KAKATIYA UNIVERSITY, WARANGAL

DEPARTMENT OF COMPUTER SCIENCE

MCA COURSE STRUCTURE WITH EFFECT FROM 2013-14

MCA III YEAR I SEMESTER:

Paper No	Paper Title / Subject	Workload Per week (Theory : Lab)	MARKS		
			Internal	External	Total
MCA311	Artificial Intelligence	T (4)	20	80	100
MCA312	Cryptography and Network Security	T (4)	20	80	100
MCA313	Mobile Application Development	T (4)	20	80	100
MCA314	Elective - I	T (4)	20	80	100
MCA315	Elective – I I	T (4)	20	80	100
MCA316	Mobile Application Development Laboratory	L (4)	--	50	50
MCA317	Cryptography and Network Security Laboratory	L (4)	--	50	50
MCA318	Mini Project Laboratory	L (4)	--	50	50
					650

Elective - I	Elective – I I
A. Cloud Computing	A .Soft Computing
B. Human Computer Interaction	B. E-Commerce
C. Software Project Management	C. Information Retrieval System

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MCA III YEAR II SEMESTER:

MCA321	**MAJOR PROJECT WORK**	**MPW**
WORK LOAD: 2 PPW	**REVIEW ASSESSMENT**	**EXTERNAL MARKS: 150**

The Project work constitutes a major component in most professional programmes. It needs to be carried out with due care, and should be executed with seriousness by the students. The project work is not only a partial fulfilment of the MCA requirements, but also provide a mechanism to demonstrate ASK (Attitude, Skills, and Knowledge) with specialisation. The project work should compulsorily include the software development.

The majority of the students are expected to work on a real-life project preferably in some industry/ R&D Laboratories / Educational Institution / Software Company. Students are encouraged to work in their interested area. However, it is NOT MANDATORY for a student to work on a real-life project. The student can formulate a project problem with the help of his / her Guide and submit the project proposal of the same. APPROVAL OF THE PROJECT PROPOSAL IS MANDATORY. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project. Project problem domain selected and the specifications should be very much genuine.

Every student is mandatory to present two seminars in the sixth semester on the progress of the project.

MCA311	ARTIFICIAL INTELLIGENCE	AI
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

UNIT – I

ARTIFICIAL INTELLIGENCE: ITS ROOTS AND SCOPE, AI: HISTORY AND APPLICATIONS: From Eden to ENIAC: Attitudes toward Intelligence, Knowledge, and Human Artifice, Overview of AI Application Areas. ARTIFICIAL INTELLIGENCE AS REPRESENTATION AND SEARCH**:** Introduction, The Prepositional Calculus, The Predicate Calculus, Using co Rules to Produce Predicate Calculus Expressions, Application: A Logic-Based Financial Advisor. (Chapters 1 & 2)

UNIT – II

STRUCTURES AND STRATEGIES FOR STATE SPACE SEARCH: Introduction, Graph Theory, Strategies for State Space Search, Using the State Space to Represent Reasoning with the Predicate Calculus. HEURISTIC SEARCH: Introduction, An Algorithm for Heuristic Search, Admissibility, Monotonicity, and Informed ness, Using Heuristics in Games, Complexity Issues. CONTROL AND IMPLEMENTATION OF STATE SPACE SEARCH: Introduction, Recursion-Based Search, Pattern-Directed Search, production Systems, The Blackboard Architecture for Problem Solving.
(Chapters 3, 4 and 5)

UNIT – III

REPRESENTATION AND INTELLIGENCE: THE AI CHALLENGE: KNOWLEDGE REPRESENTATION: Issues in Knowledge Representation, A Brief History of AI Representational Systems, Conceptual Graphs: A Network Language, Alternatives to Explicit Representation, Agent Based and Distributed Problem Solving. STRONG METHOD PROBLEM SOLVING: Introduction, Overview of Expert System Technology, Rule- Based Expert Systems, Model-Based, Case Based, and Hybrid Systems, Planning. (Chapters 6 and 7)

