

DMCA701 Mathematical Foundation Of Computer Security

Module I

Fundamental Properties, Summation and Product Notation, Mathematical Induction, Recursion, Binomial Theorem, Polygonal Numbers, Pyramidal Numbers, Catalan Numbers. Divisibility-Division Algorithm, Number Pattern, Prime, Composite Numbers, Fibonacci and Lucas Numbers, Fermat Numbers

Module II

Greatest Common Divisor, Euclidean Algorithm, Fundamental Theory of Arithmetic, Least Common Multiple, Linear Diophantine Equations, Divisibility Test, Modular Design, Check Digits, Round Robin Tournaments.

Module III

System of Linear Congruence- Chinese Remainder Theorem, 2X2 Linear Systems. Cryptology- Affine Ciphers, Hill Ciphers, Exponentiation Ciphers.

Module IV

Primitive Root and Indices- The order of a positive integers, Primality Test, Primitive root for Prime, Composites with primitive roots, Algebra of Indices.

Module V

Quadric Congruences- Quadric Residues, The Legendre Symbol, Quadric Reciprocity, The Jacobi Symbol, Quadric Congruence with Composite Moduli

TEXT BOOK

1. Elementary Number Theory With Applications, Thomas Koshy, 2nd Ed.
2. Kenneth Ireland, 'A Classical introduction to Modern Number Theory'. 2nd Ed. Michael

Rosen, Springer 2004

REFERENCES

1. Niven & H.S. Zuckerman, 'Introduction to the theory of Numbers'. 3rd Ed., John Wiley & Sons, New York 1992.

2. Melvyn B. Nathanson, 'Methods in Number Theory', Springer, 2005
3. Neal Koblitz, 'A Course in Number Theory and Cryptography', 2nd Ed. Springer, 2004.
4. Neal Koblitz, 'Algebraic aspects of Cryptography' Springer, 1999.

DDMCA 702 Principles of Management & Marketing

Module I

Basic Managerial Concepts, Levels of management, Managerial Skills, Concept of management principles, Nature and Need of Management, Management thought – classical approach, scientific management, Fayol's management, bureaucratic approach, systems approach, Contingency approach.

Module II

Management Functions, Planning – Meaning, nature, structure, steps, effective planning, MBO, SWOT Analysis. Organizing – meaning, process, structure, formal and informal, types of organization, Delegation of authority.

Module III

Human resources management: staffing – meaning, nature, staffing process, recruitment & selection. Directing, supervision, Motivation – significance, motivational theories- Maslow's need hierarchy, McGregor's Theory X & Theory Y. Leadership, Communication – formal and informal, Oral and written, barriers, effective communication. Labour welfare, Quality Circle. Controlling- concepts, steps, objectives.

Module IV

Organizational behavior – Scope, models of OB, Industrial fatigue, Industrial discipline, Industrial dispute, Labour unions, Labour turnover. Individual behavior- Personality, Attitudes, Values and Job satisfaction. Group behavior. Team Building- Types, process, roles.

Module V

Marketing Management- Types of market- Market segmentation, target marketing, market positioning, Core Marketing Concepts, Marketing research, Customer value, Customer relationship management, Brand Equity, Product Life Cycle, Marketing Mix, Pricing Strategies, Distribution Channels, Promotions – Sales promotions, advertising and Public relations.

References

- Principles of Management, R N Gupta, S.Chand & Company Ltd.

- Essentials of Management – Koontz & Wheinrich, 7th Edition, PHI Publications
- Marketing management – Kotler, Keller, Jha and Koshy, 13th edition, Pearson Education
- Organisational Behavior, S.S Khanka, S.Chand & Company Ltd
- Principles of Management, L M Prasad, Sultan Chand Publications

DMCA 703 Data Mining & Warehousing

Module I - Introduction to Data mining & Data Warehouse

What is Data mining, Data mining - On What kinds of Data, Data mining Functionalities, Classification of Data mining Systems, Data Mining Task Primitives, Integration of Data mining systems, Major issues of Data mining, What is Data Warehouse, Multidimensional Data Model, A three-tier Data Warehousing Architecture.

Module II-Data Preprocessing and Mining Frequent Patterns Data Preprocessing

Data Cleaning, Data Integration and Transformation, Data Reduction, Data discretization and concept hierarchy generation. Association Rules-Basic Concepts, Efficient and Scalable Frequent Item set Mining Methods :Apriori Algorithm, Generating association Rules from Frequent Item sets, Improving the Efficiency of Apriori. Mining Frequent item-sets without Candidate Generation.

Module III-Classification and Prediction

Introduction to Classification and Prediction, Issues Regarding Classification and Prediction Classification by Decision Tree Induction: Decision Tree induction, Attribute Selection Measures, Tree Pruning, Bayesian Classification: Bayes' theorem, Naïve Bayesian Classification, Rule Based Algorithms: Using If - Then rules of Classification, Rule Extraction from a Decision Tree, Rule Induction Using a Sequential Covering algorithm, K- Nearest Neighbour Classifiers. Prediction :Linear Regression, Nonlinear Regression, Other Regression-Based Methods

Module IV - Clustering

What is Cluster Analysis, Requirements of Cluster Analysis' Types of Data in Cluster Analysis, Categorization of Major Clustering Methods, Partitioning Methods :k-Means and k- Medoids, From KMedoids to CLARANS , Hierarchical Method : Agglomerative and Divisive Hierarchical Clustering, BIRCH, ROCK, Chameleon, Density-Based Method: DBSCAN, Grid Based Methods: STING: Statistical Information Grid, Wave Cluster, Model based Methods-Expectation-Maximization, Conceptual Clustering, Neural Network Approach.

Module V-Applications and Trends in Data Mining

Data Mining Applications :Data Mining for Financial Data Analysis, Data Mining for the Retail Industry, Data Mining for the Telecommunication Industry, Data Mining for Biological Data Analysis, Data Mining in Other Scientific Applications, Data Mining for Intrusion Detection, Social Impacts of Data Mining, Trends in Data Mining.

References

Data Mining Concepts and Techniques – Jiawei Han and Micheline Kamber, Second Edition, Elsevier, 2006

Data Mining – BPB Editorial Board, BPB Publications, First Edition, 2004

Data Warehousing, Data Mining, & OLAP – Alex Berson, Stephen J Smith, Tata McGraw Hill, 2004

Data Warehousing, Sinha, Thomson Learning, First Edn.

DMCA704 Web Technologies

MODULE I

Introduction: Introduction to web, protocols governing the web, web development strategies, Web applications, web project, web team.

MODULE II

Web Page Designing: HTML: list, table, images, frames, forms, CSS; XML: DTD, XML schemes, presenting and using XML

MODULE III

Scripting: Java script: Introduction, documents, forms, statements, functions, objects; event and event handling; introduction to AJAX, VB Script

MODULE IV

Server Site Programming: Introduction to active server pages (ASP), ASP.NET, java server pages (JSP), JSP application design, tomcat server, JSP objects, declaring variables, and methods, debugging, sharing data between JSP pages, Session, Application: data base action , development of java beans in JSP, introduction to COM/DCOM.

MODULE V

The Ruby Language - OOP with Ruby - Text Processing and Scripting

Overview of Rails- Document Requests- Processing Forms- Rails Application with Databases – Layouts. Overview of Ajax – Basics of Ajax – Rails with Ajax

References

1. Xavier, C, “ Web Technology and Design” , New Age International
2. Ivan Bayross, “ HTML, DHTML, Java Script, Perl & CGI”, BPB Publication.
3. Ramesh Bangia, “Internet and Web Design” , New Age International
4. Bhave, “Programming with Java”, Pearson Education
5. Ullman, “PHP for the Web: Visual QuickStart Guide”, Pearson Education
6. Deitel, “Java for programmers”, Pearson Education
7. Beginning Rails: From Novice to Professional Paperback – Import, 16 Aug 2007 ,Cloves, Carneiro Jr ,Hampton Catlin ,Jeffrey Hardy .

