



Lokmanya Tilak Jankalyan Shikshan Sanstha's

PRIYADARSHINI COLLEGE OF ENGINEERING

(Recognised by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to R.T.M.Nagpur University)

Near CRPF Campus, Hingna Road, Nagpur-440 019, Maharashtra (India)

Phone : 07104 – 236381, 237307, Fax : 07104 – 237681,

email : principal.pce.ngp@gmail.com, www.pcenagpur.edu.in



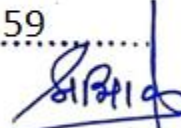
1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years

2016-17



**PRIYADARSHINI COLLEGE
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Principal



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1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years BE.:Computer Technology(2016-17)

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain	Page No
1	Program Logic Design in "C"	BECT202T/P	Programming and logic design	2-12
2	Data Structures & Program Design	BECT209T/P		
3	Introduction to Main-Frame Languages	BECT212T		
4	Object Oriented Modeling	BECT301T/P		
5	Design and Analysis of Algorithms	BECT304T/P		
6	Computer Graphics	BECT306T/P		
7	Software Engineering and Project Management	BECT308T/P		
8	Social and Ethical aspects of IT	BECT204T	Computer Network and Security	13-20
9	Data Communication	BECT305T		
10	Computer network	BECT307T/P		
11	Cyber & Information Security	BECT407T/P		
12	Elective IV: Cloud Computing	BECT409T	Database Management System and Data Processing	21-27
13	Database Management System	BECT302T/P		
14	ELECTIVE-I Advance Database Systems	BECT403T		
15	Data Warehousing and Mining	BECT406T/P	Computer Architecture	28-35
16	Digital Circuits & Microprocessor	BECT203T/P		
17	Computer Architecture & Organization	BECSE205T		
18	Advance Microprocessor and Interfacing	BECT210T/P		
19	Embedded System Design	BECT309T	System Software	36-44
20	Theory of Computation	BECSE211T		
21	COMPUTER WORKSHOP – 2 LAB	BECSE206P		
22	Operating Systems	BECT303T/P		
25	Compilers	BECT401T/P	Web Technology	45-51
26	Elective II: Natural Language Processing	BECT404T		
27	COMPUTER WORKSHOP I LAB	BECSE206P		
28	Elective II:Architecture of Web Application	BECT404T	Artificial Intelligence	52-58
29	ELECTIVE-III :Web Data Management	BECT408T		
30	Artificial Intelligence	BECT402T/P	Others	
31	ELECTIVE-I Computational Intelligence	BECT403T		
32	ELECTIVE-III :Human Computer Interface	BECT408T		
33	Mini project	BECT311P	Others	
34	Project and Seminar	BECT405P		
35	Project	BECT410P		

Domain 1: Programming and Logic Design

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Program Logic Design in “C”	BECT202T/P	Programming and logic design
2	Data Structures & Program Design	BECT209T/P	
3	Introduction to Main-Frame Languages	BECT212T	
4	Object Oriented Modeling	BECT301T/P	
5	Design and Analysis of Algorithms	BECT304T/P	
6	Computer Graphics	BECT306T/P	
7	Software Engineering and Project Management	BECT308T/P	

BECT202T: Program Logic Design in "C"

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Practical) 1 hr (Tutorial)	5	100	20	80	100

Unit-I

Arrays: single dimensional arrays, two dimensional arrays, multidimensional arrays, variable length arrays. Array operations. Strings, single dimensional array of string, two dimensional array of string, operations in "string.h". Structures: array of structures, passing structure to function, structure within structures. Unions, bit-fields, enumerations, sizeof, typedef.

Unit II

Introduction File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer, Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(). Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), getting file name as Command line arguments.

Unit III

Pointers: pointers operators, pointer arithmetic, Pointers and function, Array of pointers, Pointer and Strings, Pointer to structure, Pointers within structure, Introduction of Static and Dynamic memory allocation, The process of Dynamic memory allocation, DMA functions Malloc() function, Sizeof() operator, Function free(), Function realloc()

Unit IV

Graphics: Graphics and Text mode, Video Adapter, Initialize Graphics Mode and resolution, header file graphics.h. Functions used In Graphics – Drawing a Point on Screen, Drawing – lines, rectangle, circles, arcs, polygon. Functions to fill colors. Display Text in Graphics mode, outtext(), outtextxy(), justifying text.

Advanced Graphics: various functions used for moving of graphical objects viz moverel(), moveto(), putimage(), putpixel().

Unit V

Introduction to problem solving and programming : Basic model of computation, Notion of Algorithms, Principle of Mathematical Induction, Basics of functional programming, notion of types, Iterative versus recursive style, Correctness and efficiency issues in programming, time and space measures

Unit VI

Introduction to problem solving and programming: Basics of imperative style programming, Assertions and loop invariants, Top down design and examples of step-wise refinement, Programming using structures, introduction to encapsulation and object oriented programming.

Text Books

1. The C Programming Language: Dennis Ritchie & Brian Kernighan [Pearson]
2. Practical "C" Programming: Steve Oualline, O'Reilly Publications
3. Programming with C :K.R.Venugopal&S.R.Prasad [TMH]
3. How to solve it by Computer by R. J. Dromey, Prentice-Hall India EEE Series.

Reference Books

1. The Complete Reference C (4th Edition) : Herbert Schildt [TMH]
2. Structure and Interpretation of Computer Programs by Harold Abelson and Gerald Sussman with Julie Sussman, MIT Press, 1985.

BECT202P: Program Logic Design in "C" lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT209T: Data Structures & Program Design

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Introduction to Data Structures: Basic Concepts of Data, How to Create programs.

Arrays: Ordered Lists, Sparse Matrices, Quick Sort, Merge Sort, Heap Sort, selection & Bubble Sort, Linear Search, Binary Search.

Unit II:

Stacks & Queues: Fundamentals, Evaluation of expressions, Polish expressions & their compilation, Application of stacks, Multiple stacks & Queues, priority queues.

Unit III:

Linked Lists: Singly Linked List, Linked Stacks & Queues, the polynomial addition, Examples on linked list, circular linked list, doubly linked list & dynamic Storage management, Generalized list.

Unit IV:

Trees: Basic Terminology, Basic trees, Binary tree representations, threaded storage representation, binary tree traversals, binary search trees, Application of trees. Preliminary treatment of AVL Trees, B-Trees.

Unit V:

Graphs: Definition & terminology, Graph representation: matrix representation of Graph, List of structure, other representation of graphs, Breadth First Search, Depth First Search, Spanning trees, Shortest path algorithm, topological sorting, Critical path.

Unit VI:

Files: Storage structures on tapes & disks, sorting with disks & Tapes, sequential files, indexed sequential files, Direct Access files, and Hashing techniques.

Textbooks:

- Fundamentals of Data Structures: Horowitz and Sahani
- Algorithms in a Nutshell, George H & Garry, O'reilly Publication
- Data Structures using C by Tanenbaum, Pearson Education
- S. Sahani, Data Structures in C,
- Data structures -Robert Kruse

BECT209P: Data Structures & Program Design Lab: Practical will be based on above syllabus using "C" language and relevant tools of MATLAB.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT212T: Introduction to Main-Frame Languages

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I: Evolution of Mainframe hardware

- Overview of Computer Architecture -Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems
- Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes

Unit II: z/OS and its features

- Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC

Unit III: Introduction to JCL

- Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.

Unit IV: COBOL Programming 1

- Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL
- Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.
- Data division – Data names, level numbers, PIC and VALUE clause, REDEFINES, RENAMES and USAGE clause
- Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.

Unit V: COBOL Programming 2

- File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations.
- File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.
- Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison.
- Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.

Unit VI: Mainframe Application Development guidelines

- COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).

Books and Reference Text:

1. MVS JCL, Doug Lowe, Mike Murach and Associates
2. Gary DeWard Brown, JCL Programming Bible (with z/OS) fifth edition, Wiley India Dream Tech, 2002.
3. z/OS V1R4.0 MVS JCL Reference found online at <http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706>
4. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
5. COBOL - Programming Guide, Ver 3, Release 2, IBM Redbook.
6. Nancy Stern & Robert A Stern, "Structured Cobol Programming", John Wiley & Sons, New York, 1973.
7. M.K. Roy and D. GhoshDastidar, "Cobol Programming", Tata McGraw Hill, New York, 1973.
8. Newcomer and Lawrence, Programming with Structured COBOL, McGraw Hill Books, New York, 1973.
- Study material from INFOSYS-PUNE

SYLLABUS: V SEMESTER (Computer Technology) (C.B.S.)

BECT301T: Object Oriented Modeling

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I: Introduction: The meaning of **Object Orientation**, object identity, Encapsulation, information hiding, polymorphism, importance of modeling, principles of modeling, object oriented modeling, **Aggregation and association**, **Generalization**, Introduction to UML, conceptual model of the UML, Architecture.

Unit II: Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams. Collaboration Diagrams: Terms, Concepts, depicting a message, polymorphism in collaboration Diagrams, iterated messages, use of self in messages. Terms, concepts, depicting asynchronous messages with/without priority, callback mechanism, broadcast messages.

Unit III: Basic Behavioral Modeling: Use cases, Use case Diagrams, Activity Diagrams, State Machine, Process and thread, Event and signals, Time diagram, interaction diagram, **Dataflow diagram**, Package diagram, **sequence diagram**, **E-R diagram**.

Unit IV: Architectural Modeling: Component, **Deployment**, Component diagrams and Deployment diagrams.

Unit V: The Unified process: use case driven, architecture centric, iterative, and incremental. Use case driven process: why use case, capturing use cases, analysis, design, and implementation to realize the use cases, testing the use cases.