UNIT – IV

REASONING IN UNCERTAIN SITUATIONS: Introduction, Logic-Based Adductive Inference, Abduction: Alternatives to Logic, the Stochastic Approach to Uncertainty. (Chapter 8)

TEXT BOOK:

1. ARTIFICIAL INTELLIGENCE by George F Luger, Pearson Education.

REFERENCE BOOKS

1. ARTIFICIAL INTELLIGENCES by Ritch & Knight.
2. INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS By D.W. Patterson,(PHI-2001)
3. ARTIFICIAL INTELLIGENCE By Patrick Henry Winston(Pearson)
4. PRINCIPLES OF ARTIFICIAL INTELLIGENCE (Narosa)
5. Artificial Intelligence By Shiart Russel Peter Norvig (Pearson)
6. EXPERT SYSTEMS SYSTEMS AND PRACTICE By Giarratano & Riely (Thomson)
7. ARTIFICIAL INTELLIGENCE APPLICATIONS PROGRAMMING By M Tim Jones

(Dreamtech)

MCA312	CRYPTOGRAPHY AND NETWORK SECURITY	CNS
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

U N I T – I

INTRODUCTION: Attacks, Services, and Mechanisms, Security Services. CONVENTIONAL ENCRYPTION TECHNIQUES: Cryptography, Steganography, Classical Encryption Techniques. MODERN TECHNIQUES: Simplified DES, The Data Encryption Standard, Differential and Linear Cryptanalysis, Block Cipher Modes of Operation.

U N I T – II

CONFIDENTIALITY USING CONVENTIONAL ENCRYPTION: - Traffic Confidentiality, Random Number Generation. PUBLIC-KEY CRPTOGRAPHY: - Principles of Public-Key Cryptosystems, the RSA Algorithm, Diffie - Hellman Key Exchange, Elliptic Curve Cryptography. INTRODUCTION TO NUMBER THEORY: - Prime and Relatively Prime Numbers, Fermat's and Euler's Theorem, Euclid's Algorithm, The Chinese Remainder Theorem, And Discrete Logarithms.

U N I T – III

MESSAGE AUTHENTICATION AND HASH FUNCTIONS: - Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs. DIGITAL SIGNATURES AND AUTHENTICATION PROTOCOLS: - Digital Signatures, Authentication Protocols, Digital Signature Standard.

U N I T – IV

ELECTRONIC MAIL SECURITY: S/MIME.IP SECURITY: IP Security Overview, IP Security Architecture, Encapsulating Security Payload, Key Management. FIREWALLS: Firewall Design Principles, Trusted Systems.

TEXT BOOK:

CRYPTOGRAPHY AND NETWORK SECURITY principles and Practice FOURTH Edition By William Stallings (Pearson Asia)

REFERENCE BOOKS

1. DAVIES & PRICE : SECURITY FOR COMPUTER NETWORKS - Wiley (1984)
2. MAYER & MATYAS : CRYPTOGRAPHY – Wiley B. SCHNEIER : APPLIED CRYPTOGRAPHY -
   (John Wiley)
3. CRYPTOGRAPHY IN C AND C++ :WEISCHANBACH – A PRESS
4. CRYPTOGRAPHY MYSTIFIED :HERSHEY
5. INTRODUCTION TO CRYPTOGRAPHY BY J A BUCHANAN (SPRINGER)

MCA313	Mobile Application Development	MAD
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

Unit I

J2ME Overview

Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices

Small Computing Technology: Wireless Technology, Radio Data Networks, Microwave Technology, Mobile Radio Networks, Messaging, Personal Digital Assistants

Unit II

J2ME Architecture and Development Environment

J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit

J2ME Best Practices and Patterns: The Reality of Working in a J2ME World, Best Practices

Unit III

Commands, Items, and Event Processing ,J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling .

High-Level Display: Screens: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class

Low-Level Display: Canvas: The Canvas, User Interactions, Graphics, Clipping Regions, Animation

Unit IV

Record Management System:Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener

JDBC Objects: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing, Metadata, Data Types, Exceptions.

JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Subqueries, VIEWs

TEXT BOOK

1.J2ME: The Complete Reference, James Keogh, Tata McGrawHill.

REFERENCE BOOKS

1. Enterprise J2ME: Developing Mobile Java Applications – Michael Juntao Yuan, Pearson Education, 2004
2. Beginning Java ME Platform, Ray Rischpater, Apress, 2009
3. Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005
4. Kicking Butt with MIDP and MSA:Creating Great Mobile Applications,1st edition,J.Knudsen,Pearson.

MCA314	ELECTIVE - I	E-I
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

A. Cloud Computing

U N I T – I

INTRODUCTION: Essentials, Benefits and need for Cloud Computing - Business and IT Perspective - Cloud and Virtualization - Cloud Services Requirements - Cloud and Dynamic Infrastructure - Cloud Computing Characteristics Cloud Adoption. CLOUD MODELS: Cloud Characteristics - Measured Service - Cloud Models - Security in a Public Cloud Public versus Private Clouds - Cloud Infrastructure Self Service. CLOUD AS A SERVICE: Gamut of Cloud Solutions - Principal Technologies - Cloud Strategy Cloud Design and Implementation using SOA - Conceptual Cloud Model - Cloud Service Defined

U N I T – II

CLOUD SOLUTIONS: Cloud Ecosystem - Cloud Business Process Management - Cloud Service Management - Cloud Stack - Computing on Demand (CoD) – Cloud is sourcing. CLOUD OFFERINGS: Information Storage, Retrieval, Archive and Protection - Cloud Analytics Testing under Cloud - Information Security - Virtual Desktop Infrastructure - Storage Cloud. CLOUD MANAGEMENT: Resiliency – Provisioning - Asset Management - Cloud Governance - High Availability and Disaster Recovery - Charging Models, Usage Reporting, Billing and Metering.

U N I T – III

CLOUD VIRTUALIZATION TECHNOLOGY: Virtualization Defined - Virtualization Benefits - Server Virtualization - Virtualization for x86 Architecture - Hypervisor Management Software - Logical Partitioning (LPAR)- VIO Server - Virtual Infrastructure Requirements. CLOUD VIRTUALIZATION: Storage virtualization - Storage Area Networks - Network-Attached storage - Cloud Server Virtualization - Virtualized Data Center.

U N I T – IV

CLOUD AND SOA: SOA Journey to Infrastructure - SOA and Cloud - SOA Defined - SOA and IaaS - SOA-based Cloud Infrastructure Steps - SOA Business and IT Services. CLOUD INFRASTRUCTURE BENCHMARKING: OLTP Benchmark - Business Intelligence Benchmark e-Business Benchmark - ISV Benchmarks - Cloud Performance Data Collection and Performance Monitoring Commands - Benchmark Tools.

TEXT BOOK:

1. Cloud Computing – Insight into New Era Infrastructure, Dr. Kumar Saurabh, Wiley India.

REFERENCE BOOKS:

1. Cloud Computing, Roger Jennings, Wiley India
2. Cloud Computing Explained, John Rhoton, Recursive Press
3. Cloud Computing Bible, Barry Sosinsky, Wiley
4. Cloud Computing: Principles and Paradigms, Rajkumar Buyya, James Broberg, Wiley
5. Cloud Computing for Dummies, Judith Hurwiz, Wiley Publishing.
6. The Cloud at your service, Rosenberg and Matheos, Manning Publications

B. HUMAN COMPUTER INTERACTION

UNIT - I

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

UNIT - II

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.
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 - III

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 - IV

Software tools – Specification methods, interface – Building Tools.
Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS:

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia

REFERENCE BOOKS:

1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, Pearson Education
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech.
3. User Interface Design, Soren Lauesen , Pearson Education.
4. Human –Computer Interaction,D.R.Olsen,Cengage Learning.
5. Human –Computer Interaction,Smith - Atakan,Cengage Learning.