DMCA705 PYTHON Programming

Module I

Introduction: The Process of Computational Problem Solving, Python Programming Language, Python Data Types: Numbers, Expressions, Variables and Assignments, Strings, List, Python Standard Library, Imperative Programming: Python programs, Execution Control Structures, User-Defined Functions, Python Variables and Assignments, Parameter Passing.

Module II

Text Files: Strings, Formatted Output, Files, Errors and Exception Handling, Execution and Control Structures: if Statement, for Loop, Two Dimensional Lists, while Loop, More Loop Patterns, Additional Iteration Control Statements, Containers and Randomness: Dictionaries, Other Built-in Container Types, Character Encoding and Strings, Module random, Set Data Type.

Module III

Object Oriented Programming: Fundamental Concepts, Defining a New Python Class, User-Defined Classes, Designing New Container Classes, Overloaded Operators, Inheritance, User-Defined Exceptions, Namespaces: Encapsulation in Functions, Global versus Local Namespaces, Exception Control Flow, Modules and Namespaces.

Module IV

Objects and Their Use: Software Objects, Modular Design: Modules, Top-Down Design, Python Modules, Recursion: Introduction to Recursion, Examples of Recursion, Run Time Analysis, Searching, Iteration Vs Recursion, Recursive Problem Solving.

Module V

Graphical User Interfaces: Basics of tkinter GUI Development, Event-Based tkinter Widgets, Designing GUIs, OOP for GUI, The Web and Search: The World Wide Web, Python WWW API, Database Programming in Python.

Text Book

1. LjubomirPerkovic, "Introduction to Computing Using Python: An Application Development Focus", Wiley, 2012.

Reference

1. Charles Dierbach, "Introduction to Computer Science Using Python: A Computational Problem-Solving Focus", Wiley, 2013.
2. Allen B Downey, "Think Python" ,Oreilly, 2012

DMCA706 Software Lab XI- PYTHON Lab

Data Types and Data Structures :

Introduction to Python: - using the Python interpreter, Overview of programming in Python, Python built-in types, Arithmetic in Python, Program input and Program output, Variables and assignment. Strings and string operations, List basics, List operations, Dictionaries, Dictionary basics and Tuples, (a) Simple programs using elementary data items, lists, dictionaries and tuples.

Control Structures:

Control Statements: -if statements, while statement, for statements, functions, formal arguments, variable-length arguments, Exceptions, detecting and handling exceptions.

(a) Programs using conditional branches, loops.

(b) Programs using functions

(c) Programs using exception handling

Classes ,files and modules

Introduction to Classes and Objects: -classes, class attributes, instances, instance

attributes, binding and method invocation, inheritance, polymorphism, Built-in functions

for classes and instances. Files and input/output, reading and writing files, methods of file objects, using standard library functions, dates and times

(a) Programs using classes and objects

(b) Programs using inheritance

(c) Programs using polymorphism

(d) Programs to implement file operations.

(e) Programs using modules.

Database and web programming

Python database application programmer's interface (DB- API), connection and

cursor objects, Type objects and constructors, python database adapters.

Creating simple web clients, introduction to CGI, CGI module, building CGI

applications, python web application frameworks: django .

- (a) Programs using python database API.
- (b) Programs for creating simple web pages.
- (c) Programs for creating dynamic and interactive web pages using forms.

Development of sample web applications using python.

Sample applications may include

- i) Web based polling
- ii) Social networking site
- iii) Online transaction system
- iv) Content management system

References

1. Core Python Programming by Wesley J. Chun, 2nd Edition , Pearson Education
2. An Introduction to Python by Guido Van Russom, Fred L.Drake, Network Theory Limited.
3. Beginning Python: From Novice To Professional By Magnus Lie Hetland, Second Edition Apress
4. Programming in Python 3 by Mark Summerfield, Pearson Education

DMCA707 Software Lab XII -Web Technologies Lab

Creation of HTML Pages with Frames,Links,tables and other tags

Usage of internal and external CSS along with HTML pages

Javascript for displaying date and comparing two dates

Form validation including textfield,radiobuttons,checkboxes,listbox and other Controls

Creating event handler that respond to mouse and keyboard event: Onload,onmouseover, onmouseout, onfocus, onblur, onsubmit, onresult, onclick, onchange

Using sessions and cookies as part of web applications

Program using XML

AJAX implementation

Basic PHP programs

Sample web applications using PHP and MySQL

Rails Application with Databases

DMCA801 CRYPTOGRAPHY AND NETWORK SECURITY

Module I

Foundations of Cryptography and Security – Ciphers and Secret Messages, Security Attacks and Services, Mathematical Tools for Cryptography, Substitutions and Permutations, Modular Arithmetic, Euclid’s Algorithm, Finite Fields, Polynomial Arithmetic, Discrete Logarithms, Conventional Symmetric Encryption Algorithms, Theory of Block Cipher Design, Feistel Cipher Network Structures, DES and Triple DES, Strength of DES.

Module II

Modern Symmetric Encryption Algorithms, IDEA, CAST, Blowfish, Twofish, RC2, RC5, Rijndael (AES), Key Distribution, Stream Ciphers and Pseudo Random Numbers, Pseudo Random Sequences, Linear Congruential Generators, Cryptographic Generators, Design of Stream Cipher, One Time Pad.

Module III

Public Key Cryptography – Prime Numbers and Testing for Primality, Factoring Large Numbers, RSA, Diffie-Hellman, ElGamal, Key Exchange Algorithms, Public-Key Cryptography Standards

Module IV

Hashes and Message Digests – Message Authentication, MD5, SHA, RIPEMD, HMAC, Digital Signatures, Certificates, User Authentication, Digital Signature Standard, Security Handshake Pitfalls, Elliptic Curve Cryptosystems.

Module V

Authentication of Systems, Kerberos, Electronic Mail Security, Pretty Good Privacy, IP and Web Security, Secure Sockets and Transport Layer, Electronic Commerce Security, Electronic Payment Systems, Secure Electronic Transaction, Digital Watermarking.

TEXTBOOK

Behrouz A Forouzan, Cryptography and Network Security, Tata Mc Graw Hill, 2005

REFERENCE

William Stallings, Cryptography and Network Security, Principles and Practices. 3rd Ed., Pearson Education, 2005.

DMCA802 Artificial Intelligence

MODULE I

Introduction to Artificial Intelligence - Overview of AI - AI Problems, Assumptions, Techniques, Level of Model, and Criteria for success. Problems, Problem spaces and Search - Problem Definition, Production systems, Problem characteristics, Production system characteristics.

AI languages – Introduction to LISP & PROLOG

MODULE II

Knowledge Representation Schemes -Formalized Symbolic Logics - Syntax and Semantics of Propositional and Predicate logic, Properties of WFFS, Conversion to clausal form, Inference rules, Resolution, Non- Deductive Inference Method. Inconsistencies and Uncertainties – Non-monotonic reasoning, Truth Maintenance system, Default reasoning and the closed world assumption. Structured Knowledge - Associative Networks, Frame Structures, Conceptual Dependencies and scripts. Overview of Object Oriented Systems - Objects, Classes, Messages and Methods.

MODULE III

Knowledge Organization and Management - Search and Control Strategies - Examples of search problem, Uniformed or Blind search, Informed search, Searching AND-OR graphs. Matching Techniques -Structures used for matching, Measures for Matching, Matching like patterns, Fuzzy matching algorithm, RETE Algorithm. Knowledge Organization and Management – Indexing and retrieval techniques, Integrating knowledge in memory, Memory organization systems.

