### Chhattisgarh Swami Vivekanand Technical University, Bhilai

#### Scheme of Teaching and Examination

**B.E. VI Semester Computer Science & Engineering**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code No.</th>
<th>Subjects</th>
<th>Period Per Week</th>
<th>Scheme of Exam</th>
<th>Total Marks</th>
<th>Credit L+(T+P)/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322651(22)</td>
<td>Computer Networks</td>
<td>4 1 -</td>
<td>80 20 20</td>
<td>120 5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322652(22)</td>
<td>Compiler Design</td>
<td>3 1 -</td>
<td>80 20 20</td>
<td>120 4</td>
<td>4</td>
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<tr>
<td>3</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322653(22)</td>
<td>Enterprise Resource Planning</td>
<td>3 1 -</td>
<td>80 20 20</td>
<td>120 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322654(22)</td>
<td>Software Engineering &amp; Project Management</td>
<td>3 1 -</td>
<td>80 20 20</td>
<td>120 4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322655(22)</td>
<td>Computer Graphics</td>
<td>3 1 -</td>
<td>80 20 20</td>
<td>120 4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Refer Table - I</td>
<td></td>
<td>Professional Elective - I</td>
<td>3 1 -</td>
<td>80 20 20</td>
<td>120 4</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322661(22)</td>
<td>Computer Networks Lab</td>
<td>- - 3</td>
<td>40 - 20</td>
<td>60 2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322662(22)</td>
<td>Software Engineering &amp; Project Management Lab – With Minor Project</td>
<td>- - 3</td>
<td>40 - 20</td>
<td>60 2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322663(22)</td>
<td>Computer Graphics Lab</td>
<td>- - 3</td>
<td>40 - 20</td>
<td>60 2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Computer Sc. &amp; Engg.</td>
<td>322664(22)</td>
<td>Advanced Java Programming Lab</td>
<td>- - 3</td>
<td>40 - 20</td>
<td>60 2</td>
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<tr>
<td>11</td>
<td>Management</td>
<td>300665(76)</td>
<td>Managerial Skills</td>
<td>- - 2</td>
<td>- - 40</td>
<td>40 1</td>
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<tr>
<td>12</td>
<td>Computer Sc. &amp; Engg.</td>
<td>-----------</td>
<td>Library</td>
<td>- - 1</td>
<td>- - -</td>
<td>- - -</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL**

19 6 15 640 120 240 1000 34

**L:** Lecture  **T:** Tutorial  **P:** Practical  
**ESE:** End Semester Examination  **CT:** Class Test  **TA:** Teachers’ Assessment

**Note:** Industrial Training of eight weeks is mandatory for B.E. students. It is to be completed in two equal parts. The first part must have been completed in summer after IV semester. The second part to be completed during summer after VI semester after which students have to submit a training report which will be evaluated by college teachers during B.E. VII semester.

**Table 1: Professional Elective – I**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Board of Studies</th>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computer Science &amp; Engg</td>
<td>322671(22)</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>2</td>
<td>Computer Science &amp; Engg</td>
<td>322672(22)</td>
<td>Advanced Microprocessors &amp; Micro Controllers</td>
</tr>
<tr>
<td>3</td>
<td>Information Technology</td>
<td>322673(33)</td>
<td>Multimedia &amp; Virtual Reality</td>
</tr>
<tr>
<td>4</td>
<td>Computer Science &amp; Engg</td>
<td>322674(22)</td>
<td>Inter-Networking with TCP/IP</td>
</tr>
<tr>
<td>5</td>
<td>Computer Science &amp; Engg</td>
<td>322675(22)</td>
<td>Management Information Systems</td>
</tr>
<tr>
<td>6</td>
<td>Computer Science &amp; Engg</td>
<td>322676(22)</td>
<td>Advanced Operating System</td>
</tr>
<tr>
<td>7</td>
<td>Computer Science &amp; Engg</td>
<td>322677(22)</td>
<td>Advanced Data Base Systems</td>
</tr>
<tr>
<td>8</td>
<td>Computer Science &amp; Engg</td>
<td>322678(22)</td>
<td>Object Oriented Modelling &amp; Design</td>
</tr>
</tbody>
</table>

**Note:** 1/4th of total strength of students to minimum of twenty students is required to offer an elective in the college in a particular academic session.