Unit VI: Architecture-centric process: architecture in brief, why we need architecture, use cases and architecture, the steps to architecture, an architecture description. Case Study: The Unified Library application.

Text Books:

1. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson 2nd Edition, Pearson Education.
2. UML 2 Toolkit by Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado WILEY-Dreamtech India Pvt. Ltd.
3. The Unified Software Development Process by Ivar Jacobson, Grady Booch, James Rumbaugh, Pearson Education

Reference Books:

1. Fundamentals of Object Oriented Design in UML by Meilir Page-Jones Pearson Education.
2. Modeling Software Systems Using UML2 by Pascal Roques WILEY-Dreamtech India Pvt. Ltd
3. Practical Object-Oriented Design with UML by Mark Priestley TATA McGrawHill

BECT301P: Object Oriented Modeling lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT304T: Design & Analysis of Algorithms

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT-I

Mathematical foundations, summation of arithmetic and geometric series, n , n^2 , bounding summations using integration, recurrence relations, solutions of recurrence relations using technique of characteristic equation, Complexity calculation of various standard functions, principles of designing algorithms

UNIT-II

Asymptotic notations of analysis of algorithms, analyzing control structures, worst case and average case analysis, amortized analysis, application of amortized analysis, advanced data structures like Fibonacci heap, disjoint set representation, and their applications, Divide and conquer basic strategy, binary search, quick sort, merge sort, matrix operations, Multiplication Algorithm

UNIT-III

Greedy method – basic strategy, Knapsack Problem, application to job sequencing with deadlines problem, minimum cost spanning trees, single source shortest path, Optimal Search Patterns.

UNIT-IV

Dynamic Programming basic strategy, multistage graphs, all pairs shortest path, single source shortest paths, optimal binary search trees, traveling salesman problem, Longest Common Subsequence, 0/1 Knapsack problem.

UNIT-V

Connected components, Backtracking basic strategy, 8-Queen's problem, sum of subsets, Knight tour's problem, graph coloring, Hamiltonian cycles etc, Introduction to Approximation algorithm.

UNIT-VI

NP-hard and NP-complete problems, basic concepts, non-deterministic algorithms, NP-hard and NP-complete, decision and optimization problems, graph based problems on NP Principle.

Text Books:

1. Introduction to Algorithms By Thomas H. Cormen et.al. Prentice Hall of India.
2. Design & Analysis of Algorithms By Parag Himanshu Dave, Himanshu Bhalchandra Dave, second Edition, Pearson Publication.
3. Computer Algorithms- Introduction to Design and Analysis By Sara Baase, Allen Van Gelder, Third Edition, Pearson Publication.
4. The Design and Analysis of Algorithms By Alfred V. Aho, John E. Hopcraft, Jeffrey D. Ullman, Pearson Publication.

Reference Books:

1. Computer Algorithms By Horowitz, Sahani, Rajsekharam, Galgotia Publications Pvt.

BECT304P: Design & Analysis of Algorithms Lab: Practical will be based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

SEMESTER: SIXTH (C.B.S.)
BRANCH: COMPUTER TECHNOLOGY

BECT306T: Computer Graphics

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Computer Graphics

Overview of Computer Graphics, Computer Graphics Application and Software, Graphics Areas, Graphics Pipeline, Graphics API's, Hardcopy Technologies, Display Technologies – Raster scan Display System, Video Controller – Vector scan display system, Random Scan Display Processor, Input Devices for Operator Interaction,

UNIT II

Basic Raster Graphics Algorithms for Drawing 2D primitives, aliasing and antialiasing, Polygon filling methods: Scan Conversion Algorithms: Simple Ordered edge list, Edge Fill, Fence fill and Edge Flag Algorithm. Seed fill Algorithms: Simple and Scan Line Seed Fill Algorithm, Halftoning techniques

UNIT III

2D Clipping algorithms for regular and irregular windows: Sutherland Cohen Outcode, Sutherland Cohen Subdivision, Mid-Point subdivision, Cyrus Beck and Sutherland Hodgman, Cohen-Sutherland Polygon clipping Algorithm. Clipping about Concave regions.

Curves and Surfaces: Polygon Mesh, Parametric Cubic Curves, Parametric Bicubic Surfaces, Quadratic Surface, Bezier Curves and B-spline curves.

UNIT IV

2D Transformations, Translation, Rotation, Reflection, Scaling, Shearing Combined Transformation, Rotation and Reflection about an Arbitrary Line. Normalized Device Coordinates and Viewing Transformations. Homogeneous coordinate system.

UNIT V

3D System Basics and 3D Transformations, 3D graphics projections, parallel, perspective, viewing transformations. 3D graphics hidden surfaces and line removal, painter's algorithm, Z - buffers, Warnock's algorithm.

UNIT VI

Graphics Programming using OPENGL: Why OpenGL, Features in OpenGL, OpenGL operations, Abstractions in OpenGL – GL, GLU & GLUT, 3D viewing pipeline, viewing matrix specifications, a few examples and demos of OpenGL programs.

Text Books:

1. Fundamentals of Computer Graphics, Peter Shirley and Steve Marschner, Third Edition.
2. Procedural Elements of Computer Graphics III Edition, Rogers, McGraw Hill.
3. Computer Graphics - Principles and Practice, J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes, Second Edition in C, Pearson Education.
4. Computer Graphics with OpenGL, Donald D. Hearn, M. Pauline Baker, Warren Carithers, Fourth Edition, Pearson Education.
5. Computer Graphics, Hearn and Baker, PHI, India

BECT306P: Computer GraphicsLab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs	1	50	25	25	50

BECT308T: Software Engineering & Project Management

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT - I

Introduction: Software Characteristics, Software Engineering- A Layered Technology, Software Process Framework, Software Process Models, Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process Model, Agile Process Models.

UNIT - II

Software Engineering Principles and Practice: Communication, planning and modeling practices, System engineering and modeling, Business process engineering, Requirements Engineering

UNIT - III

Software Analysis & Design: Modeling Approaches, Data Modeling, Object-Oriented Modelling, Scenario-Based Modeling, Flow-Oriented Modeling, Class-based Modeling, Behavioral Model. Design Engineering Concepts, Design Model, Pattern-Based Software design
Design Concepts: Abstraction Architecture, pattern modularity, information hiding, design classes, refactoring.

UNIT - IV

Software Testing: Testing Fundamentals, Black-Box Testing, White-Box Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging.

UNIT - V

An overview, Software Quality, A Framework for Product Metrics, Metrics for Analysis & Design Models, Metrics for Source Code, Metrics for Testing & Maintenance. Project management – the management spectrum, Metrics for process & project – Software measurement, Metrics for software quality, Project scheduling.

UNIT - VI

Risk management – Risk strategies, Software risks, Risk identification, Risk refinement, RMMM Quality Management – Quality Concepts, Software Quality Assurance, Software Reviews, Formal Technical Review, Statistical Software Quality Assurance, Software Reliability, Change Management – Software Configuration Management, SCM Repository, SCM Process, Reengineering – Software reengineering, Reverse engineering, Restructuring, Forward Engineering

Text Books:

1. Software Engineering-A Practitioner's Approach (Sixth Edition)-Roger Pressman (TMH)
2. Software Engineering (Ninth Edition)-Ian Sommerville (Pearson Education)
3. Software Engineering : Theory and Practice (Fourth Edition) – Pfleeger (Pearson Education)
4. Software Engineering- Mishra /Mohanty (Pearson Education)

Reference Books:

1. Software Engineering-Schaum's Series (TMH)
2. Software Project Management - Sanjay Mohapatra (Cengage Learning)
3. Software Engineering for Students –(Fourth Edition) – Bell (Pearson Education)

BECT308P: Software Engineering & Project Management Lab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

**A
PROJECT REPORT
ON
"C SIMULATOR"**

Submitted in Partial Fulfilment of Requirement For the Degree
of
Bachelor of Engineering
In
COMPUTER TECHNOLOGY

By

**Ashwaghosh Sadanshiv
Mayur Bode
Kajal Gupta**

**Akshay Bijwe
Amrapali Raut**

Under the Guidance of
Mr. Ravi Asati
Assistant Professor



**DEPARTMENT OF COMPUTER TECHNOLOGY
PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR
440019
2016-17**

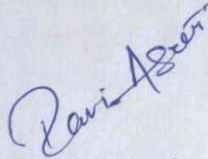
CERTIFICATE

This is to certify that the project entitled "C Simulator" has been carried out by Ashwaghosh Sadanshiv, Akshay Bijwe, Mayur Bode, Amrapali Raut, Kajal Gupta under my guidance and submitted the partial fulfilment for the degree of Bachelor of Engineering (B.E.) in Computer Technology, during the academic year 2016-17 is a bonafide work prepared by them.

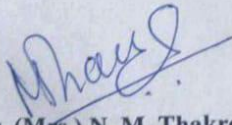
This work fulfils the requirements relating the standard of work for the award of Bachelor of Computer Technology to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

Place: Nagpur

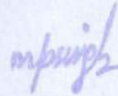
Date:



Mr. Ravi Asati
Assistant Professor
Computer Technology



Dr. (Mrs.) N. M. Thakre
Head of Department
Computer Technology
Head of Department
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19



Dr. M. P. Singh
Principal,
P.C.E, Nagpur

1.1 Introduction

Coding is back bone of every computer science engineer, so to become a coder you need to learn coding from base. Learning base is not sufficient, with this they have to be clear with all concepts and logic behind it. Same story happens with students who belong to computer science stream. They still have to learn theories from books, which is still not that much interesting. Because there is lack of visualization, they have to imagine several things by their own. At present stage, students are more interested in learning things by viewing animation instead of theoretical stuff. Very few of them are able to understand concept from theoretical stuff, but most of them are unable to grasp it.