MODULE IV

Knowledge Acquisition - General Concepts in Knowledge Acquisition - Types of learning, Difficulty in Knowledge Acquisition, General learning model, Performance measures. Early work in Machine Learning – Perceptrons, Checkers playing example, Learning automata, Genetic algorithms, Intelligent editors. Analogical and Explanation Based Learning – Analogical Reasoning and learning, Examples, Explanation based learning.

MODULE V

AI Application - Natural Language Processing - Overview of Linguistics, Grammars and Languages, Basic Parsing Techniques, Semantic Analysis and Representation structures, Natural Language generation, Natural language systems. Patterns Recognition - Recognition and Classification process, Classification pattern, Recognizing and Understanding speech. Experts system Architectures – Rule-based system, Non production system, Dealing with uncertainty, Knowledge acquisition and validation, Knowledge system Building Tools.

References

1. Introduction to Artificial intelligence and expert systems by Dan W. Patterson, Prentice Hall India (All Modules).
2. Artificial Intelligence, Elaine Rich, McGraw Hill (Module 1).
3. Principles of Artificial Intelligence, Nilson. N.J, Springer Verlag
4. Introduction to Artificial Intelligence, Charvanak E. and McDermoti D, Addison Wesley
5. Artificial Intelligence and Intelligent Systems by N.P Pandhy. Oxford Publications.

DMCA 803 Data Analysis & Algorithms

Module I

Introduction – Algorithms-design strategies-concepts in performance analysis – spacecomplexity, time complexity- asymptotic notation- practical complexities, performancemeasurement.

Module II

Divide and conquer method – General method, Finding the maximum and minimum, mergesort, Quick sort, Selection sort, Strassen’s matrix multiplication.

Module III

Greedy Method and Dynamic programming method – The general method, Knapsackproblem, Job sequencing with dead lines, Minimum cost spanning tree- prim’s algorithm andkruskal’s algorithm, optimal storage on tapes. Dynamic programming- General method,multistage graphs, All pairs shortest paths, The traveling salesperson problem.

Module IV

Backtracking and branch and bound techniques – The general method, The 8 queensproblem, Sum of subsets. Branch and Bound- least cost search, control abstraction for LCsearch.

Module V

Lower bound theory and NP Hard problem – Comparison trees- searching, sorting andselection. Concepts of NP hard and NP-complete problems, non deterministic algorithms,Classes of NP hard and NP complete. COOK’S theorem.

Text Book:

Fundamentals of computer algorithms- Ellis Horowitz, SartajSahni, SanguthevarRajeshkharan (Galgotia)

References:

1. Fundamentals of algorithms – Gilles Brassard, Paul Bratley (PHI)
2. Introduction to the design and analysis of algorithms – AnanyLevitin (Pearson)
3. Computer algorithms – Introduction to design and analysis – Sara Baase, Allen VanGelder (Pearson)

DMCA 804(A) - (Elective-II)

Android Programming

Module I

INTRODUCTION - Setting up development environment, Dalvik Virtual Machine & .apk file extension, Fundamentals: Basic Building blocks, Activities, Services, Broadcast Receivers & Content providers, UI Components – Views & notifications, Components for communication - Intents & Intent Filters. Android API levels (versions & version names).

Module II

Application Structure–AndroidManifest.xml, Uses-permission & uses-sdk, Resources & R.java, Assets, Layouts & Drawable Resources, Activities and Activity lifecycle, First sample Application.

Module III

Emulator-Android Virtual Device–Launching emulator, Editing emulator settings, Emulator shortcuts, Logcat usage, Introduction to DDMS, Second App(switching between activities)– Develop an app for demonstrating the communication between Intents.

Basic UI design – Form widgets, Text Fields, Layouts.

Preferences – Shared Preferences, Preferences from xml.

Module IV

Menu – Option menu, Context menu, Sub menu, Menu from xml, Menu via code.

UI design – Time and Date, Images and media, Composite, AlertDialogs & Toast, Popup.

Styles & Themes– styles.xml, drawable resources for shapes, gradients (selectors), style attribute in layout file, Applying themes via code and manifest file.

Content Providers – SQLite Programming, SQLiteOpenHelper , SQLiteDatabase , Cursor , Reading and updating Contacts , Reading bookmarks.

Module V

Adapters and Widgtes – Adapters: ArrayAdapter , BaseAdapters – ListView and ListActivity, Custom listview, GridView using adapters, Gallery using adapters.

Custom components – Custom Tabs, Custom animated popup panels, Other components.

Threads - Threads running on UI thread (runOnUiThread), Worker thread , Handlers & Runnable.

References

- Android Apps for Absolute Beginners , Wallace Jackson, 2nd Edition.
- Android Design Patterns, **Greg Nudelman**
- Programming Android, Zigurd Mednieks, Laird Dornin, G. Blake Meike & Masumi Nakamura
- Hello, Android(Introducing Google's Mobile Development Platform), Ed Burnette, Third Edition

DMCA 804(B) – Elective -II

USER INTERFACE DESIGN

Module I

Introduction

Introduction-Importance-Human-Computer interface-characteristics of graphical and web user interface-advantages and disadvantages of graphical systems-characteristics of GUI - web user interface- popularity-characteristics of Web interface-internet-intranet-extranet-principles of UID

Module II

Human Computer Interaction

User interface design process- obstacles-usability-Creating graphical systems-Know your user client-human characteristics in design-Understand the business functions-requirement analysis-Direct-Indirect methods-basic business functions-Design standards-system trainings- Understand the principles of good screen design-Human consideration in screen design- Develop System Menus and Navigation Schemes-structures of menus - functions of menus- contents of menu-formatting - phrasing the menu - selecting menu choice-navigating menus- graphical menus.

Module III

Windows

Windows: Characteristics-components-presentation styles-types-managements organizations- Operations-web systems-device-based controls: characteristics-Screen-based Controls: operate control-text boxes-selection control-combination control-custom control presentation Control.

Module IV

Multimedia

Write clear text and messages-Text for web pages - effective feedback-guidance & assistance- Internationalization accessibility-Icons-Image - Multimedia -coloring.

Module V

Windows Layout - Test

Windows layout-test: prototypes - kinds of tests - retest - Information search - Visualization - Hypermedia - www - Software tools.

References

- Wilbent. O. Galitz ,“The Essential Guide to User Interface Design”, John Wiley& Sons, 2001.
- Ben Sheiderman, “Design the User Interface”, Pearson Education, 1998.
- Alan Cooper, “The Essential of User Interface Design”, Wiley – Dream Tech Ltd., 2002.

DMCA 804(C) – Elective -II

GRID COMPUTING

Module I

Grid Computing: Introduction - Definition -Scope of grid computing. Grid computing model - Grid.**Protocols** – Desktop grids: Characteristics – key elements – Role in enterprise computing infrastructure. Data grids: Avaki Data Grid – Data grid Architecture.

Module II

Grid Computing Initiatives: Grid Computing Organizations and their roles – Grid Computing anatomy – Grid Computing road map. Grid Computing Applications: Merging the Grid services architecture with the Web Services Architecture.

Module III

Technologies: OGSA – Sample use cases – OGSA platform components – OGSi – OGSA Basic Services.

Module IV

Managing Grid Environments: Managing grids – management reporting – monitoring – service level management – data catalogs and replica management.

Module V

Grid Computing Tool Kits: Globus GT3 Toolkit – Architecture, Programming model, High level services – OGSi .Net middleware Solutions.

