expert systems, Features of expert Systems,
- Components of Expert System- i) Knowledge base- definition, components of Knowledge base, Knowledge representation , Knowledge Acquisition. ii) Inference Engine – Definition, forward chaining, backward chaining, iii) User Interface
- Development of E.S., Limitations of E.S., Applications of E.S.

Program List

- Display , copy , move , delete and print files form different directories
- Change file access permissions using chmod and confirm using ls -l command
- Creating text files using VI editor

Shell scripts-

1. Write a shell script to get any number and display its square , cube sum of its digits .
2. Write a script to display sequences such as
2 4 6 8 10
0 1 1 2 3 5 8
3. Use of set and shift in a script to use positional parameters.
4. Write a script using case structure to validate inputs
 - a) Accept only two digit number.
 - b) Accept employee code such as first character of code must be a letter
 - c) Accept only four character long string.

Reference books:

- Unix concept and applications ----- Sumitabha Das
- Unix shell programming- Yashwant Kanetkar
- Artificial Intelligence by- Mrs. Neeta Deshpande Technical Publications Pune.
- Artificial Intelligence Making a system Intelligent by Dr. Nilakshi Jain.
- Artificial Intelligence Elaine Rich and Kevin Knight, Tata McGraw Hill edition 3.

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR

B. Sc. Part – III (Computer science Entire)

CBCS Syllabus with effect from June, 2020

Semester: VI Skill Enhancement course-II

SEC-IV Android Programming

Theory: 30 Hours (38 Lectures) credits -2

Course Outcomes

- To understand the Event driven & sequence driven programming, to explain .net framework architecture, understand assembly, namespace, garbage collector & JIT Compilers
- Understand data types, operators, conditional, unconditional & looping statements. To understand how to write function & procedures
- Understand class, object, & OOP concepts
- Understand different controls in window application, events & properties of controls.

Unit -1 Fundamentals & developments of Android

What is android, setting up development environment, Dalvik virtual machine & .apk file extension. How to setup Android Development Environment. Android development Framework - Android-SDK, Android Project Framework

Unit –2 Android Activities & UI Design

Understanding Intent, Activity, Activity Lifecycle and Manifest, Creating Application and new Activities Expressions and Flow control, Android Manifest Simple UI -Layouts and Layout properties, Fundamental Android UI Design Introducing Layouts Creating new Layouts, Drawable Resources Resolution and density independence (px,dip,dp,sip,sp)

XML Introduction to GUI objects viz. Push Button Text / Labels EditText, ToggleButton, Weight Sum Padding Layout Weight

Unit – 3 Advanced UI Programming

Event driven Programming in Android (Text Edit, Button clicked etc.) Creating a splash screen, Event driven Programming in Android. **Android Activity Lifecycle**-Creating threads for gaming requirement Understanding the Exception handler. **Different controls in win form** – Forms, textbox, labels, buttons, radio buttons, check box, combo box, list box, Date time picker, Important properties of controls, Important events of each control, Menus, **built in dialog box** – input box, message box, **Mouse events** – click, double click, enter, hover, leave, move, **Keyboard events** – key press, key down, key-up

Unit – 4: Toast, Menu, Dialog, List and Adapters

What is Menu? Custom Vs. System Menus Creating and Using Handset menu Button (Hardware) What are Android Themes. What is Dialog? How to create an Alter Dialog? What is Toast in Android? List & Adapters Manifest.xml File Update

Question Bank

Here is a list of basic Android tutorials, that you can follow in order to make the first basic steps in the Android World:

Android Layouts and Views

- [Android FrameLayout Example](#)
- [Android LinearLayout Example](#)
- [Android ImageView Example](#)
- [Android TextView Example](#)
- [Android Button Example](#)

Android Click and Drag Listeners

- [Android OnClickListener Example](#)
- [Android Drag and Drop Example](#)

Android Styles and UI Elements

- [Android Styles and Themes Example](#)
- [Android Toast Example](#)
- [Android Toolbar Example](#)

Android Activities

- [Android Activity Transition Example](#)

Android Development

- [Building Android Applications with Gradle](#)
- [Android Project migration from Eclipse to Android Studio](#)