There is a fact that whatever we see, we remember it for a long time or we understand it better and more clearly. So here we came up with new concept for better understanding how code actually works. Basically our main moto is to illustrate the animation of that **algorithm**/logic, so that student can easily understand how the logic/algorithm actually works at backend, which they have to imagine while executing that **code**. By doing this, they will came to know whether the output of that code which they are expecting is correct or not, and logic/algorithm which they are trying to implement is correct or not.

When all these things are clear to them, they can easily grasp the **flow**, **logic**, & overall working of that **code**. For them it will create a fun and learn session and the fear related to coding in them will disappear.

Domain 2: Computer Network and Security

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Social and Ethical aspects of IT	BECT204T	Computer Network Security and
2	Data Communication	BECT305T	
3	Computer network	BECT307T/P	
4	Cyber & Information Security	BECT407T/P	
5	Elective IV: Cloud Computing	BECT409T	

BECT305T: Data Communication

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	4	100	20	80	100

UNIT - 1

Analog and digital signals; periodic and non periodic signals analog signals time and frequency domains; COMPOSITE SIGNALS: Frequency spectrum and Bandwidth; TRANSMISSION MODES: Serial and Parallel transmission, Asynchronous and Synchronous Transmission, Simplex, Half-Duplex and Full-Duplex communication.

UNIT - 2

Signal conversions: digital-to-digital conversion, digital-to-analog conversion, analog to digital conversion, analog-to-analog conversion in detail.

UNIT - 3

COMMUNICATION MEDIA: guided media and unguided media, Radio frequency allocation, Propagation of Radio waves, Terrestrial microwave, Satellite communication, Cellular Telephony

UNIT - 4

Multiplexing and Spread Spectrum, frequency division multiplexing (FDM). Time division multiplexing (TDM): inverse multiplexing, wave-division multiplexing, FHSS AND DSSS multiplexing applications: the telephone system: Common carrier services and hierarchies, Analog services, Digital Services; DIGITAL SUBSCRIBER LINE (DSL): ADSL, RADSL, HSDL, SDSL, VDSL

UNIT - 5

Multimedia: Digitizing Audio and Video, Compression of Audio and Video, Real Time Interactive Audio/Video, RTP, HTTP and WWW.

UNIT - 6

DATA COMPRESSION: Huffman code, Run-Length Encoding, Relative Encoding, Lempel-Ziv Encoding, Image Compression, JPEG, MPEG

Text / Reference Books:

1. Data Communications and Networking by Behrouz A. Forouzan, 4th Edition, Tata McGraw Hill
2. Understanding Data Communications and Networks by William A. Shay, 2nd Edition, Vikas Publishing House.
3. Electronic communication Systems by Kennedy.

BECT307T Computer Networks

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to **Networks** – Components and categories, Types of connections, Topologies – , Protocols and standards, ISO / OSI model **and TCP/IP model**, Transmission media, Coaxial cable, Fiber optics, Line coding, Modems. RS232 interfacing sequences.

UNIT II**DATA LINK LAYER**

Error – Detection and correction, Parity, LRC, CRC, Hamming code, Flow Control and error control, Stop and wait, Go back-N, ARQ – Selective repeat ARQ – Sliding window, HDLC – LAN – Ethernet IEEE 802.3, IEEE 802.4, IEEE 802.5.

MEDIUM ACCESS SUBLAYER

Channel allocation in LAN's and MAN's **Network: Protocols-persistent and Non Persistent CSMA, CSMA with collision detection, binary countdown, Limited Contention protocol.**

UNIT III**NETWORK LAYER**

Internetworks – Packet switching and datagram approach, IP addressing methods, Subnetting, Routing, Distance vector routing, Link state routing, Routers, **Congestion control.**

UNIT IV**TRANSPORT LAYER**

Duties of transport layer, Multiplexing – Demultiplexing, Sockets, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Quality of Services (QOS) – Integrated services.

UNIT V**APPLICATION LAYER**

DNS; SMTP, SNMP, FTP, HTTP & WWW; Security: **Cryptography, user authentication, security protocols in internet, Firewalls.**

UNIT VI

ISDN services & ATM; DSL technology, Sonet. Wireless LAN: **IEEE 802.11; Introduction to blue-tooth, VLAN's, Cellular telephony & Satellite network.**

Text Books:

1. B. A. Forouzan – "Data Communications and Networking (3rd Ed.)" – TMH
2. A. S. Tanenbaum – "Computer Networks (4th Ed.)" – Pearson Education/PHI
3. W. Stallings – "Data and Computer Communications (5th Ed.)" – PHI/ Pearson Education

Reference Books:

1. Kurose and Rose – "Computer networking -A top down approach featuring the internet" – Pearson Education
2. Leon, Garica, Widjaja – "Communication Networks" – TMH

BECT307P: Computer NetworksLab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT406P: Data Warehousing & Mining: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT407T: Cyber and Information Security

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Need of **Information Security**: Legal, Ethical and Professional Issues Attributes of security- authentication, access control, confidentiality, authorization, integrity, non-reproduction.

OSI Security Architecture: attacks, services and mechanisms. **Security Attacks, Security services**, A model of Internetwork Security.

Conventional Encryption: Classical Encryption Techniques and Problems on classical ciphers, Security architecture.

UNIT II

Introduction to Secret key and **Cryptography**: Block Cipher Principle: Stream ciphers and block cipher, Block cipher design principles, modes of operation, Encrypt given messages using DES, Triple DES, IDEA, AES Problems on cryptography algorithms.

Confidentiality Using Conventional Encryption: Key Distribution.

UNIT III

Introduction to Public key and **Cryptography**: Principles of Public-Key Cryptosystem, RSA algorithm, Key Management, Diffie Hellman Key Exchange, Encrypt given messages using ECC.

Introduction to Number Theory: Prime and Relative Prime numbers, Modular Arithmetic, Fermat's and Euler's Theorem, Euclid's Algorithm, the Chinese Remainder Theorem.

UNIT IV

Message Authentication and **Hash Functions**: Authentication Requirements and Functions, Hash Functions and their Security, MD5 Message Digest Algorithm, Kerberos.

Key Management: **Digital Certificates**-Certificate types, X.509 Digital Certificate format, Digital Certificate in action, Public Key Infrastructure-Functions, PKI Architecture, Certificate Authentication.

UNIT V

Firewall: Firewall Functionality, Policies and Access Control Policies, Firewall Types.

Intrusion Prevention and Detection: Prevention vs Detection, Types of Intrusion Detection System- Anomaly versus Signature based IDS, Host-based versus Network-based IDS, DDoS Attack Prevention/ Detection, Malware Detection-Worm Detection, Worm Signature Extraction, Virus Detection.

UNIT VI

Software Vulnerability: Phishing, Buffer Overflow, Cross-site Scripting (XSS), SQL Injection.

Electronic Payment: Payment Types, Enabling Technologies-Smart Cards and Smart Phones, Cardholder Present E-Transaction-Attacks, Chip Card Transactions, Payment over Internet-Issues and Concerns, Secure Electronic Transaction, Online Rail Ticket Booking.

Electronic Mail Security: Pretty Good Privacy, S/MIME

Text Book:

1. William Stallings, "Cryptography and network security, principles and practices", Pearson Education, 2013.
2. Bernard Menezes, "Network Security and Cryptography", Cengage Learning, 2010.

Reference Books:

1. Nina Godbole, "Information System Security", Wiley India Publication, 2008.
2. Charlie Kaufman, Radia Perlman and Mike Speciner, "Network security, private communication in a public world", Second Edition, Prentice Hall, 2002.
3. Christopher M. King, Curtis Patton and RSA press, "Security architecture, Design Deployment and Operations", McGraw Hill Publication, 2001.
4. Robert Bragge, Mark Rhodes, Heithstraggberg "Network Security, The Complete Reference", Tata McGraw Hill Publication, 2004.

BECT407P: Cyber and Information Security: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT409T: Elective IV: Cloud Computing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I

Introduction to Cloud Computing: Introduction to **Cloud Computing**, History of Cloud Computing, Cloud service providers, Properties, Characteristics & Disadvantages of Cloud Computing, Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing. Legal issues when using cloud models, challenges in cloud computing.

Unit II

Cloud Computing Architecture: Cloud computing stack, Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of **Networks** in Cloud computing, protocols used, Role of Web services, Service Models (XaaS), Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), Deployment Models: Public cloud, Private cloud, Hybrid cloud, Community cloud.

Unit III

Big Data Analysis, Hadoop and Map Reduce: Introduction, Clustering Big Data, Classification of Big Data, Hadoop MapReduce Job Execution, Hadoop scheduling, Hadoop cluster setup, configuration of Hadoop, starting and stopping Hadoop cluster.

Unit IV

Security in Cloud: **Cloud Security** Challenges, Infrastructure Security, **Network level security**, Host level security, Application level security, data privacy, data security, **application security**, virtual machine security, Identity Access Management, **Authentication** in cloud computing, Client access in cloud, Cloud contracting Model, Commercial and business considerations.

Unit V

Application Development using C#: Understand object oriented concepts in C#.NET, Creation of UI and event handling, web page creation using ASP.NET, ADO.NET architecture, implementation of data sets, using ADO.NET in console application, using ADO.NET in web application.