References:

- Joshy Joseph & Craig Fellenstein, “Grid Computing”, PHI, PTR-2003.
- Ahmar Abbas, “Grid Computing: A Practical Guide to technology and Applications”, Charles River media – 2003.
- Ian Foster, Carl Kesselman, “The Grid2: Blueprint for a New Computing Infrastructure”. Morgan Kaufman, New Delhi, 2004.
- Fran Bermn, Geoffrey Fox, Anthony Hey J.G., “Grid Computing: Making the Global Infrastructure a Reality”, Wiley, USA, 2003.
- Maozhen Li, Mark Baker, “The Grid: Core Technologies”, John Wiley & Sons, 2005.
- URLs: www.globus.org and glite.web.cern.ch (Unit 5).

DMCA805 Computer Graphics and Open GL

(All the Graphics techniques specified should be implemented using OpenGL)

Module I

Introduction to graphics, Practical applications of computer graphics, Image processing and Graphics-Interactive Graphics- Input devices ,Display devices- Random scan and Raster scan systems, Color CRT, Flat panel displays .Drawing primitives. Basic raster graphics algorithms- Points and lines: DDA and Bresenham's line drawing algorithm, Midpointcircle and DDA circle algorithm.

Module II

Two dimensional transformations: translation, rotation, scaling, reflection and Shear. Matrix representations and homogeneous co-ordinates, composite transformations. Window to viewport transformation-changing coordinate systems- Surface normal-Plane equation. Filling, clipping

Module III

Projection: 3D Geometric transformations- Translation, Scaling, Rotation. Perspective parallelMatrix representation – 3D viewing – 3D clipping.Modeling a 3D object – Data structure for object representation

Module IV

Representations of 3D Objects :Representation of curves and surfaces –Parametric, Quadric-Bezier, B-Splines, NURBS. Representing surfaces using polygon meshes- Sweep representations, Boundary representations, Spatial-partitioning representations, Constructivesolid geometry- Sweep representations, octrees, BSP trees, Fractals.

Module V

Visible surface detection methods- Shading-diffused, specular - Illumination -Comparison of.different shading methods-Ray tracing.

References

- Hearn D.,Baker M.P., *Computer Graphics(using OpenGL)*, Prentice- Hall of India 2006.

- Foley J.D. ,Andries van Dam, *Computer Graphics(latest) - Principles and Practice*, , Addison-Wesley.

- Angel, Edward. *Interactive Computer Graphics- A Top-down Approach with OpenGL*, Addison-Wesley,1996.

- Computer Graphics using OpenGL F S Hill – Prentice Hall

DMCA 806 Seminar-II

The seminar / Case study is to be considered as purely INTERNAL (with 100% internal marks only). Every student is expected to present a minimum of 2 seminars per semester before the evaluation committee and for each seminar marks can be equally apportioned. The three member committee appointed by Head of the Department will evaluate the seminar and at the end of the semester the marks can be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper (40%), presentation (40%) and response to the questions asked during presentation (20%)

DMCA807 Software Lab-XIII (Graphics Lab)

1. Lab directives - OpenGL libraries-installation in your computer-getting familiar with openGL commands-Running simple programs.
2. Display drawing primitives – Draw Polygon surfaces, filling with colors–shading, scale, rotate and translate a triangle with 3 colors at 3 vertices. Animate the triangle.
3. Draw a circle and anellipse. Draw a cuboid with different colors on its sides. Implement projections using the cuboid.
4. Draw a sphere model with constant color. Draw a cone scale rotate and translate it.
5. Animate two objects on same screen.
6. Simulate solar system.
7. Display Bezier and B-Spline surfaces.
8. Implement Constructive solid geometry techniques.
9. Display a scene with and without back face culling.
10. Program to draw a 3D Shape with Animation

DMCA901 Research Methodology

Module I :

Meaning of Research – Types of Research. Research process- Problem definition-Objectives of Research- Research design- Data collection –Data Analysis –Interpretation of Results- Validation of Results. Formulation of a Research problem.

Module II:

Basic Statistical measures - Measures of central tendency – Arithmetic Mean, Median, Mode, Geometric Mean, Harmonic Mean, Measures of variation – Range, Mean Deviation, Quartile Deviation, and Standard Deviation.

Module III:

Ethics of Research- Scientific Misconduct- Forms of Scientific Misconduct. Measurement parameters- Measurement of errors - Measurement uncertainty. Statistical test of hypothesis- T-test, Z Test, F-test, Chi-square test.

Module IV:

Guidelines for writing research Papers - Guidelines for writing the abstract, introduction, methodology, results and discussion, conclusion sections of a manuscript. Impact factor- Validity, Merits, limitations. Other measurements of impact. h-index-advantages, criticism of h-index-modification of h-index.

Module V:

Intellectual property rights (IPR)- forms of IPR- patents-copyrights-Trademarks-Industrial design-geographical indication. Protection of plant varieties and farmers rights. Patent Facilitating centre - Do's and Don'ts of patents. Introduction to Latex, Basic Latex Commands and Documentation

REFERENCE:

1. Research Methodology By R Panneerselvam - Prentice Hall International 2004 - Eleventh printing, 2013.

2. Research Methodology By CR Kothari - New Age International publishers Second Revised Edition, Reprint 2013.
3. Research Methodology By Francis C. Dane, Brooks/Cole Publishing Company, California.

DMCA 902 Compiler Design

Module I:

Introduction to compilers: Compilers and Translators, need for translators, phases of compiler, pass structure of compiler, book keeping, compiler writing tools, bootstrapping of compiler.

Module II:

Finite Automata and Lexical Analysis: Role of lexical analyzer, design of lexical analyzer, Transition Diagrams, specification of tokens, recognition of tokens, regular expressions, finite automata, from regular expressions to finite automata, finite state machines, NFA to DFA, minimizing DFA, language for specifying lexical analyzers (Analyzer Generator: LEX)

Syntactic specifications: grammars, context free grammars, parse trees, ambiguous grammar, regular expressions and context free grammars, non context free grammars.

Module III:

Basic Parsing Techniques: Parsers, parse tree representation, shift -reduce parsing, handles, stack implementation of shift-reduce parser, operator precedence parsing, top-down parsing, left recursion, left-factoring, Bottom up parsing, predictive parsers.

Module IV:

Automatic construction of Efficient parsers: LR parsers, canonical collection of LR(0) items, SLR parsing tables, canonical LR parsing table, LALR parsers.

Symbol table management, Error handling: - sources and reporting.

Module V:

Intermediate code generation:-postfix notation, syntax tree, three-address code, basic blocks and flow graph, DAG representation of basic blocks. Code optimization: - The principal sources of optimization, optimization of basic blocks, loops in flow graphs, Peephole optimization. Code Generations: - Issues in the design of a code generator, simple code generator.

References:

1. Alfred V Aho , Jeffrey D. Ullman, "Principles of Compiler Design", Narosa

2. Aho, Ullman and Sethi, "Principles of Compiler Design", Addison Wesley
3. J. P. Trembley and P. G. Sorensen, "Theory and Practice of Compiler Writing", McGraw Hill.
4. Holub, "Compiler Design in C", PHI.

DMCA 903 Distributed Computing

Module I

Introduction to distributed systems – definition, goals, types. Architectures- System architectures, architectures versus middle ware, self management. Processes – Threads, Virtualisation, Clients, Servers, Code Migration

Module II

Communication – RPC, Message oriented, Stream oriented. Naming – flat naming, structured naming, attribute based naming. Synchronization – Clock synchronization, Logical Clocks, Election Algorithms, Mutual Exclusion

Module III

Consistency and replication – Data centric consistency, client centric consistency, consistency protocols. Fault Tolerance – introduction, process resilience, reliable client-server communication, reliable group communication, distributed commit. Introduction to Distributed File Systems

Module IV

CLOUD ARCHITECTURE AND MODEL

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud – Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

Module V

VIRTUALIZATION

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management - Cloud Security Challenges and Risks

References

1. Distributed Systems – Principles and Paradigm, Tanenbaum& Van Steen, 2nd Edition, PHI Publications
2. Elements of Distributed Computing, Garg, Wiley Publications
3. Distributed Operating System, Pradeep K Sinha, PHI Publications
4. “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”,Kai Hwang, Geoffrey C Fox, Jack G Dongarra, Morgan Kaufmann Publishers, 2012.
5. “Cloud Computing: Implementation, Management, and Security” John W.Rittinghouse and James F.Ransome, , CRC Press, 2010.
6. “Cloud Computing, A Practical Approach” Toby Velte, Anthony Velte, Robert Elsenpeter, TMH, 2009.
7. “Cloud Computing – insights into New-Era Infrastructure”, Kumar Saurabh, Wiley India,2011.