1. Choice of elective course once made for an examination cannot be changed in future examinations.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

<table>
<thead>
<tr>
<th>Branch:</th>
<th>Computer Science &amp; Engineering</th>
<th>Semester: VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject:</td>
<td>Computer Networks</td>
<td>Code: 322651(22)</td>
</tr>
<tr>
<td>Total Theory Periods:</td>
<td>40</td>
<td>Total Tutorial Periods: 10</td>
</tr>
<tr>
<td>No. of class Tests to be conducted:</td>
<td>2 (Minimum)</td>
<td>No. of assignments to be submitted: One per Unit</td>
</tr>
<tr>
<td>ESE Duration:</td>
<td>Three Hours</td>
<td>Maximum Marks in ESE: 80 Minimum Marks in ESE: 28</td>
</tr>
</tbody>
</table>

COURSE OBJECTIVE:
- Provide students with an enhanced base of knowledge in current and reflective practice necessary to support a career in Computer Networking at advanced professional level.
- Understanding concept of local area networks, their topologies, protocols and applications
- Understanding the different protocols, software, and network architectures.

COURSE OUTCOME: On completion of this unit the student should be able to:
- describe the basis and structure of an abstract layered Network protocol model
- identify and apply basic theorems and formulae for the information-theoretic basis of communication and the performance of TCP/IP network protocols

UNIT I Introduction: OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN. Physical Layer: Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broadband ISDN and ATM.


TEXT BOOKS:

REFERENCE BOOKS:
COURSE OBJECTIVE:
- To understand the fundamental principles in compiler design
- To provide the skills needed for building compilers for various situations that one may encounter in a career in Computer Science.

COURSE OUTCOME:
- After the course a student should have an understanding, based on knowledge of the underlying machine architecture, the limitations and efficiency of various design techniques of compilers implementation.


UNIT II SYNTAX ANALYSIS AND PARSING TECHNIQUES: Context free grammars, Bottom-up parsing and top down parsing. Top down Parsing : elimination of left recursion, recursive descent parsing, Predicative Parsing ,Bottom Up Parsing : Operator precedence parsing, LR parsers, Construction of SLR, canonical LR and LALR parsing tables, Construction of SLR parse tables for Ambiguous grammar, the parser generator – YACC, error recovery in top down and bottom up parsing.

UNIT III SYNTAX DIRECTED TRANSLATION & INTERMEDIATE CODE GENERATION : Synthesized and inherited attributes, dependency graph, Construction of syntax trees, bottom up and top down evaluation of attributes, S-attributed and L-attributed definitions ,Postfix notation; Three address codes, quadruples, triples and indirect triples, Translation of assignment statements, control flow, Boolean expression and Procedure Calls.

UNIT IV RUNTIME ENVIRONMENT: Storage organization, activation trees, activation records, allocation strategies, Parameter passing symbol table, dynamic storage allocation.

UNIT V CODE OPTIMIZATION & CODE GENERATION: Basic blocks and flow graphs, Optimization of basic blocks, Loop optimization, Global data flow analysis, Loop invariant computations. Issue in the design of Code generator, register allocation, the target machine, and simple Code generator.

Text Books:

Reference Books:
1. Compiler design in C, A.C. Holub, PHI.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Computer Science & Engineering
Subject: Enterprise Resource Planning
Semester: VI
Code: 322653(22)

Total Theory Periods: 40
Total Tutorial Periods: 10
No. of class Tests to be conducted: 2 (Minimum)
No. of assignments to be submitted: One per Unit
ESE Duration: Three Hours
Maximum Marks in ESE: 80
Minimum Marks in ESE: 28

COURSE OBJECTIVES:
- To know the basics of ERP and business modules of ERP
- To understand the key implementation issues of ERP
- To be aware of some popular products in the area of ERP
- To appreciate the current and future trends in ERP

COURSE OUTCOME: Students will know the strategic importance of Enterprise Resource Planning.


UNIT II ERP IMPLEMENTATION: ERP Implementation Lifecycle, Implementation Methodology, Hidden Costs, Organizing the Implementation, Role of SDLC/SSAD, Object Oriented Architecture Vendors, Consultants and Users, Contracts with Vendors, Consultants and Employees, Project Management and Monitoring


UNIT V ERP – PRESENT AND FUTURE:ERP, ERP and Internet, Critical success and failure factors, Integrating ERP into organizational culture Using ERP tool: ERP Market Place, SAP AG, PeopleSoft, Baan, JD Edwards, Oracle, QAD, SSA. Turbo Charge the ERP System, EIA, ERP and e-Commerce, ERP and Internet, Future Directions

TEXT BOOK:

REFERENCE BOOKS:

Name of the Programme: Bachelor of Engineering
Duration of the Programme: Four Years
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Computer Science & Engineering
Subject: Software Engineering & Project Management
Semester: VI
Duration: Four Years

COURSE OBJECTIVE:
- To introduce software project and to understand about the different software processes & their uses.
- Understanding good coding practices, including documentation, contracts, regression tests and daily builds.
- To introduce ethical and professional issues and to explain why they are concern to software engineers.