Unit VI

Creating Cloud Application using Azure: Creating simple cloud application, configuring an application, creating virtual machine, deployment of application to Windows Azure Cloud, using Azure Storage Services, using Azure Table Service, deployment of application to the production environment.

Text Books:

1. McOhen K. Hurley, "Google Compute Engine", O'Reilly Edition, 2014.
2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, "Cloud Computing: Principles and Paradigms", Wile, 2011.
3. Arshdeep Bahga, Vijay Madisetti, "Cloud Computing, A Hands-on Approach", Universities Press, 2013.
4. R. J. Dudley, N. A. Duchene, "Microsoft Azure: Enterprise Application Development", Packt Publication, 2010.

Reference Books:

1. B. M. Harwani, "Cloud Computing using Windows Azure", Arizona Business Alliance Publication, 2014.
2. J. W. Rittinghouse, J. F. Ransome, "Cloud Computing, Implementation, Management and Security", CRC Press, 2009.

PROJECT REPORT
ON
“DATA SECURITY IN CLOUD COMPUTING”

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in
Computer Technology

Submitted By

ANSHU SINGH
PRACHI GUPTA

RASHMI LONARE
RAHUL KR SHARMA

Under the guidance of
Mr. N. A. Ghodichor



Department of Computer Technology
Priyadarshini College of Engineering
Nagpur - 440019
2016-17

CERTIFICATE

This is to certify that the project entitled “**DATA SECURITY IN CLOUD COMPUTING**” has been carried out by

ANSHU SINGH

RASHMI LONARE

PRACHI GUPTA

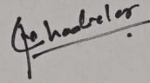
RAHUL KR SHARMA

under my guidance and submitted the partial fulfillment for the degree of Bachelor of Engineering (B.E.) in Computer Technology, during the academic year 2016-17 is a bonafide work prepared by them.

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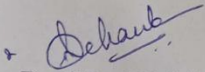
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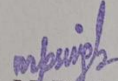
Mr. N. A. Ghodichor

Guide
Assistant Professor
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19



Dr. (Mrs.) N. M. Thakare

Head of Department
Head of Department
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19



Dr. M. P. Singh

Principal

ABSTRACT

Cloud computing has quickly become one of the most significant field due to its evolutionary services provided model of computing not only in the IT industry but also in the software and hardware industry. This mechanism came up with increasing flexibility, scalability and reliability; while decreasing the operational and support cost. Due to the cloud computing, it becomes easy for managing the stuffs related as well as provides many features which cannot be replaced by anyone. It is a way difficult as well as effective in its own. Providing security is a major concern as the cloud data are stored and accessed in a remote server with the help of by the cloud service provider. We propose a framework to ensure the correctness of users' data and to build the consistency of information.

Domain 3: Database Management System and Data Processing

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Database Management System	BECT302T/P	Database Management System and Data Processing
2	ELECTIVE-I Advance Database Systems	BECT403T	
3	Data Warehousing and Mining	BECT406T/P	

BECT302T: Database Management System

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Syllabus

UNIT-I

Introduction to IMs, Introduction to DBMS, architecture, role of database administrator, data dictionary, Traditional Models, three-level architecture, hierarchical model, network model and relational model.

UNIT-II

Relational Database design, ER modeling, relational algebra, Tuple relation calculus, Domain relational calculus. Functional Dependencies, Normalization

UNIT-III

PL/SQL Concept. Physical and logical hierarchy. Concept of index, B-trees, hash index, function index, bitmap index, trigger and assertions.

UNIT-IV

Overview, measures of query cost, query optimization, selection operation, sorting, join, evaluation of expressions, transformation of relational expressions, estimating statistics of expression results, evaluation plans, materialized views.

UNIT-V

Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two-Phase Commit protocol, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency related problems, deadlock, two-phase locking protocol, Isolation, Intent locking.

UNIT-VI

Recovery System: failure classification, recovery and atomicity, log based recovery, checkpoints, buffer management, advanced recovery techniques. Introduction to various Sql databases.

TextBooks:

1. Database System Concepts by Silberschatz, Henry F. Korth, S. Sudarshan, Tata McGraw Hill, Fifth Edition
2. Fundamentals of Database Systems – Elmasiri and Navathe, Addison Wesley, 2000.
3. An introduction to Database Systems, C J Date - Wesley

Reference Books:

1. Database Management Systems - by Ragu Ramakrishnan and Johannes Gehrke, Tata McGraw Hill Publication, Third Edition

BECT302P: Database Management System lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT403T: Elective-I Advanced Database Management Systems

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Distributed Databases, DDBMS architectures, Comparison of Homogeneous and Heterogeneous Databases, Concurrency control in distributed databases, Distributed query processing, Distributed data storage, Distributed transactions, Commit protocols, and Directory systems-LDAP.

UNIT II

Introduction to Parallel databases, Parallel database architecture, speedup, scale-up I/O parallelism, Comparison of Inter-query and Intra-query parallelism, parallel query evaluation, implementation issues of Parallel query evaluation.

UNIT III

Object-based databases: Complex data types, structured types and inheritance in SQL, table inheritance, array and multi-set types in SQL, object identity and reference types in SQL, Persistent programming languages, Object-oriented vs. Object-Relational.

UNIT IV

Introduction to XML, Structure of XML data, Document type definition, XML Document Schema, Querying and Transformation, XPATH, XSLT, XQUERY, API in XML, XML data storage, XML applications.

UNIT V

Introduction to Data warehouse, Data warehouse architecture, Creating and maintaining a warehouse, Multidimensional data model, OLAP and data cubes, Operations on cubes, pre-processing, Analysis of Data pre-processing.

UNIT VI

Security and integrity threats, Defence mechanisms, Statistical database auditing & control, Security issue based on granting/revoking of privileges, introduction to statistical database security, PL/SQL Security - Locks - types and levels of locks, Implicit locking, explicit locking.

BECT406T: Data Warehousing & Mining

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction: Evolution of data warehousing, Characteristics, Operational database systems and data warehouse (OLTP & OLAP), Multidimensional data models, Data warehouse architecture, OLAP Operations, Design and construction of data warehouses.

UNIT II

Fundamentals of data mining, Data mining functionalities, Classification of data mining systems, Data mining task primitives, Integration of data mining systems with data warehouse, Major issues and challenges in data mining, Data preprocessing- need for processing, data cleaning, integration, transformation, data reduction. Discretisation and concept hierarchy generation, data mining application areas.

UNIT III

Classification: Introduction, Decision tree, Building decision tree- tree induction algorithm, Split algorithm based on information theory, Split algorithm based on gini index, Decision tree rules, naive based methods.

Clustering: Cluster analysis, Desired features, Types of data in cluster analysis, Computing distance. Categorizations of major clustering methods - Partitioning methods (K-means, EM), Hierarchical methods (agglomerative, divisive).

UNIT IV

Mining frequent patterns and Association Rules: Market basket analysis, Frequent item sets and association rules, Apriori algorithm, FP growth algorithm, Improving efficiency of Apriori and FP growth algorithms.

UNIT V

Web Data Mining: Introduction, Graph properties of web, Web content mining, Web structure mining, Web usage mining, Text mining, Visual web data mining, Temporal and Spatial data mining.

UNIT VI

Big data Analytics: Introduction to the Big Data problem. Current challenges, Trends, and applications, Technologies for big data management. Big data technology and tools, Map-Reduce paradigm and the Hadoop.

TEXT BOOK:

1. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.
2. A. K. Pujari, "Data Mining Techniques", Second Edition, University press, 2013.
3. Jason Bell, "Machine Learning for Big Data: Hands-on for Developers and Technical Professionals, Wiley India Publications, 2013.

BECT406P: Data Warehousing & Mining: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

PROJECT REPORT
ON
“WEB APPLICATION OF MEDICAL DATABASE”

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in
Computer Technology

Submitted By

ASHWIN GOSWAMI

NAWAL WAGH

PRATIKSHA JIWANE

PRAJAKTA MAHORE

PRIYANKA DANDEKAR

Under the guidance of
Mr. Nitesh Ghodichor



Department of Computer Technology
Priyadarshini College of Engineering,
Nagpur - 440019
2016-17

CERTIFICATE

This is to certify that the project entitled “**WEB APPLICATION FOR MEDICAL DATABASE**” has been carried out by

ASHWIN GOSWAMI

PRATIKSHA JIWANE

PRIYANKA DANDEKAR

NAWAL WAGH

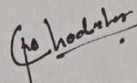
PRAJAKTA MAHORE

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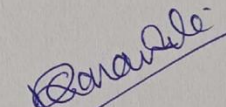
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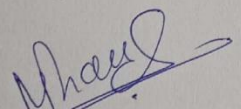


Mr. Nitesh Ghodichor
Guide

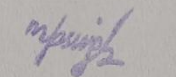
Mrs.A. Dehankar
Co-guide



Mr.C.R.Pote
Co-guide



Dr.(Mrs.) Nita M. Thakare
Head of Department
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19



Dr. M.P.Singh
Principal

ABSTRACT

In the most recent decade, the forceful space in clinical division, worldview is evolving quickly. Grouped new things can be found in the clinical part, since it is grasping new idea phrasing and innovation to upgrade their business and to win the fulfilment of their patient. This paper talks about the part of Unified Modelling Language (UML) in the Object Oriented Database Management System (OODBMS) in clinical framework. An endeavour has been gained to speak to that the ground abilities of protest situated information encourages a sharp and direct acknowledgment of the Event Model Database configuration was guided by two idea: (1) that there is a hidden shape to every single clinical dat and (2) that items stay inside the database ought to serve interfaces to differences of administrations. These administrations incorporate choice support data conveyance and information trade. The clinical area investigated was research center pharmaceutical. Routine choice bolster questions were keeping running against the lab information data put away in the protest situated database. Question arranged Data Modelling system has been utilized to store the information storehouses

Domain 4: Computer Architecture

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Digital Circuits & Microprocessor	BECT203T/P	Computer Architecture
2	Computer Architecture & Organization	BECSE205T	
3	Advance Microprocessor and Interfacing	BECT210T/P	
4	Embedded System Design	BECT309T	

BECT203T: Digital Circuits & Microprocessor

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Boolean Algebra, Boolean identities, , Binary, Gray, Octal, Hex and ASCII Codes, Logic Gates & truth Tables, De-Morgan's Law, Sum of Product & Product of Sum, K-Maps, Solution of problems using K-Maps

Unit II:

Combinational Circuits: Decoders, Encoders, Multiplexers, De-multiplexers, Code Converters. Introduction to Flip-flops, Latches, Memory organization with Flip Flop as a basic cell, Master Slave Combination & conversion of one type to another type flip flop.