DMCA904 Modeling & Simulation

MODULE I

System definition and components, stochastic activities, continuous and discrete systems, system modeling, types of models, static and dynamic physical models, static and dynamic mathematical models, full corporate model, types of system study.

MODULE II

System simulation, why & when to simulate, nature and techniques of simulation, comparison of simulation and analytical methods, types of system simulation, real time simulation, hybrid simulation, simulation of pure-pursuit problem, single-server queuing system and an inventory problem, Monte-Carlo simulation, Distributed Lag models, Cobweb model.

MODULE III

Simulation of continuous systems, analog vs. digital Simulation, Simulation of water reservoir system, Simulation of a servo system, simulation of an autopilot, Discrete system simulation, fixed time-step vs. even to even model, generation of random numbers, test for randomness, Monte-Carlo computation vs. stochastic simulation.

MODULE IV

System dynamics, exponential growth models, exponential decay models, modified exponential growth models, logistic curves, generalization of growth models, system dynamic diagrams
Introduction to SIMSCRIPT: Program, system concepts, origination, and statements, defining the telephone system model.

MODULE V

Simulation of PERT Networks, critical path computation, uncertainties in activity duration, resource allocation and consideration. Simulation languages and software, continuous and discrete simulation languages, expression based languages, object oriented simulation, general purpose vs. application - oriented simulation packages, CSMP-III, MODSIM-III.

References

1. Geoffrey Gordon, " System Simulation", PHI

2. Jerry Banks, John S. C Barry L. Nelson David M. Nicol, "Discrete Event System Simulation", Pearson Education
3. V P Singh, "System Modeling and simulation", New Age International.
4. Averill M. Law, W. David Kelton, "System Modeling and simulation and Analysis", TMH

DMCA 905(A) – (Elective-III)

Distributed Processing

Module I

Introduction: Definition, Characteristics, Goals and applications of Distributed Computing, Basic design issues and user requirements.

Interprocess Communication: Client Server Communication, Group Communication, IPC in UNIX, Remote Procedure Calls, Design issues and implementation.

Module II

Distributed Operating Systems: Introduction, kernel, processes and threads, Naming and protection - Communication and Invocation, virtual memory, Distributed file services - design issues, interfaces, implementation techniques, Case study sun NFS, Name services: Name spaces; Name resolution, Domain Name System, SNS and DNS, Peer-to-Peer Systems.

Module III

Distributed Transactions: Simple distributed transactions and Nested transactions, Atomic Commit protocols, Concurrency control, N distributed transaction, Distributed deadlocks, Transactions with replicated data.

Module IV

Distributed Shared Memory: Introduction, Design and implementation issues, Sequential, consistency and Ivy case study, Release consistency and Munin case study, Other consistency models.

Module V

Recovery and fault tolerances: Transaction recovery, logging - shadow versions, fault model for transaction; Fault tolerance: characteristics; Hierarchical and group masking of faults; Security, authentication and key distribution, logic of authentication, digital signatures; Web Services: SOAP, XML, CORBA, Distributed object based systems, Distributed file systems, Distributed web- based systems, Distributed coordination based systems.

Text Books:

1. George Coulouris, Jean Dollimore, Tim Kindberg, Distributed Systems: Concepts and Design, 4th Edition, Pearson Education, 2005.
2. George Coulouris, Jean Dollimore, Tim Kindberg : Distributed Systems : Concepts and Design 2nd edition, Addison-Wesley Publishing Company.

References:

- A.tS. Tanenbaum and M. V. Steen, "Distributed Systems: Principles and Paradigms", Second Edition, Prentice Hall, 2006.
- M.L.Liu, "Distributed Computing Principles and Applications", Pearson Addison Wesley, 2004.
- Mukesh Singhal, "Advanced Concepts In Operating Systems", McGrawHill Series in Computer Science, 1994.
- Nancy A. Lynch, "Distributed Algorithms", The Morgan Kaufmann Series in Data Management System, Morgan Kaufmann Publishers, 2000.

DMCA 905(B) – (Elective-III)

Embedded System Design

Module I

Introduction - Definition of Embedded System, Embedded Systems Vs General Computing Systems, History of Embedded Systems, Classification, Major Application Areas, Purpose of Embedded Systems, Embedded computing – characteristics of embedded computing applications – embedded system design challenges – constraint-driven design – IP-based design – hardware and software co-design.

Module II

Development Environment - The Execution Environment - Memory Organization - System Space - Code Space - Data Space - Unpopulated Memory Space - I/O Space - System Start-up - Interrupt Response Cycle - Function Calls and Stack Frames - Run-Time Environment - Object Placement.

Module III

Embedded Computing Platform - CPU bus – memory devices – I/O devices – component interfacing – designing with microprocessors – development and debugging – design example – design patterns – dataflow graphs – assembly and linking – basic compilation techniques – analysis and optimization.

Module IV

Distributed Embedded System Design - Inter-process communication: signals – signals in UML – shared memory communication – accelerated design – design for video accelerator – networks for embedded systems – network based design – Internet enabled systems.

Module V

Design Technique - Design methodologies and tools – design flows – designing hardware and software components - requirement analysis and specification – system analysis and architecture design – system integration – structural and behavioural description - case studies.

References

- Wayne Wolf, "Computers as Components: Principles of Embedded Computer Systems Design", Morgan Kaufman Publishers.
- Jean J. Labrosse, "Embedded system Building blocks: complete and ready-to-use modules in C".
- Arnold S. Berger, "Embedded Systems Design: An Introduction to Processes, Tools and Techniques"
- Introduction to Embedded Systems , Shibu K.V, Mc Graw Hill
- Embedded System Design .Frank Vahid, Tony Givargis, John Wiley

DMCA 905(C) –(Elective-III)

Internet Technology and Applications

Module I

Introduction-protocols and standards,The OSI model,TCP/IP Protocol suite, Addressing,connecting devices,Switching,packet,Internet Protocol(IP), IP addressing: Classful addressing, Classless addressing, Private Networks, Virtual Private Network and Network Address Translation(NAT).,subnetting and supernetting. Other Network layer Protocols: ARP, RARP, ICMP, IGMP.

Module II

Autonomous Systems. Unicasting, Unicast Routing Protocols : Interior Gateway Routing Protocol- RIP, OSPF. Exterior Gateway Routing Protocols - BGP. Multicasting, Multicast applications, Multicast Routing Protocols: MOSPF, DVMRP. Host Configuration Protocols: BOOTP, DHCP.

Module III

Introduction to transport layer,Transport layer services,UDP-User datagram,Use of UDP,UDP operation,UDP services,UDP applications,UDP package.TCP-TCP services,TCP Features,Segment,TCP connection,Flow control,Error control,Congestion control,TCP timers,TCP Package.SCTP-SCTP services,SCTP Features, Flow control,Error control,Congestion control

Module IV

DNS-need for DNS,name space,DNS in the internet,Resolution,DNS messages,Types of records,DDNS,Security of DNS.Telnet-concepts,NVT,embedding.SSH-components,SSH packet format.FTP-connection,communication,command processing,file transfer ,anonymous FTP,Security for FTP.TFTP-Messages,connection,data transfer,UDP ports,Security,applications.