C. SOFTWARE PROJECT MANAGEMENT

UNIT I

INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT
Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

PROJECT EVALUATION
Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT II

ACTIVITY PLANNING
Objectives – Project Schedule – Sequencing And Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity On Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

UNIT III MONITORING AND CONTROL

Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT IV MANAGING PEOPLE AND ORGANIZING TEAMS

Introduction – Understanding Behavior – Organizational Behaviour: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldman–Hackman Job Characteristics Model – Working In Groups – Becoming A Team – Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

REFERENCES:
1. Bob Hughes and MikeCotterell “Software Project Management”, Third Edition, TATA McGraw Hill Edition 2004.
2. Ramesh, Gopalaswamy: "Managing Global Projects ", Tata McGraw Hill, 2001.
3. Royce.” Software Project Theory”, Pearson Education, 1999.
4. P.Jalote “Software Project Management In Practice”, Pearson Education, 2000.

MCA315	ELECTIVE - II	E-II
WORK LOAD: 4 PPW	INTERNAL MARKS: 20	EXTERNAL MARKS: 80

A. Soft Computing

UNIT-I

AI Problems and Search: AI problems, Techniques, Problem Spaces and Search, Heuristic Search Techniques- Generate and Test, Hill Climbing, Best First Search Problem reduction, Constraint Satisfaction and Means End Analysis. Approaches to Knowledge Representation- Using Predicate Logic and Rules.

UNIT-II

Artificial Neural Networks: Introduction, Basic models of ANN, impotant terminologies, Supervised Learning Networks, Perceptron Networks, Adaptive Linear Neuron, Backpropogation Network. Asscociative Memory Networks. Traing Algorithms for pattern association, BAM and Hopfield Networks.

UNIT-III

Unsupervised Learning Network- Introduction, Fixed Weight Competitive Nets, Maxnet, Hamming Network, Kohonen Self-Organizing Feature Maps, Learning Vector Quantization, Counter Propogation Networks, Adaptive Resonance Theory Networks. Special Networks-Introduction to various networks.

UNIT-IV

Introduction to Classical Sets (crisp Sets)and Fuzzy Sets- operations and Fuzzy sets. Classical Relations -and Fuzzy Relations- Cardinality, Operations, Properties and composition. Tolerance and equivalence relations.

Membership functions- Features, Fuzzification, membership value assignments, Defuzzification.

Fuzzy Arithmetic and Fuzzy Measures, Fuzzy Rule Base and Approximate Reasoning Fuzzy Decision making

Text Books:

1 Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007

2 Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.

References:

1. Artificial Intelligence and SoftComputing- Behavioural and Cognitive Modelling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.

2. Artificial Intelligence – Elaine Rich and Kevin Knight, TMH, 1991, rp2008.

3. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.

4. A first course in Fuzzy Logic-Hung T Nguyen and Elbert A Walker, CRC. Press Taylor and Francis Group.

B. E- Commerce

UNIT - I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.
Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT - II

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.
Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT - III

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.
Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses.

UNIT- IV

Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.
Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

TEXT BOOK:

1. Frontiers of electronic commerce – Kolkata, Whinstone, Pearson.

REFERENCES:

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Cengage Learning..
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.
6.ElectronicCommerce,B.Bhaskar,3rdedition,TMH.

C. INFORMATION RETRIEVAL SYSTEM

UNIT I

INTRODUCTION: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses, INFORMATION RETRIEVAL SYSTEM CAPABILITIES - Search, Browse, Miscellaneous. CATALOGING AND INDEXING: Objectives, Indexing Process, Automatic Indexing, Information Extraction, Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT II

AUTOMATIC INDEXING: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages. DOCUMENT AND TERM CLUSTERING: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters. USER SEARCH TECHNIQUES: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, weighted searches of Boolean systems, Searching the Internet and hypertext - INFORMATION VISUALIZATION: Introduction, Cognition and perception, Information visualization technologies.