Unit III:

Sequential Circuits: Excitation tables, Counters- Synchronous/asynchronous, different modulo counters with reset/clear facility, design of counters of arbitrary modulo with K-maps, Lock Free Counters. **Arithmetic Circuits:** Adders, Subtractors, BCD adders/Subtractor, Carry Look Ahead Adders

Unit IV:

Introduction to Intel's 8085A, **Architecture** Description, memory and Input/Output, **Instruction** set.

Unit V:

Addressing Modes, Timing Diagrams, Assemblers & Disassemblers (by Hand coding), Flag structure, concept of PSW, Stacks, Subroutines, PUSH & POP instructions & CALL/RETURN instructions, Stack Manipulations. Simple Programs.

Unit VI:

Programming Techniques, Looping, Counting, Indexing, Counters & timing delays, interrupt concept & structure in 8085. Interrupt Service routines. Advanced Instructions of 8085.

TEXT BOOKS:

1. Digital Circuits & Microprocessors by Herbert Taub
2. Digital circuits by M. Mano
3. Digital Electronics Principles by Malvino.
4. Microprocessors Architecture Programming & Application with 8085 By R. S. Gaonkar
Microprocessor & Interfacing: D. V. Hall

BECT203P: Digital Circuits & Microprocessor lab: Practical based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	25

BECSE205T: Computer Architecture & Organization

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Basic Structure of **Computer Hardware** and Software: **Functional Units**, Basic Operational concepts, Bus Structures, Software, Distributed computing, Addressing Methods and Machine Program Sequencing: Memory Locations, Addresses and Encoding of Information, Main Memory Operations, Instructions and Instruction Sequencing, Addressing Modes, **Assembly Language**, Stacks. Subroutines.

Unit II:

Instruction Sets: Instruction Formats, Limitations of Shortword- length machines, High Level Language considerations, **The IBM -370**.

The **Processing Unit**: Some Fundamental Concepts, Execution of a complete Instruction, Sequencing of Control Signals, Concluding Remarks.

Unit III:

Microprogrammed Control: Microinstructions, Grouping of control signals, Micro program Sequencing, Micro instructions with next address field, Perfecting Microinstructions, Emulation, Bit Slices, Introduction to Microprogramming.

Unit IV:

Arithmetic: Number Representation, Addition of Positive Numbers, Logic Design for Fast Adders, Addition and Subtraction, Arithmetic and Branching Conditions, Multiplications of positive numbers, Signed -Operand Multiplication, Fast Multiplication, Integer Division, Floating Point Numbers and Operations.

Unit V:

The Main Memory: Some Basic Concepts, Semiconductor RAM Memories, Memory System Considerations, Semiconductor ROM Memories, Multiple module Memories and Interleaving, Cache Memories, Virtual Memories, Memory Management requirements.

Unit VI:

Computer peripherals: I/O Devices, Online Storage, File Services. Processors: Families of **Microprocessor** chips, Introduction to RISC Processors, Array Processors, Loosely coupled, Tightly coupled Systems. Vector Processing, Array Processor, Literature review of multi-core architecture

BOOKS:

- V.C.Hamacher,Z.G.Vranesic and S.G.Zaky, Computer Organisation, McGraw Hill,5thed,2002.
- Computer Organization, Design and Architecture (IV Ed), Sajjan G. Shiva, CRC Press
- Computer Architecture & Organization III Ed- J.P.Hayes.

REFERENCES BOOKS:

- M Mano, "Computer System and Architecture", PHI, 1993.
- W. Stallings, "Computer Organization & Architecture", PHI, 2001.

BECT210T: Advance Microprocessor and Interfacing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Architecture of 8086, Pin configuration of 8086, Physical address formation, addressing modes, Segmentation of memory, Instruction set & programming, 8086 minimum mode and maximum mode, Memory interfacing, static RAM interfacing, dynamic RAM interfacing.

UNIT II

Different input/output techniques, interfacing with latches, buffers, interfacing of keyboard matrix, Seven-segment display, DAC, ADC 0809 pin diagram, interfacing ADC with 8086, interfacing of 8253.

UNIT III

Interrupts of 8086, CRT controller 6845 and Hard disk controller. 8255 PPI, pin diagram, modes of operation, strobe modes, interrupt driven mode, BSR mode, Programmable Interrupt Controller 8259, pin diagram, ICWs, OCWs, modes of operation and interfacing details, cascaded mode, SFNM, polled

mode, SMM, USART 8251, pin diagram, internal architecture, modes of operation synchronous and asynchronous modes and interfacing details, DMA controller 8237, pin diagram, transfer modes and interfacing details.

UNIT IV

Maximum mode of 8086, PDMAC 8237, Interfacing with 8086, 8279A, interfacing with 8086, bus controller 8288, bus arbiter 8289, IOB mode, resident bus mode, co-processor configuration, ESC prefix, system bus mode, semaphores and LOCK prefix, loosely coupled and closely coupled configuration, priority resolution, NDP architecture.

UNIT V

Introduction to 8 bit microcontroller 8051, architecture, instruction set and programming, using 32 bit addressing in real mode, introduction to protected mode operation, segmentation, segment descriptors, selectors, privilege levels, paging.

UNIT VI

Pentium super scalar architecture, CPU pin description, bus operation, RISC concepts, pipe lining, branch prediction, instruction and data cache, floating point unit, software programming model, registers, data organization, protection, protecting segmented access, page level protection, multitasking, TSS descriptors, task switching, exceptions and interrupts, IDT descriptors, input/output, IOPL, ALP implementation of data structures : linked list, Queue, stacks.

Reference

1. Microprocessor and interfacing : Douglas Hall
2. Advanced Microprocessors And Peripherals A.K.Ray ,K.M.Bhuchandi
3. John P Uffenbeck, 8086/8088 Families: Designing, Programming and interfacing Prentice Hall
4. James Antonokos, The Pentium Processor, Pearson Education

BECT210P: Advance Microprocessor and Interfacing

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT309T: Embedded System Design

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	4	100	20	80	100

UNIT - 1

Introduction to an embedded systems design: Microcontroller, Memory Devices, Embedded System Project Management, ESD and Co-design issues in System development Process, Design cycle in the development phase for an embedded system, Use of target system or its emulator and In-circuit emulator, Use of software tools for development of an ES, *embedding software on target machine.*

UNIT - 2

Inter Process Communication And Synchronization: Tasks and Threads, SharedData problem, Use of semaphore(s), Priority inversion problem and deadlocksituations, Inter process communications using signals, Semaphore flag or mutex asresource key, Message queues, Mailboxes, Pipes, Virtual (Logical) sockets, Remote Procedure Calls (RPCs).

UNIT - 3

Introduction to real time operating systems: Real Time Operating Systems: OS Services, I/O Subsystems, Interrupt Routines in RTOS Environment, RTOS Task Scheduling model, Interrupt Latency and Response times of the tasks. Case study of embedded systems

UNIT - 4

Overview of Microcontroller: Microcontroller and Embedded Processors, Overview of 8051 Microcontroller family: Architecture, basic assembly language programming concepts, The program Counter and ROM Spaces in the 8051, Data types, 8051 Flag Bits ad PSW Register, 8051 Register Banks and Stack Instruction set, Loop and Jump Instructions, Call Instructions, Time delay generations and calculations, I/O port programming Addressing Modes, accessing memory using various addressing modes, Arithmetic instructions and programs, Logical instructions, Single-bit instruction programming, Programming of 8051 Timers, Counter Programming

UNIT - 5

Communication with 8051: Basics of Communication, Overview of RS-232, I²C Bus, UART, USB, 8051 connections to RS-232, 8051 serial communication programming, 8051 interrupts, Programming of timer interrupts, Programming of External hardware interrupts, Programming of the serial communication interrupts, Interrupt priority in the 8051

UNIT - 6

Interfacing with 8051: Interfacing an LCD to the 8051, 8051 interfacing to ADC, Sensors, Interfacing a Stepper Motor, 8051 interfacing to the keyboard, Interfacing a DAC to the 8051, 8255 Interfacing with 8031/51, 8051/31 interfacing to external memory

Text / Reference Books:

1. Raj Kamal, "Embedded Systems", TMH, 2004.
2. M.A. Mazidi and J. G. Mazidi, "The 8051 Microcontroller and Embedded Systems", PHI, 2004.
3. David E. Simon, "An Embedded Software Primer", Pearson Education, 1999.
4. K.J. Ayala, "The 8051 Microcontroller", Penram International, 1991.
5. Dr. Rajiv Kapadia, "8051 Microcontroller & Embedded Systems", Jaico Press
6. Dr. Prasad, "Embedded Real Time System", Wiley Dreamtech, 2004.