WWW- architecture,web documents.HTTP:- Transactions, Request messages, Response message, Headers. Electronic Mail: Architecture, User agent - Sending Mail, Receiving Mail. Multipurpose Internet Mail Extensions (MIME). Mail transfer agent: SMTP. Mail access protocols: POP and IMAP.

Module V

Multimedia-introduction,digitizing audio and video,audio and video compression,streaming stored audio and video,streaming live audio/video.Real time interactive audio/video,RTP,RTCP,voice over IP.

References

- Behrouz A. Forouzan - TCP/IP Protocol Suite- Third Edition- Tata McGraw Hill
- Behrouz A. Forouzan - TCP/IP Protocol Suite- Fourth Edition- Tata McGraw Hill
- Andrew S Tanenbaum- Computer Networks- PHI- Fourth Edition.
- Behrouz A. Forouzan - Data Communications and Networking- Fourth Edition- Tata McGraw Hill
- William Stallings- Data and computer communications- PHI- Seventh Edition.
- Douglas E. Comer- Internetworking with TCP/IP- Volume I- PHI- Third Edition.
- Comer, Douglas. The Internet Book: Everything you need to know about computer networking and how the Internet works, 4th Ed., 2007

DMCA 906 Software Lab-XIV (Compiler Design Lab)

Part-A

Programs using C language:

1. Write a C program to recognize strings under 'a', 'a*b+', 'abb'.
2. Write a C program to test whether a given identifier is valid or not
3. Write a program to check whether a string belongs to the grammar or not.
4. Implementation of Lexical Analyzer for 'if' Statement
5. Implementation of Lexical Analyzer for Arithmetic Expression
6. Write a program to generate a parse tree.
7. Write a program to find leading terminals.
8. Write a program to find trailing terminals.
9. Write a program to compute FIRST and FOLLOW of non-terminals.
10. Write a program to check whether a grammar is left recursive and remove left recursion.
11. Write a program to check whether a grammar is Operator precedent.

Part-B

Practicing Compiler Writing Tools:

1. Practice with “LEX” and “YACC” tools of Compiler writing.

References:

1. Allen I Holub ,Compiler design in C,Prentice Hall of India ,2003.
2. Vinu V .Das,Compiler design using FLEX and YACC,Prentice Hall of India ,2008

DMCA 907 Software Lab-XV (Cloud Computing Lab)

1. Installation and configuration of Hadoop/Euceliptus etc.
2. Service deployment & Usage over cloud
3. Management of cloud resources
4. Using existing cloud characteristics & Service models .
5. Cloud Security Management.
6. Performance evaluation of services over cloud .
7. Working of Goggle Drive to make spreadsheet and notes.
8. Installation and Configuration of Justcloud.
9. Working in Cloud9 to demonstrate different language.
10. Working in Codenvy to demonstrate Provisioning and Scaling of a website.
11. Installation and Configuration of Hadoop/Eucalyptus
12. Working and installation of Google App Engine
13. Working with Mangrasoft Aneka Software

DMCA X01Research Element- Project II

To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination.

The students in a group of 3 to 4 works on a topic approved by the head of the department/project coordinator under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department/project coordinator, project guide . A project report is required at the end of the semester. The project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department. The student's sessional marks for project -60% marks will be based on day to day performance assessed by the guide. Balance 40% marks will be awarded based on the presentation of the project by the students before an evaluation committee. For Project, the minimum for a pass shall be 50% of the total marks assigned to the Project work. By this time, the students will be in a position to publish a paper in international/ national journals/conferences.

Project report: To be prepared in proper format given by M.G.University for PG Students. The report shall record all aspects of the work, highlighting all the problems faced and the approach/method employed to solve such problems. Members of a project group shall prepare and submit separate reports. Report of each member shall give details of the work carried out by him/her, and only summarise other members' work.

DMCA 604 Seminar-I

The seminar / Case study is to be considered as purely INTERNAL (with 100% internal marks only). Every student is expected to present a minimum of 2 presentation of seminar per semester before the evaluation committee and for each presentation marks can be equally apportioned. The three member committee appointed by Head of the Department will evaluate the seminar and at the end of the semester the marks can be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper (40%), presentation (40%) and response to the questions asked during presentation (20%)

TEMPLATE
FOR
MCA
PROJECT REPORT

*This document lists the contents required for the academic project report done as part of the MCA curriculum. Section names have been listed with description. The descriptions have been provided in italics. **Important: This page and the text in italics present throughout this document are to give you guidance. Please do not include them in your project report.***

Draft Version 1, 203-16

CONTENTS OF THE ACADEMIC PROJECT REPORT

1. Cover Page as per format

Use the same format given in the project doc

2. Certificate of the Company/Organization

Use the same format given in the project doc

3. Certificate of the Head Of Departmentr as per format

Use the same format given in the project doc

4. Certificate of the Internal project guide as per format

Use the same format given in the project doc

5. Declaration

By student – format given

6. Acknowledgement

Use the same format given in the project doc

7. Revision history

Table with version, date, author, changes done, approval

8. Table of Contents

Please use the MS Word Table of content feature for this and not a manual TOC.

9. Executive Summary

It should describe the problem and the solution given by your project in brief. You should also mention the process model you used for development, methodology and technology. Limit the description to 1-2 pages.

10. Background

UP Phase: Inception

- 10.1. Existing System

Describe the system that already exists. Please note that the system could be manual or automated or a combination of both. Provide the business flow using an activity diagram.

10.2. Definition of Problem-

Describe the problems/inadequacies of current set up.

10.3 Proposed System

Explain how the proposed system will solve the problems.

Provide the revised business flow involving your system using an activity diagram, if relevant.

11. Project Overview

UP Phase: Inception

11.1. Objective of the Project

Describe the business benefits expected from this project.

11.2. Stakeholders

List the stakeholders, their goals which will be satisfied by this system and the benefits.

11.3. Scope of the Project

Mention in brief the system proposed to meet the objective. Mention clearly if any part of the work is not in your scope – e.g. installation, or some data migration required for implementation of this system, integration with some other system etc.

11.4 Feasibility Analysis

11.4.1. Technical feasibility

Technology and system feasibility - The assessment is based on an outline design of system requirements in terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be quantified in terms of volumes of data, trends, frequency of updating, etc. in order to estimate whether the new system will perform adequately or not

11.4.2. Operational feasibility

Is a measure of how well a proposed system solves the problems, and takes advantages of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development

11.4.3. Schedule feasibility

Schedule feasibility is a measure of how reasonable the project timetable is.

11.5.4. Economic feasibility - Cost - Benefit Analysis

If the company had already done the analysis before deciding on the project, then obtain the information from the company and just mention it here. If this analysis was performed by the student, then explanation of how the analysis was conducted should be provided. The analysis aims to determine the benefits and savings that are expected from a candidate system and compare them with costs.

12. Overall Project Planning

UP Phase: Inception

12.1. Development environment

Identify and list the technology and tools planned to be used in the development of the project – IDEs, compilers, UML tool, configuration management tool etc.

12.2. Constraints

List the constraints applicable to your project e.g. time constraints, budget constraints, resource constraints, any other constraints set by the customer.

12.3. Deliverables

List all deliverables expected by the customer – e.g. application, configuration files, source code, any 3rd party software packaged along with this, documents – requirements, design, user manual, installation manual, tutorial – as applicable for your project.

12.4. Assumptions and dependencies

List the assumptions and dependencies made while planning the project, eg .there could be an assumption that the required inputs will be given by users or that users will be available to review the documents or that the testing team will be available to test if required etc.

12.5. Risks

List any risks you foresee in the execution of this project and describe the plan to mitigate it.