To understand how Software engineering & Project Management is concerned with theories, methods and tools for professional software development.

COURSE OUTCOME:
After completion of this course, the students would be able to
- Select and implement different software development process models
- Extracting and analyzing software requirements specifications for different projects
- Developing some basic level of software architecture/design
- Applying standard coding practices, Identification and implementation of the software metrics
- Defining the basic concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress.
- Applying different testing and debugging techniques and analyzing their effectiveness.
- Analyzing software risks and risk management strategies
- Defining the concepts of software quality and reliability on the basis of International quality standards.


UNIT II Software Requirements Specification (SRS): Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document. Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioural models, Data models, Object models, structured methods.


UNIT IV Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Metrics for Process and Products: Software Measurement, Metrics for software quality.


TEXT BOOKS:

REFERENCE BOOKS:
3. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005

Name of the Programme: Bachelor of Engineering  Duration of the Programme: Four Years
COURSE OBJECTIVE: The primary objective of this course is to learn the basic principles of computer graphics. These topics will include the following:

- Transformational geometry -- utilizing transforms to positioning and manipulate objects in 3-dimensional space. This includes the positioning of virtual cameras and light sources.
- Rendering of complex models -- accurately drawing illustrations of complex objects with arbitrary camera and light source.
- Curves and surfaces -- methods for rendering and shading curved objects.

COURSE OUTCOME:

- Know and be able to describe the general software architecture of programs that use 3D computer graphics.
- Know and be able to discuss hardware system architecture for computer graphics. This includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors.
- Know and be able to use a current 3D graphics API (e.g., OpenGL or DirectX).
- Must be able to use the underlying algorithms, mathematical concepts, supporting computer graphics.

UNIT I Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT II Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT III 2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. 2-D viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland–Hodgeman polygon clipping algorithm.

UNIT IV 3-D object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods. 3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT V Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods. Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

TEXT BOOKS:


REFERENCE BOOKS:

List of experiments to be conducted in Computer Network Lab.

1. Introduction to Local Area Network with its cables, connectors and topologies.
2. Installation of Switch. Hub their cascading and network mapping.
3. Installation of UTP, Co-axial cable, Cross cable, parallel cable NIC and LAN card.
4. Case Study of Ethernet (10 base 5,10 base 2,10 base T)
5. Installation and working of Net meeting and Remote Desktop.
6. Installation and working with Telnet (Terminal Network).
7. Installation and working with FTP (File Transfer Protocol).
8. Installation and Computers via serial or Parallel ports and enable the computers to share disk and printer port.
9. To connect two Personal Computer with Telephone line.
10. Installation of Modem and Proxy Server.
11. Working with Null Modem.
13. Configuration of DHCP.

Recommended Books.

2. List of Software required :-
4. List of Hardware required :-
5. LAN Trainer Kit LAN Card Cable, Connectors, HUB, Switch, Crimping Tools.
INSTRUCTIONS TO BE STRICTLY FOLLOWED BY STUDENTS

1) A group of two to three students should develop software that could be developed during session.
2) Technology/Tool like (C/C++/VB/Gambas/PhP/Core Java/Servlet/ JSP .... Any other relevant tool) can be selected for Developing their project
3) Phase wise documentation of the project should be submitted (soft and hard copy).
4) All group members must have a copy of the documentation, which are to be checked by faculty Lab Incharge, phase wise.
5) Before the Final Practical examinations, every individual student should submit his own hardcopy of the documentation in a Punched Cardboard File Only, with a CD containing the softcopy of the same.
6) During Final Submissions, every copy of the documentation should be accompanied by a Submission Certificate duly signed by the Teacher In-charge and Head of Department

Note:
Initial 4 – 6 Weeks Instructor is supposed to teach/Cover PHP/MySQL or students are supposed to go through the spoken Tutorial Course on PhP

SAMPLE EXPERIMENT

AIM: To perform the user’s view analysis: Use case diagram for the coffee-maker.