UNIT III

TEXT SEARCH ALGORITHMS: Introduction, Software text search algorithms, Hardware text search systems. INFORMATION SYSTEM EVALUATION: Introduction, Measures used in system evaluation, Measurement example – TREC results. PARALLEL AND DISTRIBUTE IR - Parallel Computing, Performance Measures, Parallel IR - MIMD and SIMD Architectures, Distributed IR – Collection Partitioning, Source Selection, Query Processing, Web Issues, Trends and Research Issues.

UNIT IV

MULTIMEDIA INFORMATION RETRIEVAL – Models and Languages – Data Modeling, Query Languages, Indexing and Searching. BRARIES AND BIBLIOGRAPHICAL SYSTEMS – Online IR Systems, OPACs, Digital Libraries.

TEXT BOOK:

1. Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.

REFERENCES:

1. Modern Information Retrival By Ricardo Baeza-Yates, Pearson Education, 2007.
2. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frieder, 2nd Edition, Springer International Edition, 2004.
3. Information Retrieval Data Structures and Algorithms By William B Frakes, Ricardo Baeza-Yates, Pearson Education, 1992.
4. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.
5. Introduction to Information Retrieval By Christopher D. Manning and Prabhakar,Raghavan, Cambridge University Press, 2008.

5 MCA L- 1	Cryptography and Network Security LAB	MRIAL
WORK LOAD: 4 PPW	ASSIGNMENTS ASSESSMENT	EXTERNAL MARKS: 50

1. Write a program that contains a string (char pointer) with a value 'Hello world'. The program should XOR each character in this string with '0' and displays the result.
2. Write a program that contains a string (char pointer) with a value 'Hello world'. The program should AND, OR and XOR each character in this string with 127 and display the result.
3. Write a program to perform encryption and decryption using Ceaser Cipher algorithm.
4. Write a program to perform encryption and decryption using Substitution cipher algorithm.
5. Write a program to perform encryption and decryption using Hill Cipher algorithm.
6. Write a program to implement the DES algorithm logic.
7. Write a program to implement RSA Algorithm.
8. Write a Program to Implement DES-2.
9. Write a program to implement Diffie-Hellman Key Exchange mechanism.
10. Write a program to encrypt user's passwords before they are stored in a database table, and to retrieve them whenever they are to be brought back for verification.
11. Write a program on Key generation (public and private key pair).
12. Write a program to perform a digital signature on a given text.
13. Write a program to implement Random Number Generation Algorithm.
14. Write a program to implement MAC generation algorithm.
15. Write a program to implement MAC with hash.
16. Write a program to implement MAC with single key.
17. Write a program to implement MAC with double key.

Note: The above programs can be implemented using C/C++/Java.

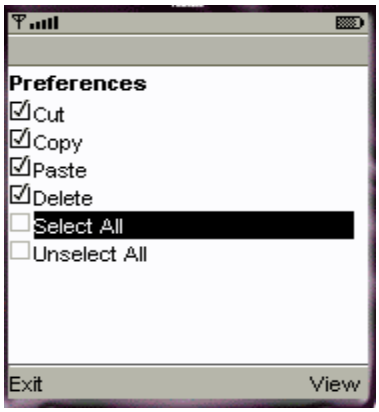
5 MCA L- 2	Mobile Application Development LAB	MADL
WORK LOAD: 4 PPW	ASSIGNMENTS ASSESSMENT	EXTERNAL MARKS: 50

1. Create a program which creates to following kind of menu.

- cut
- copy
- past
- delete
- select all
- unselect all

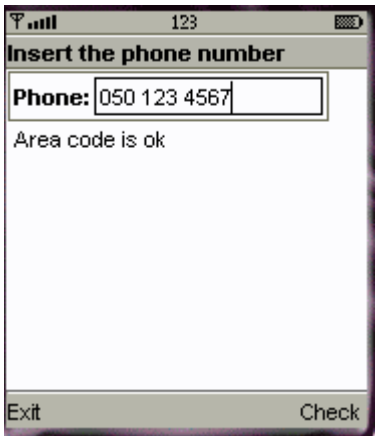
2. Create a menu which has the following options:

- cut - can be on/off
- copy - can be on/off
- paste - can be on/off
- delete - can be on/off
- select all - put all 4 options on
- unselect all - put all 4 options off