PROJECT REPORT
ON
“PORTABLE WIRELESS NOTICE DISPLAY USING
RASPBERRY PI”

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in
Electronics and Telecommunication Engineering

Submitted By

PRASHANTKUMAR KATRE
VISHAL RAHANGDALE
PRAVIN WARHADKAR

MRUNALI GAWANDE
PAYAL LOTHE

Under the guidance of
Prof. (Mrs.) J.M. BHATTAD
(Guide)
Prof.P.U.TEMBHARE
(Co-Guide)



Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering
Nagpur - 440019
2016-17

CERTIFICATE

This is to certify that the project entitled "**PORTABLE WIRELESS NOTICE DISPLAY USING RASPBERRY PI**" has been carried out by

PRASHANTKUMAR KATRE

MRUNALI GAWNADE

VISHAL RAHANGDALE

PAYAL LOTHE

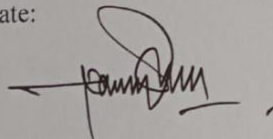
PRAVIN WARHADKAR

Under my guidance and submitted in the partial fulfillment for the degree of Bachelor of Engineering (B.E.) in Electronics and Telecommunication, during the academic year 2016-17 is a bonafide work prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rastrasant Tukdoji Maharaj Nagpur University, Nagpur.

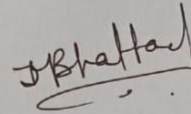
Place: Nagpur

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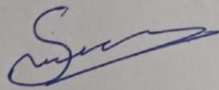
Prof. P.U. Tembhare

Co-Guide



Prof. (Mrs.) J.M. Bhattad

Guide



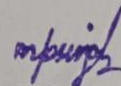
Dr. (Mrs.) S.W. Varade

Head of Department

H.O.D.

Deptt. of E&T

Priyadarshini College of Engineering
Nagpur-19



Dr. M.P. Singh

Principal

ABSTRACT

Notice Board is commonly used in variety of institution which we come across in a daily basis. Also it is best place to put on any kinds of information but sticking or pinning various notices day to day is difficult process. A separate person is required to take care of this noticeboard this waste a lot of things like paper, printer-ink and loss of time. This project idea is about advanced wireless noticeboard. The project is built with the help of ARM-controller raspberry-pi 3 model B, which is heart of system and it is act as a transmitter which send notices. It has onboard Wi Fi which provides Wi Fi range up to 30-50 m. At a receiving end any smartphone can receive notices this whole process is done without internet.

Domain 5: System Software

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Theory of Computation	BECSE211T	System Software
2	COMPUTER WORKSHOP – 2 LAB	BECSE206P	
3	Operating Systems	BECT303T/P	
4	Compilers	BECT401T/P	
5	Elective II: Natural Language Processing	BECT404T	

BECSE211T: Theory of Computation

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT 1

Mathematical preliminaries – Sets, operations, relations, strings, closure of relation, countability and diagonalization, induction and proof methods- pigeon-hole principle, concept of language, formal grammars, Chomsky hierarchy.

UNIT 2

Finite Automaton, regular languages, deterministic & non deterministic finite automata, E-closures, minimization of automata, equivalence, Moore and Mealy machine.

UNIT 3

Regular expression, identities, Regular grammar, right linear, left linear, Arden theorem, Pumping lemma for regular sets, closure & decision properties for regular sets, Context free languages, parse trees and ambiguity, reduction of CFGS, Normal forms for CFG.

UNIT 4

Push down Automata (PDA), non-determinism, acceptance by two methods and their equivalence, conversion of PDA to CFG, CFG to PDAs, closure and decision properties of CFLs, pumping lemma for CFL.

UNIT 5

Turing machines, TM as acceptor, TM as transducers, Variations of TM, linear bounded automata, TM as computer of function.

UNIT 6

Recursively enumerable (r.e.) set, recursive sets, Decidability and solvability, Post correspondence Problem (PCP), Introduction to recursive function theory, primitive recursive functions, Ackerman function

Text Books:

- Introduction Of Automata Theory, Languages and computation- Hopcroft, Motwani & Ulman
- Introduction to formal languages and automata – Peter Linz.
- Introduction to Theory of Computation – Michael Sipser.

Reference Books:

- Theory Of Computer Science – Mishra and Chandrashekharan,
- Theory Of Computation – John C. Martin

BECT213P: COMPUTER WORKSHOP – 2 LAB

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

The contents may be based on **LINUX** and **LINUX** Administration. The contents can be revised as per the current trends in **Software** Industry.

BECT303T: Operating system

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory)	5	100	20	80	100
1 hr (Tutorial)					

Unit I: Introduction: Definition, Functions of Operating Systems, Evolution of Operating Systems, Types of OS, Structural overview, System calls, Process Concept, Process States, Process Scheduling, Operations on Processes, Types of scheduler, Context switch, Threads Overview, Multithreading Models, Threading issues. Examples of WINDOWS Server & LINUX.

Unit II: CPU Scheduling Concepts, Scheduling Criteria and Algorithms. Process Synchronization: The Critical-Section Problem, software and hardware solution, Semaphores, Monitors, Classical inter process communication problems.

Unit III: Deadlocks: Definition & Characterization, Deadlocks Prevention, Avoidance, Detection and Recovery from Deadlock, Goals of Protection.

Unit IV: Memory Management: Background, Swapping, Contiguous Memory Allocation Schemes, Paging, Segmentation, Segmentation with paging, demand paging, page Faults and instruction restart, page replacement algorithms, working sets, Locality. Virtual Memory Management: Background, Demand Paging scheme, Process Creation, Page Replacement Policies, Allocation of Frames, Thrashing.

Unit V: File System: Directory Structure, File-System Mounting, File Sharing & Protection. File-System Structure, File-System Implementation. Directory Implementation, Disk space management and space allocation strategies File Recovery, disk arm scheduling strategies.

Unit VI: I/O Systems :Overview, I/O Hardware, Application I/O Interface, and Kernel I/O Subsystem. Transforming I/O to Hardware Operations. Disk Scheduling, Disk Management, Swap-Space Management, RAID Structure.

Text Books:

1. Operating System concepts by Silberchatz & Galvin, Addison Wesley, 6th edition.
2. Modern Operating Systems by Tanenbaum, 2nd edition Pearson Education.

Reference Books:

1. Operating System concepts and design by Milan Milenkovic McGraw-Hill
2. Operating Systems by William Stallings
3. Operating Systems by D M Dhamdhare

BECT303P: Operating system lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT401T: Compilers

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Compilers: Compilers and translators, Phases of **compiler design**, cross compiler, Bootstrapping, Design of Lexical analyzer, LEX. Top down Parsing; LL(1) Parser, recursive descent parser.

UNIT II

Syntax Analysis: Specification of syntax of programming languages using CFG, Top-down parser, design of LL (1) parser, bottom up parsing technique, LR parsing, Design of SLR, CLR, LALR parsers, YACC.

UNIT III

Syntax directed translation: Study of syntax directed definitions & syntax directed translation schemes, implementation of SDTS, intermediate notations- postfix, syntax tree, TAC, translation of expressions, controls structures, declarations, procedure calls, Array reference.

UNIT IV

Code optimization: Important code optimization techniques, loop optimization, control flow analysis, data flow analysis, Loop invariant computation, induction variable removal, Elimination of Common sub expression.

UNIT V

Code generation: Problems in code generation, Simple code generator, Register allocation and assignment, Code generation from DAG, peephole optimization.

UNIT VI

Storage allocation & Error Handling: Run time storage administration stack allocation, symbol table management, Error detection and recovery-lexical, syntactic and semantic.

TEXTBOOKS

1. Alfred V. Aho and Jeffery D. Ullman, "Principles of Compiler Design", Narosa Pub. House, 1977.
2. Aho, Sethi, and Ullman, "Compilers Principles Techniques and Tools", Second Edition, Pearson education, 2008.
3. Vinu V. Das, "Compiler Design using Flex and Yacc" PHI Publication, 2008.

BECT401P: Compilers lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT404T: Elective II Natural Language Processing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I

Introduction: NLP tasks in syntax, semantics, and pragmatics, Key issues & Applications such as information extraction, question answering, and machine translation, the problem of ambiguity, the role of machine learning, brief history of the field.

Unit II

N-gram Language Models : Role of language models, Simple N-gram models, Estimating parameters and smoothing, Evaluating language models, Part Of Speech Tagging and Sequence Labeling Lexical syntax, Hidden Markov Models, Maximum Entropy models.

Unit III

Syntactic parsing: Grammar formalisms and tree banks, Efficient parsing for context-free grammars (CFGs), Statistical parsing and probabilistic CFGs (PCFGs), Lexicalized PCFGs.

Unit IV

Semantic Analysis: Lexical semantics and word-sense disambiguation, Compositional semantics, Semantic Role labeling and Semantic Parsing.

Unit V

Information Extraction (IE): Named entity recognition and relation extraction, IE using sequence labeling, automatic summarization Subjectivity and sentiment analysis.

Unit VI

Machine Translation (MT): Basic issues in MT, Statistical translation, word alignment, phrase-based translation, and synchronous grammars.

Text Books:

1. D. Jurafsky and R. Martin, "Speech and Language Processing", Second Edition, Pearson Publication, 2014.
2. Terence Parr, "Language Implementation Patterns", Pragmatic Bookshelf, 2011.