The CSE Dep’t has a new building in CSVTU Campus. We all know that Computer Engineers love caffeine, so the CSE department is planning on installing a Coffeemaker in a lounge across the hall from the 24-hour computer lab. Our job is to test and model the functionality of the Coffeemaker. We are only working with the logic code behind the hardware, so only a command line interface is used for manual testing. Here is a partial listing of requirements for the Coffeemaker system.

2 TOOLS/APPARATUS: Net beans 6.0, Microsoft Visio.

3 STANDARD PROCEDURES:

3.1 Analyzing the Problem:
According to the analysis of nouns and verbs we can have the following actors and use cases for the given system:

<table>
<thead>
<tr>
<th>Actors (based on the nouns)</th>
<th>Use-cases (based on the verbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>User(The person who makes coffee)</td>
<td>Waiting State</td>
</tr>
<tr>
<td></td>
<td>Add a Recipe</td>
</tr>
<tr>
<td></td>
<td>Edit a Recipe</td>
</tr>
<tr>
<td></td>
<td>Delete a Recipe</td>
</tr>
<tr>
<td></td>
<td>Check Inventory</td>
</tr>
<tr>
<td></td>
<td>Add Inventory</td>
</tr>
<tr>
<td></td>
<td>Purchase Beverage</td>
</tr>
</tbody>
</table>

The use-cases based on the requirements stated in the problem are given in the designing part of the solution.

3.2 Designing the Solution:
Requirements - User Stories

Title : Waiting State

<table>
<thead>
<tr>
<th>AccTest: checkOptions0</th>
<th>Priority: 1</th>
<th>Story Points: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the Coffee Maker is not in use it waits for user input. There are six different options of user input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Add a Recipe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Edit a Recipe</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3) Delete a Recipe
4) Check Inventory
5) Add Inventory
6) Purchase Beverage

Title: Add a Recipe

AccTest: addRecipe1  |  Priority: 1  |  Story Points: 2

- Only three recipes may be added to the Coffeemaker. A recipe consists of a name, price and units of coffee, units of milk, units of sugar and units of chocolate.
- Each recipe name must be unique in the recipe list. Price must be handled as an integer.
- A status message is printed to specify if the recipe was successfully added or not. Upon completion the Coffeemaker is returned to the waiting state

Title: Delete a Recipe

AccTest: DeleteRecipe1  |  Priority: 2  |  Story Points: 1

- A recipe may be deleted from the Coffeemaker if it exist in the list of recipes in the coffeemaker
- The recipes are listed by their name
- Upon completion a status message is printed and the Coffee Maker is returned to the waiting state

Title: Edit a Recipe

AccTest: editRecipe1  |  Priority: 2  |  Story Points: 1

- A recipe may be edited in the Coffeemaker if it exist in the list of recipes in the coffeemaker
- The recipes are listed by their name. After selecting a recipe to edit, the user will then enter the new recipe information
- A recipe name may not be changed
- Upon completion a status message is printed and the Coffee Maker is returned to the waiting state

Title: Add Inventory

AccTest: addInventory1  |  Priority: 2  |  Story Points: 2

- Inventory may be added to the machine at any time from the main menu and is added to the current
- Inventory in the Coffeemaker
- The type of Inventory in Coffeemaker are Coffee, milk, sugar and chocolate
- The Inventory is measured in Integer Units
- Inventory may be removed from the coffeemaker by purchasing a beverage
- Upon completion a status message is printed and the Coffeemaker is returned to the waiting state

Title: Check Inventory

AccTest: checkInventory  |  Priority: 2  |  Story Points: 1

- Inventory may be checked at any time from the main menu
- The units of each item in the inventory are displayed
- Upon completion the Coffeemaker is returned to the waiting state

Title: Purchase Beverage

AccTest: purchaseBeverage1  |  Priority: 1  |  Story Points: 2

- The user selects a beverage and inserts an amount of money.
- The money must be an integer
- If the beverage is in the RecipeBook and the user paid enough money the beverage will be dispensed and any change will be returned.
- The user will not be able to purchase a beverage if they do not deposit enough money into the coffeemaker
- A users money will be returned if there is not enough inventories to make the beverage
- Upon completion, the Coffee maker displays a message about the purchase status and is returned to the main menu

Name of the Programme: Bachelor of Engineering  :::::  Duration of the Programme: Four Years
3.3 Implementing the Solution

The use-case diagram can be drawn using the netbeans version 6.0 or higher.
3.4 Testing the Solution
Here the problem statement is: CSE department is planning on installing a Coffeemaker in a lounge across the hall from the 24-hour computer lab so we have prepared the use-case accordingly:

The use-cases are tested to match up with the requirements stated in the above table and they are complying with the problem statement requirements.