12.6. Process model

Mention which process model you chose to develop this project and the justification for it.

12.7. Test Strategy

Mention all testing strategies – unit, integration, system, user acceptance testing that have been used.

12.8. Testing environment and tools

The environment for testing should give the specifications of hardware and software used for testing. Tools used for testing if any, should be listed here.

13. Iteration Planning

UP Phase – Each iteration in each phase

13.1. Schedule

Put the schedule here – activities, dependencies, start and end dates.

13.2. Risks

List any risks you foresee in the execution of this iteration and describe the plan to mitigate it.

14. High level system Analysis

UP Phases: Inception

This analysis will be performed completely during inception and will be continued to be revised in the elaboration stage.

14.1. User characteristics

Mention the different types of users or user groups of the proposed system and any special training needs they have in order to use this system.

14.2. Summary of system features/Functional requirements

List the features identified to be part of this system in order to satisfy this goal.

14.3. Non Functional Requirements / Supplementary Specification

List the non functional requirements applicable to your project related to performance, security etc.

14.4. Glossary

Define the business/domain terms specific to the context of this system

14.5. Business Rules

Define the business rules specific to the user's domain/organization that need to be satisfied by this system.

14.6. Use cases

List all the use case names here and a brief description of each use case.

14.7. Use case diagram

15. Domain Model

UP Phases: Inception and Elaboration

The initial model will be identified during elaboration and will be continued to be revised in the elaboration stage.

Give the analysis level class diagram, i.e. the domain model here and a brief description of the analysis level classes.

16. Use Case Model

Relevant UP Phases: Inception and Elaboration

To be developed during inception for a critical few use cases and the remaining use cases (majority) will be developed during elaboration for the majority of the use cases.

16.1. Use case text

Write the detailed use case text, in the fully dressed format for each use case. Identify the non functional requirements and rules to be followed specific to the use case being considered. Also identify the user inputs in the form of text and file inputs to system (if any). Develop the format of input which the system will accept, with examples. If it is a file input, format of file and format of data within it (if relevant) have to be provided.

Develop error messages and information texts required as part of this use case. Any external system interface requirements also need to be identified

16.2. System sequence diagram

For each use case under consideration, draw the system sequence diagram(s).

16.3. Operation contracts

For each system sequence diagram under consideration, write up the operation contracts.

16.4. Reports

Develop the format of the reports generated as part of this use case, if any.

17. Design Model

UP Phases: Elaboration and Construction

Developed completely in elaboration and revised in construction phase.

17.1. Sequence diagrams

Develop the design level sequence diagrams for the use case under consideration.

17.2. Class diagrams

Develop the design level class diagram for the use case under consideration.

17.3. UI design

Develop the screens identified for the use case under consideration and provide snapshots. At this stage, static screens are sufficient.

17.4. Theoretical Background

Theoretical details about the technology, tools and algorithms you have used in this project should be mentioned here in brief.

17.5. Architecture

In this section, show pictorially the logical and deployment architecture of this system. Use package diagrams, component and deployment diagrams for this.

17.6. Database design

This should give a catalogue of the data elements used in the system / sub system developed. The following are the details require for each table and field in the table. Repeat this list as many times there are tables and fields. Write NA if NOT applicable:

17.6.1. Table Name

17.6.1.1. Field Name

17.6.1.2. Length

11.4.1.1 Type CHAR, VARCHAR, NUMBER, DATE etc.

11.4.1.2 Description

18. Testing

UP Phases: Construction and Transition

Developed completely in construction and revised in transition phase.

18.1. Test cases

List each test case – with description, inputs, expected output, pass/fail criteria.

18.2. Test Report

Actual result against the expected results of test cases should be compiled here. A measure of quality like % of passed test cases should also be provided.

18.3. Sample Code used for testing

Sample code used for unit testing should be provided.

19. Transition

Relevant UP Phase: Transition

19.1. System Implementation

Describe the implementation mechanisms. Describe the method of data conversion and migration for the new system if applicable.

19.2. System Maintenance

Describe the plan for maintenance of the system. Mention the documents and any training provided by the student for future maintenance.

19.3. User/Operational Manual

If there was a user manual expected as deliverable by the customer, provide it here. If there was a demo or training given to users on the system, mention that. If there are any limitations of the system or constraints on inputs like data format, which have to be taken care by users, list it here. Also mention the details required for operation of the system. This should include instructions on how to start and shutdown the system, description of expected folder structure of system related files after installation, list of roles of users required to be created and maintained in the system.

If there are any requirements to do periodic cleaning of data, those have to be mentioned here. If the delivery of scripts or programs for automatic data cleaning is in scope, usage of the scripts should be described. Configuration management related information, if applicable, should be provided to suggest frequency of backups of files.

20. Annexure :

20.1. Organization profile

Give a brief background of the organization where the student has developed the project

20.2. Document Glossary, Figures, Tables

List of abbreviations should be provided in the document glossary. Each figure and table should be labeled. You should create an index for these like the table of contents.

20.3. References :

Books:

Any references you made to books and papers should be listed here with the book name, edition, name of author and publisher.

Websites:

Any references you made to websites should be listed here with the URL and date of access.

20.4. User Interview Questionnaires

20.5. Sample Project code / Algorithm if project code is not available.

A Report

On

“PROJECT TITLE”

For

The Company name

Submitted to the

Department of Computer Applications

In partial fulfilment of the Course

Master of Computer Applications

Under the guidance of

Internal Guide’s Name

BY

NAME OF STUDENT

(Reg no:)

EMBLEM OF COLLEGE

DEPARTMENT OF COMPUTER APPLICATIONS

NAME AND ADDRESS OF COLLEGE

Month-Year

NAME AND ADDRESS OF COLLEGE

EMBLEM OF COLLEGE

BONAFIDE CERTIFICATE

Certified that the Project Work entitled

“PROJECT TITLE”

is a bonafide work done by

Name

*In partial fulfillment of the requirement for the
Award of*

MASTER OF COMPUTER APPLICATIONS

Degree From

Mahatma Gandhi University, Kottaym
(2007-2010)

Head of Department

Project Guide

Submitted for the Viva-Voce Examination held on.....

External Examiner1
(Name & Signature)

External Examiner2
(Name & Signature)

NAME AND ADDRESS OF COLLEGE

EMBLEM OF COLLEGE

CERTIFICATE

This is to certify that the project entitled “**PROJECT TITLE**” has been successfully carried out by **NAME OF STUDENT** (Reg no:) in partial fulfillment of the Course **Master of Computer Applications**.

Date:

HEAD OF DEPARTMENT

NAME AND ADDRESS OF COLLEGE

EMBLEM OF COLLEGE

CERTIFICATE

This is to certify that the project entitled “**PROJECT TITLE**” has been successfully carried out by **NAME OF STUDENT** (Reg no:) in partial fulfillment of the course **Master of Computer Applications** under my guidance .

Date:

Name of Guide

INTERNAL GUIDE

NAME AND ADDRESS OF COLLEGE

EMBLEM OF COLLEGE

DECLARATION

I, **NAME OF STUDENT**, hereby declare that the project work entitled “**NAME OF PROJECT**” is an authenticated work carried out by me at **XYZ SOFTWARE PVT. LTD.** under the guidance of **Guide’s Name** for the partial fulfillment of the course **MASTER OF COMPUTER APPLICATIONS** . This work has not been submitted for similar purpose anywhere else except to **NAME OF COLLEGE** , affiliated to **M.G.UNIVERSITY, KOTTAYAM** .

I understand that detection of any such copying is liable to be punished in any way the school deems fit.