Reference Books:

1. James Allen, "Natural Language Understanding", Second Edition, Addison Wesley, 2007.
2. Akshar Bharati, Vineet Chaitanya, and Rajeev Sangal, "NLP: A Paninian Perspective", Prentice Hall, 1994.

PROJECT REPORT

on

“HUNGER-GO”

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in

Computer Technology Engineering

Submitted By

ASHISH RANJAN

PRITU GHUGARE

AKASH BARSAGADE

SUVIDHA GAJBHIYE

Under the guidance of
Prof.M.G.Panjwani



**Department of Computer Technology Engineering
Priyadarshini College of Engineering,
Nagpur - 440019
2016-17**

CERTIFICATE

This is to certify that the project entitled "HUNGER-GO" has been carried out by

ASHISH RANJAN
AKASH BARSAGDE

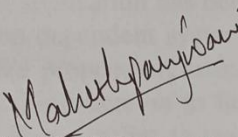
PRITU GHUGARE
SUVIDHA GAJBHIYE

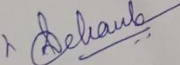
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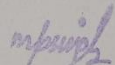
This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

Place : Nagpur

Date :


Prof. M.G. Panjwani
Guide
Assistant Professor
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19


Dr. (Mrs.) N. M. Thakare
Head of Department
Head of Department
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19


Dr. M.P. Singh
Principal

Abstract

Android is a software stack for mobile devices that includes an operating system, middleware and key applications.

Android is a software platform and operating system for mobile devices based on the Linux operating system and developed by Google and the Open Handset Alliance. It allows developers to write managed code in a Java-like language that utilizes Google-developed Java libraries, but does not support programs developed in native code

Mobile performs the important role in today's lifestyle of human being. All the convenient things are done through the mobile applications and the development of different application has been increasing day by day. In such applications, location dependent systems have been detected as an important application. We propose architecture of "HUNGER-GO" that is able to provide related information to the mobile users about the nearest food stalls. The article can realize to query information about the food stalls and its menu.

Domain 6: Web Technology

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	COMPUTER WORKSHOP I LAB	BECSE206P	Web Technology
2	Elective II:Architecture of Web Application	BECT404T	
3	ELECTIVE-III :Web Data Management	BECT408T	

BECSE206P: COMPUTER WORKSHOP LAB

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

Unit I:

Basic concepts of HTML: HTML, Web Pages, World Wide Web, Tags in HTML, HTML As a Markup Language, HTML as a Page Formatting Tool, Structure of an HTML Page, Commands Written In Notepad, the <H> TAG, the basic tags, the <P> TAG, The <PRE>Tag **The text attributes:** The <marquee> tag, Example of Text Styles, the images, the list tag: Ordered List, Unordered List, Nested List **The links:** Links between Two Pages, Links in the Same Page, Images as Links, Attributes of Links, the basic web page, **other formatting tags:** sounds and videos, comments, the <XMP> tag, special characters

Unit II:

The tables: The Table, The Rows, The Columns, Cellspacing, Cellpadding, Alignment of the Text Present inside the Cells, Alignment of Table, Border Attributes in the Table, Merging Of Rows and Columns, Colspan, Rowspan, Table within a Table, Empty Cells inside the Table, Links in the Table, **the frames:** Frames with Column Arrangement, Column Size for Frames, Row Size for Frames, Frame Spacing, Margin Width and Height in Frames,

Unit I:

The forms: The <input> Tag, The <textarea></textarea> Tag, The Dropdown List, The Normal List, HTML 5: New Markup Elements of HTML5, Basic Tags, Images, List and Links, Tables and Forms, Audio and Video, Canvas, XHTML, and CSS, **design and deploy a web site**

Unit IV:

VB script: Introduction to vbscript, Printing Text Using vbscript, Alert / msgbox in vbscript, Variables in vbscript, Arrays in vbscript, Conditional Statements, Looping Statements, Procedures, Events

Unit V:

Java script: Variables, Array, Comments, Operators, Conditional Statements, Looping Statements,

Unit VI:

Working under UNIX /LINUX Operating Systems:

- Structure: Unix Architecture
- Features of UNIX operating system
- Layered model of UNIX operating system (study of kernel and Shell)
- General file commands and Directory commands
- File structure and Directory structure

Text Book:

- HTML Programming, Freeman and Robson, Oreilly publications

BECT404T: Elective-II Architecture of Web Application

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Web Architecture and Framework: Basic Web Architecture, Web Server, Application Server, **Web development** framework, TCP/IP Architecture, TCP/IP Application Services.

UNIT II

HTTP, HTML & its roots: Uniform Resource Locator, fundamentals of http, information through header, evolution of http protocol, standard generalized markup language, html rendering.

UNIT III

XML & Introduction to **Web server**: Core XML, XHTML, XSL, Basic operation of web servers, mechanism for dynamic content recovery, Server configuration, Server security

UNIT IV

Overview of browser functionality: Architecture Considerations, Processing flow in Browser, Processing HTTP Request, Processing HTTP Responses, Cookie coordination, Privacy & P3P.

UNIT V

Active Browser Pages: Java Script, Cascading Style Sheets, DHTML, AJAX, CGI scripts and clickable maps

UNIT VI

Internet Telephoning, Virtual reality over the web, Intranet and Extranet, Firewall Design Issues.

Text Books:

1. Leon Shklar & Rich Rosen, "Web Application Architecture Principles, Protocols & Practices", 2nd Edition, John Wiley & Sons, 2009.

Reference book

1. Alex X. Liu, "Firewall Design and Analysis", World Scientific Publishing, Vol. 4., 2010.
2. Nancy J. Yeager, Robert E. McGrath, "Web Server Technology", Morgan Kaufmann Publication, 1996.
3. Peter Morville and Louis Rosenfeld, "Information Architecture for the World Wide Web", 3rd Edition, O'Reilly Publication, 1998.

BECT408T: Elective-III Web Data Management

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory)	5	100	20	80	100
1 hr (Tutorial)					

UNIT I

Introduction: Modeling Web Data, Database Technology and Web Applications, Semistructured data, Web Data Management with XML, XML and syntax, XML Data Model, XLink, and XPointer.

UNIT II

XPath and XQuery:- Regular Path Expressions, XPath Basics, XPath steps and expressions, Path evaluations, axes, node tests, predicates, XQuery Syntax, FLWOR expression, advanced features, XUpdate.

UNIT III

Automata on ranked trees, unranked trees, XML Schema, other schema languages, Graph semistructured data, graph bisimulation, data guides, XML query evaluation, XML identifiers, XML evaluation techniques

UNIT IV

Ontologies, Querying and Data Integration: RDF, RDF Schema, OWL, Description Logic, Querying data through ontologies, Querying RDF data, querying through RDFS

UNIT V

Building Web scale applications: Web search, web crawlers, web information retrieval, Web graph mining and hot topics in web search, Distributed systems, failure management, Required properties of a distributed system, P2P networks,

UNIT VI

Distributed Access Structure: Hash-based structures, distributed indexing, Distributed computing with MapReduce & PIG, Large Scale Data Management with HADOOP: Installing and Running HADOOP, Running MAPREDUCE Jobs, PIG LATIN, Scripts Running in Cluster Mode.

Text Book:

1. S. Abiteboul, I. Manolescu, P. Rigaux, M. Rousset and P. Senellart, Web Data Management, Cambridge University Press, 2012.

Reference Books :

1. S. Abiteboul, P. Buneman and D. Suciu, "Data on the Web: From Relational to Semistructured Data to XML", Morgan Kaufman Publisher, 1999.
2. Athena Vakali, George Pallis, "Web Data Management Practices: Emerging Techniques and Technologies", IGI Publication 2006.
3. W3C web site.

PROJECT REPORT
On
“Review Based Doctor Search and online appointment”
Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in
Computer Technology

Submitted By

RAKESH THAKRELE

SACHIN DANGE

KOMAL BONDE

KUMAR MANGALAM

DHARAMBIR KUMAR

Under the guidance of

Prof. YOGESH C. PATHAK



Department of Computer Technology Engineering
Priyadarshini College of Engineering,
Nagpur - 440019
2016-17

CERTIFICATE

This is to certify that the project entitled “**Review Based Doctor Search and online Appointment**” has been carried out by

RAKESH THAKRELE

SACHIN DANGE

KOMAL BONDE

KUMAR MANGALAM

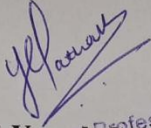
DHARAMBIR KUMAR

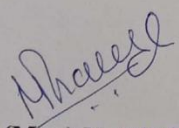
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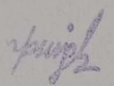
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Place : Nagpur

Date :


Prof. Yogesh C. Pathak
Associate Professor
Dept. of Computer Technology
Guide
Priyadarshini College of Engineering
Hingna Road, Nagpur-19


Dr. (Mrs.) N.M. Thakare
Head of Department
Priyadarshini College of Engineering
Hingna Road, Nagpur-19


Dr. M.P. Singh
Principal

INTRODUCTION

The institution and improvement of doctor-patient interaction system could be a vital demand, particularly currently once the online technology is developing chop-chop. The benefits of net is created full use of to create up the time and distance gap between doctors and patients and to supply quick and adequate medical services. Through the association between computers terminals and specific service, each doctors and patients area unit ready to get needed knowledge to attain a much better interaction. ASP.NET could be a net application framework developed and marketed by Microsoft to permit programmers to create dynamic internet sites, net applications and net services, in order that we will develop a doctor- patient interaction system on .net platform to satisfy the requirements of the patient and supply doctors a lot of economical and convenient means that of communication with patients. This Project bills itself because the Expedia of health care, is leverage the net to unravel a growing frustration - obtaining a doctor's appointment on short notice. It's a free service that enables patients to search out and book doctors' appointments on-line. This Project offers over 100(currently) appointment at a time with medical care physicians, dermatologists, surgeon...etc. It helps physicians, UN agency pay borderline quantity a month for the service, operate a lot of with efficiency, fill open slots and boost productivity by entertaining employees from respondent phone calls to providing care. This on-line programming resolution is nice for physicians trying to create a replacement apply in an exceedingly market. This Project filters physicians supported postal code, specialty, town and GPS. Medical practitioner credentials area unit verified and users will browse reviews written by patients UN agency has verified have seen that Doctor. The web site integrates with a physician's electronic programming system and is updated in real time

Domain 7: Artificial Intelligence

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Artificial Intelligence	BECT402T/P	Artificial Intelligence
2	ELECTIVE-I Computational Intelligence	BECT403T	
3	ELECTIVE-III :Human Computer Interface	BECT408T	

BECT402T: Artificial Intelligence

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to AI: Definition of AI, Early work in AI, Importance of AI and related fields, Task domains of AI systems, Intelligent agents, Generic architecture of intelligent agent.