<table>
<thead>
<tr>
<th>Requirements given in the problem statement(based on the verbs)</th>
<th>Use-cases(based on the verbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the coffee Maker is not in use it waits for user input. There are six different options of user input</td>
<td>Waiting state</td>
</tr>
<tr>
<td>Only three recipes may be added to the Coffeemaker. A Recipe consists of a name, Price, and units of coffee, units of milk, units of sugar and units of chocolate</td>
<td>Add a Recipe</td>
</tr>
<tr>
<td>A recipe may be edited in the coffeemaker if it exist in the list of recipes in the Coffeemaker</td>
<td>Edit a Recipe</td>
</tr>
<tr>
<td>A recipe may be deleted from the Coffeemaker if it exists in the list of recipes in the Coffeemaker</td>
<td>Delete Recipe</td>
</tr>
<tr>
<td>Inventory may be checked at any time from the main menu</td>
<td>Check Inventory</td>
</tr>
<tr>
<td>Inventory may be added to the machine at any time from the main menu, and is added to the current inventory in the Coffeemaker</td>
<td>Add Inventory</td>
</tr>
<tr>
<td>The user selects a beverage and inserts an amount of money. The money must be an integer</td>
<td>Purchase Beverage</td>
</tr>
</tbody>
</table>

4 Conclusions
The use-case diagram can provide the user’s view for designing of the software product. And it can also be tested by matching up the requirements with the use-cases.
LIST OF EXPERIMENTS:

Expt: 1 - **Aim:** Phases in software development project, overview, need, coverage of topics  
**Tools/Apparatus:** None.  
**Procedure:**  
1) Open an appropriate software engineering guide and study the software development life cycle and related topics.  
2) Study the need of the software engineering.  
3) Study the coverage of topics such as life cycle models and their comparisons.

Expt: 2 - **Aim:** To assign the requirement engineering tasks.  
**Tools/Apparatus:** None.  
**Procedure:**  
1) Identify the different requirement engineering tasks.  
2) Assign these tasks to various students to set the ball rolling.  
3) Ask the students to start working on the given tasks.

Expt: 3 - **Aim:** To perform the system analysis: Requirement analysis, SRS (Allotted Project)  
**Tools/Apparatus:** None.  
**Procedure:**  
1) Assign the group of the students different tasks of system analysis.  
2) Ask students to meet different users and start analysis the requirements.  
3) Ask students to give presentations group-wise of their system requirements analysis.

Expt: 4 - **Aim:** To perform the function oriented diagram: DFD and Structured chart  
**Tools/Apparatus:** Netbeans 6.0. or IBM Rational Tools  
**Procedure:**  
1. Identify various processes, data store, input, output etc. of the system and ask students to analyse  
2. Use processes at various levels to draw the DFDs.  
3. Identify various modules, input, output etc. of the system and ask students to analyse.  
4. Use various modules to draw Structured charts.

Expt: 5 - **Aim:** To perform the user’s view analysis: Use case diagram  
**Tools/Apparatus:** Netbeans 6.0.  
**Procedure:**  
1) Identify various processes, use-cases, actors etc. of the system and ask students to analyse.  
2) Use processes at various levels to draw the use-case diagram.

Expt: 6 - **Aim:** To draw the structural view diagram : Class diagram, object diagram  
**Tools/Apparatus:** Netbeans 6.0.  
**Procedure:**  
1) Identify various elements such as classes, member variables, member functions etc. of the class diagram  
2) Draw the class diagram as per the norms.  
3) Identify various elements such as various objects of the object diagram  
4) Draw the object diagram as per the norms.

Expt: 7 - **Aim:** To draw the behavioral view diagram : Sequence diagram, Collaboration diagram  
**Tools/Apparatus:** Netbeans 6.0.  
**Procedure:**  
1) Identify various elements such as controller class, objects, boundaries, messages etc.of the sequence diagram  
2) Draw the sequence diagram as per the norms.  
3) Identify various elements such as for the sequence diagram of the collaboration diagram  
4) Draw the collaboration diagram as per the norms.