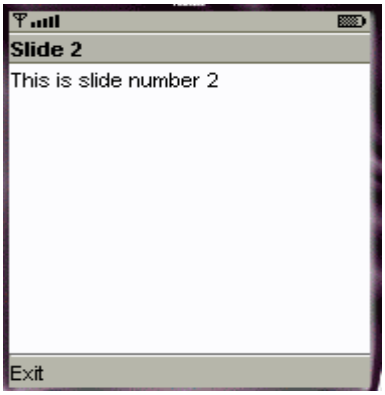


3. Create an MIDP application which examine, that a phone number, which a user has entered is in the given format.

- Area code should be one of the following: 040, 041, 050, 0400, 044
- There should 6-8 numbers in telephone number (+ area code)

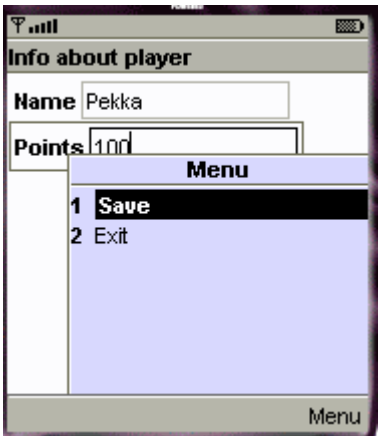


4. Create a slide show which has three slides, which includes only text. Program should change to the new slide after 5 seconds. After the third slide program returns to the first slide.



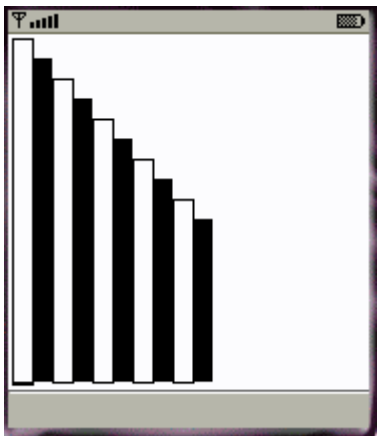
5. Create a MIDP application, which show to the user 5-10 quiz questions. All questions have 4 possible options and one right option exactly. Application counts and shows to the user how many right answers were right and shows them to user.

6. Create a MIDP application, where the user can enter player name and points. The program saves the information to the record using RMS at MIDP device. Program should also print out the top 10 player list to the end user. You can use this class in your game if you made own class for saving and reading record sets.

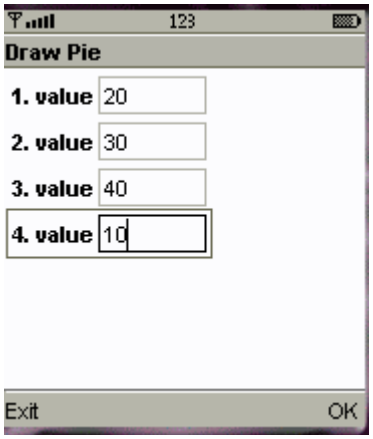


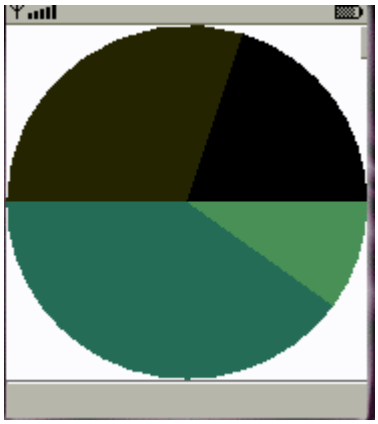
7. Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.

8. Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array.



9. Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array. You can enter four data (integer) values to the input text field.





10. Create, compile and run a basic UDP-based client-server application.

5 MCA L- 3	MINI PROJECT LAB	MPL
WORK LOAD: 4 PPW	ASSIGNMENTS ASSESSMENT	EXTERNAL MARKS: 50

Students should carry out the mini project based on the subjects studied in the course.