Date:

Place:

NAME OF STUDENT

Regulation for conducting Seminar

The seminar / Case study is to be considered as purely INTERNAL (with 100% internal marks only). Every student is expected to present a minimum of 2 presentation of seminar per semester before the evaluation committee and for each presentation marks can be equally apportioned. The three member committee appointed by Head of the Department will evaluate the seminar and at the end of the semester the marks can be consolidated and taken as the final mark. The evaluation shall be based on the seminar paper (40%), presentation (40%) and response to the questions asked during presentation (20%)

SEMESTER I

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA101	English	4	-	-	25	75	100	4
2	DMCA102	Mathematical Foundation of Computer Science	4	1	-	25	75	100	4
3	DMCA103	Statistics-I	4	-	-	25	75	100	4
4	DMCA104	Introduction to Computers & PC hardware	4	-	-	25	75	100	4
5	DMCA105	Programming Methodology & C Programming	4	1	-	25	75	100	4
6	DMCA106	Software Lab-I (PC hardware Lab- Office documents)	-	-	4	25	75	100	2
7	DMCA107	Software Lab-II (C Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER II

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA201	Technical Communication	4	-	-	25	75	100	4
2	DMCA202	Statistics- II	4	-	-	25	75	100	4
3	DMCA203	Digital Systems & Logic Designs	4	-	-	25	75	100	4
4	DMCA204	Data Structures- C	4	1	-	25	75	100	4
5	DMCA205	Object Oriented Programming with C++	4	1	-	25	75	100	4
6	DMCA206	Software Lab- III (Data Structures lab in C)	-	-	4	25	75	100	2
7	DMCA207	Software Lab-IV (C ++Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER III

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA301	Computer Organization & Architecture	4	-	-	25	75	100	4
2	DMCA302	Operating Systems	4	-	-	25	75	100	4
3	DMCA303	Data Base Management Systems	4	1	-	25	75	100	4
4	DMCA304	Accounting and Financial Management	4	-	-	25	75	100	4
5	DMCA305	Visual Programming(VB)	4	1	-	25	75	100	4
6	DMCA306	Software Lab-V (DBMS Lab)	-	-	4	25	75	100	2
7	DMCA307	Software Lab-VI (Visual Programming Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER IV

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA401	Java and Web Programming	4	1	-	25	75	100	4
2	DMCA402	Microprocessors	4	1	-	25	75	100	4
3	DMCA403	Multimedia Systems	4	-	-	25	75	100	4
4	DMCA404	Data Communications	4	-	-	25	75	100	4
5	DMCA405	Management Information Systems	4	-	-	25	75	100	4
6	DMCA406	Software Lab-VII (Java Lab)	-	-	4	25	75	100	2
7	DMCA407	Software Lab-VIII (Microprocessors Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER V

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA501	Operations Research	4	-	-	25	75	100	4
2	DMCA502	PHP Programming	4	1	-	25	75	100	4
3	DMCA503	Linux & Shell Programming	4	1	-	25	75	100	4
4	DMCA504	Computer Networks	4	-	-	25	75	100	4
5	DMCA505	Software Engineering	4	-	-	25	75	100	4
6	DMCA506	Software Lab-IX(PHP Lab)	-	-	4	25	75	100	2
7	DMCA507	Software Lab-X(Linux & Shell Programming Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER VI

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA601	Object Oriented Modeling & Designing	4	-	-	25	75	100	4
2	DMCA602	IT Infrastructure Management	4	-	-	25	75	100	4
3	DMCA603	Elective I	4	-	-	25	75	100	4
4	DMCA604	Seminar- I	-	-	2	100	0	100	2
5	DMCA605	Software Development-Project I	-	-	4	25	75	100	4
Total			12	-	6	-	-	500	18

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER VII

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA701	Mathematical foundations of Computer Security	4	-	-	25	75	100	4
2	DMCA702	Principles of Management & Marketing	4	-	-	25	75	100	4
3	DMCA703	Data Mining & Warehousing	4	1	-	25	75	100	4
4	DMCA704	Web Technologies	4	1	-	25	75	100	4
5	DMCA705	Python Programming	4	-	-	25	75	100	4
6	DMCA706	Software Lab-XI (Python Lab)	-	-	4	25	75	100	2
7	DMCA707	Software Lab-XII (Web Technologies Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER VIII

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA801	Cryptography and Network Security	4	-	-	25	75	100	4
2	DMCA802	Artificial Intelligence	4	-	-	25	75	100	4
3	DMCA803	Data Analysis & Algorithms	4	1	-	25	75	100	4
4	DMCA804	Elective- II	4	1	-	25	75	100	4
5	DMCA805	Computer Graphics and Open GL	4	-	-	25	75	100	4
6	DMCA806	Seminar- II	-	-	4	100	0	100	2
7	DMCA807	Software Lab-XIII (Graphics Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER IX

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCA901	Research Methodology	4	-	-	25	75	100	4
2	DMCA902	Compiler Design	4	1	-	25	75	100	4
3	DMCA903	Distributed Computing	4	1	-	25	75	100	4
4	DMCA904	Modeling & Simulation	4	-	-	25	75	100	4
5	DMCA905	Elective- III	4	-	-	25	75	100	4
6	DMCA906	Software Lab-XIV (Compiler Design Lab)	-	-	4	25	75	100	2
7	DMCA907	Software Lab-XV (Cloud Computing Lab)	-	-	4	25	75	100	2
Total			20	2	8	-	-	700	24

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

SEMESTER X

Sl no	Course code	Subject	Hours / week			Sessional	ESE	Total	Credits
			L	T/P	P				
1	DMCAX01	Research Element- Project II	-	-	-	150	100	250	8
2	DMCAX02	Viva Voce	-	-	-	-	100	100	4
Total			-	-	-	-	-	350	12

L-Lecture T-Tutorial P-Practical ESE-End Semester Examination

DMCA ELECTIVES

Elective-I

1. DMCA 603(A) –E- Commerce
2. DMCA 603 (B)- Client Server Computing
3. DMCA 603 (C) Bioinformatics

Elective-II

4. DMCA 804(A) –Android Programming
5. DMCA 804(B) USER INTERFACE DESIGN
6. DMCA 804(C) GRID COMPUTING

Elective-III

1. DMCA 905(A) – Distributed Processing
2. DMCA 905(B) – Embedded System Design
3. DMCA 905(C) - Internet Technology and Applications

MAHATMA GANDHI UNIVERSITY

(Abstract)

DD MCA – 2014 admission – Syllabus –VII to X semester - approved - Orders issued.

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ACADEMIC AIV SECTION

U.O.No. 5188/AIV/2/Acad/2016.

Dated: P.D.Hills, 24/09/2016

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Read:- 1. Minutes of the combined meeting of the Board of Studies in Computer Science (PG) and members of the Expert Committee of MCA held on 20/04/2016.

ORDER

The Combined meeting of the Board of Studies in Computer Science (PG), and members of the Expert Committee of MCA vide paper read (1) above, recommended and submitted the syllabi for the DD MCA 2014 (old scheme) for VII to X semester for approval.

Considering the above, the Vice Chancellor, exercising powers of the Academic Council under section 10 (17), chapter 3 of M.G. University Act, 1985 has approved the above recommendations.

Orders are issued accordingly.

Sd/-

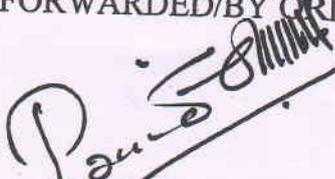
Sreeraj R

ASSISTANT REGISTRAR II (ACAD)
For REGISTRAR

Copy to:-

1. PS to VC/PVC
2. PA to Registrar/CE
3. AR/DR/JR (Exam).
4. EB –II
5. EH IV / EH XVI / EI XIV
6. Content Management section
7. Chairman, BOS in Computer Science
8. Stock File/File Copy/Records Section

FORWARDED/BY ORDER


SECTION OFFICER

File No.Ac.AIV/3/7527/2015