Basics of problem solving: Defining the problem on a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in the design of search programs.

UNIT II

Heuristic search techniques: Generate and test, Hill climbing, Best-first search, Problem reduction, Constraint satisfaction, Means-ends analysis.

Knowledge Representation: Representation and mapping, Approaches and Issues. Introduction to proposition logic, Knowledge representation using predicate logic, Unification and resolution. Representing knowledge using rules, procedural Vs declarative knowledge, logic programming, forward Vs backward reasoning, matching.

UNIT III

Knowledge representation: Network representation schemes - Semantic networks, conceptual graphs, Conceptual dependency, Structured representation schemes - Frames, Scripts.

Statistical reasoning: Symbolic Vs Statistical reasoning, Nonmonotonic and monotonic reasoning, Probability and Bayes' theorem, Certainty factors and rule based systems, Bayesian networks, introduction to fuzzy logic.

UNIT IV

Learning: General learning model, Types of learning - rote learning, learning by taking advice, learning by analogy, induction learning, learning by discovery.

Expert systems: Characteristic features of expert system, Architecture of expert system, Expert system shell, knowledge acquisition and validation, knowledge system building tools.

UNIT V

Natural Language Processing: Overview of linguistics, Grammar and languages, basic parsing techniques, semantic analysis and representation structures.

Game playing: Minimax search procedure, adding alpha-beta cutoffs.

UNIT VI

Artificial Neural Network: Introduction, Neural Network representation, neural learning, Knowledge representation in ANN, application of neural networks.

Genetic Algorithm: Motivation, GA cycle, genetic operators, GA based Machine Learning, illustrative example.

TEXT BOOK:

1. E. Rich & K. Knight, S. B. Nair "Artificial Intelligence", Tata McGraw Hill Publications, 2008.
2. D. W. Patterson, "Introduction to Artificial Intelligence and Expert System", PHI Pub., 1997.
3. K. Uma Rao, "Artificial Intelligence and Neural Networks" Pearson Education, 2011.
4. David E. Goldberg, "Genetic Algorithms in search, optimization and machine learning", Pearson Education, 2002.

BECT402P: Artificial Intelligence lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT403T: Elective-I Computational Intelligence

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Computational Intelligence, Intelligence machines, Computational intelligence paradigms, Short history.

UNIT II

Rule-Based Expert Systems and Fuzzy Expert Systems, Rule-based expert systems, Uncertainty management, Fuzzy sets and operations of fuzzy sets, Fuzzy rules and fuzzy inference, Fuzzy expert systems, Case Studies.

UNIT III

Artificial Neural Networks, Fundamental neuro computing concepts: artificial neurons, activation functions, neural network architectures, learning rules, Supervised learning neural networks: multi-layer feed forward neural networks, simple recurrent neural networks, time-delay neural networks, supervised learning algorithms, Unsupervised learning neural networks: self-organizing feature maps, Radial basis function networks, Deep neural networks and learning algorithms.

UNIT IV

Evolutionary computation, Chromosomes, fitness functions, and selection mechanisms, Genetic algorithms: crossover and mutation, Genetic programming, Evolution strategies.

UNIT V

Swarm intelligent systems: Introduction, ant colony systems, development of ant colony systems, working of ant colony systems.

UNIT VI

Hybrid Intelligent Systems, Neural expert systems, Neuro-fuzzy systems, Evolutionary neural networks.

Text Books:

1. Andries P. Engelbrecht, "Computational Intelligence: An Introduction", Wiley Publication.
2. Yegnanarayana B, "Artificial Neural Networks", PHI, 2012.
3. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill, June 2011.
4. David E. Goldberg, "Genetic algorithms in search, optimization & Machine Learning", Pearson Education, 1989.
5. Jang J. S. R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Pearson Education 2003.
6. Mitchell Melanie, "An Introduction to Genetic Algorithm", Prentice Hall, 1998.
7. Andries Engelbrecht, "Computational Intelligence: An Introduction", Wiley India, 2007.

BECT408T: Elective-III Human Computer Interface

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory)	5	100	20	80	100
1 hr (Tutorial)					

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: **Human interaction with computers**, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

Unit III

Screen Designing: Design goals: Screen planning 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 IV

Windows: New and Navigation schemes selection of window, selection of devices based and screen based controls. Components: text and messages, Icons and increases - Multimedia, colors, uses problems, choosing colors.

Unit V

Software tools: Specification methods, interface, Building Tools. Components - text and messages, Icons and increases - Multimedia, colors, uses problems, choosing colors.

Unit VI

Interaction Devices: Keyboard and function keys, pointing devices, **speech recognition** digitization and generation - image and video displays drivers.

Text Books:

1. Wilbert O Galitz, "The essential guide to user interface design", Second Edition, Wiley Dream Tech., 2002.
2. Ben Shneidermann, "Designing the user interface", Third Edition; Pearson Education, 2009.

Reference Books:

1. Alan Dix, et.al, "Human - Computer Interaction", Third Edition, Pearson Education, 2003.
2. Prece, Rogers and Sharps, "Interaction Design", 3rd Edition, Wiley Dream Tech., 2011.
3. Soren Lauesen, "User Interface Design", Pearson Education, 2005.
4. D.R.Olsen, "Human -Computer Interaction", First Edition; Cengage Learning, 2009.

PROJECT REPORT
ON
“AN EFFICIENT TECHNIQUE FOR PREVENTING
SQL INJECTION ATTACK USING PATTERN
MATCHING ALGORITHM”

Submitted in partial fulfillment of requirement for the degree of Bachelor of Engineering
in

COMPUTER TECHNOLOGY

Submitted By

PAYAL DHORE

SUMIT MANDAL

RASHMI YEOLE

RAJENDRA KUMAR RAJBHAR

SHUBHANGI NINAWA

Under the guidance of

Prof. P.U.Tembhare



Department Of Computer Technology

Priyadarshini College Of Engineering

Nagpur-440019

2016-17

CERTIFICATE

This is to certify that the project entitled "AN EFFICIENT TECHNIQUE FOR PREVENTING SQL INJECTION ATTACK USING PATTERN MATCHING ALGORITHM" has been carried out by

PAYAL DHORE

RAJENDRA KUMAR RAJBHAR

RASHMI YEOLE

SUMIT MANDAL

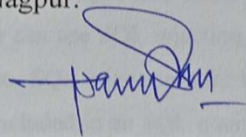
SHUBHANGI NINAWA

under my guidance and submitted the partial fulfillment for the degree of Bachelor of Engineering (B.E.) in Computer Technology, during the academic year 2016-17 is a bonafide work prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Computer Technology to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

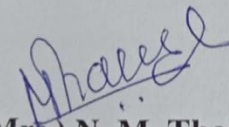
Place: Nagpur

Date:



Prof. P.U. Tembhare

Assistant Professor
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19


Dr. (Mrs.) N. M. Thakare


Dr. M.P. Singh

Head of Department

Head of Department
Dept. of Computer Technology
Priyadarshini College of Engineering
Hingna Road, Nagpur-19

Principal

ABSTRACT

Pattern matching is a technique that can be used to identify or detect any anomaly packet from a sequential action. Injection attack is a method that can inject any kind of malicious string or anomaly string on the original string. Most of the pattern based techniques are used static analysis and patterns are generated from the attacked statements. In this paper, we proposed a detection and prevention technique for preventing SQL Injection Attack (SQLIA) using Aho-Corasick pattern matching algorithm. In this paper, we proposed an overview of the architecture. In the initial stage evaluation, we consider some sample of standard attack patterns and it shows that the proposed algorithm is works well against the SQL Injection Attack. Web applications are typically interact with backend database to retrieve persistent data and then present the data to the user as dynamically generated output, such as HTML web pages. This communication is commonly done through a low-level API by dynamically constructing query strings with in a general purpose programming language. This low-level interaction (or) communication is dynamic (or) session based because it does not take into account the structure of the output language. The user input statements are treated as isolated lexical entries (or) string. Any attacker can embed a command in this string, which poses a serious threat to web application security. SQL Injection Attack (SQLIA) is one of the very serious threats for web applications. The web applications that are vulnerable to SQL Injection may allow an attacker to gain complete access to the database. In some cases, attacker can use SQL injection attack to take control and corrupt the system that hosts the web application. SQL injection refer to a class of code-injection attacks in which data provided by the user is included in an SQL query of such a way that part of the user's input is treated as SQL code.