Expt: 8 - **Aim:** To draw the behavioral view diagram : State-chart diagram, Activity diagram  
**Tools/Apparatus:** Netbeans 6.0.  
**Procedure:**  
1) Identify various elements states and their different transition of the state-chart diagram
2) Draw the state-chart diagram as per the norms.
3) Identify various elements such as different activity their boundaries etc. of the activity diagram
4) Draw the activity diagram as per the norms.

Expt: 9- Aim: To draw the implementation view diagram: Component diagram.
Tools/Apparatus: Netbeans 6.0.
Procedure:
   1) Identify various elements of the component diagram such as the various components like client, server, network elements etc.
   2) Draw the component diagram as per the norms.

Expt: 10- Aim: To draw the implementation view diagram: deployment diagram
Tools/Apparatus: Netbeans 6.0.
Procedure:
   1) Identify various elements such as the hardware components of the deployment diagram
   2) Draw the deployment diagram as per the norms.

Expt:11- Aim: To perform various techniques for testing using the testing tool : unit testing, integration testing
Tools/Apparatus: Winrunner.
Procedure:
   1) Identify various modules of the system so that they can be tested stand alone.
   2) Identify the groups of the module that can be tested together in integration.
   3) Perform the testing of the modules as a unit and in integration by using the testing tool.

Expt: 12- Aim: Aim: To draw UML diagrams using Rational rose software.
Tools/Apparatus: Rational rose software.
Procedure:
   1) Identify various elements of the system to be drawn using the IDE.
   2) Use the UML options of the rational rose to draw the diagrams from experiment 4 to 10.

Expt: 13- Aim: To draw UML diagrams using MS Visio software.
Tools/Apparatus: MS Visio software.
Procedure:
   1) Identify various elements of the system to be drawn using the IDE.
   2) Use the UML options of the MS Visio software to draw the diagram from experiment 4 to 10.

REFERENCE BOOKS:
- Fundamentals of Software engineering - Rajib Mall.
- Software design – From programming to architecture - Eric Braude
- Object-oriented software engineering – A use case driven approach – Ivar Jacobson(Computer language productivity award winner)
List of Programs:

1. Write a program to draw the line using DDA algorithm.
2. Write a program to draw the line using Bresenham’s algorithm.
3. Write a program to draw circle using Bresenham’s algorithm.
4. Write a program to draw circle using mid-point algorithm.
5. Write a program to demonstrate draw ellipse using midpoint algorithm.
6. Write a program Rotation of Triangle.
7. Write a program Translation of Line.
8. Write a program to perform scaling of line.
9. Write a program shearing of Rectangle.
10. Write a program to implement boundary –fill algorithm.
11. Write a program to implement flood –fill algorithm.
12. Write a program to implement Bezier curve using four control points.
13. Write a program to implement Cohen Sutherland line clipping algorithm.
14. Write a program to implement Liang Barsky line clipping algorithm.
15. Write a program to implement face of a cartoon.

Reference Book:

Examples are compiled and tested in Eclipse/Net Beans IDE 6.0 or higher version with its integrated tomcat/glassfish server. Minimum 12 programs have to be executed.

EXPERIMENT LIST:
1. a) Program for printing Hello World
   b) Program for Printing System Date & Time JSP/SERVLET:
2. Program: For Telephone Directory
   In this example we will use getParameter() method of the request object for processing the telephone number, Here we would accept telephone no. from front end request is get done processed in server side and corresponding telephone no of entered user is displayed on screen as output
3. Write a server side program for Finding Factorial of number.
4. Write a Server side program in JSP/SERVLET for performing Addition of two no accept numbers from client side by using HTML form
5. Write a Server side program in JSP/SERVLET for calculating the simple interest accept the necessary parameters from client side by using HTML form
6. Write a Server side program in JSP/SERVLET for solving Quadratic Equation accept necessary parameters from HTML form
7. Write a Server side program in JSP/SERVLET for Income Tax Calculation
8. Write a Server side program in JSP/SERVLET for Calculation of Sales Commission
9. Program:Write a server side JSP/SERVLET program for checking prime number, accept number from html file handover the no to JSP/Servlet file process it and return the result
10. Install a database (MySQL or Oracle). Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form). Practice 'JDBC' connectivity. Write a java program/servlet/JSP/SERVLET to connect to that database and extract data from the tables and display them. Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page
11. Write a JSP/SERVLET which does the following job: Insert the details of the 3 or 4 users who register with the web site (Experiment -11) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database
12. Create tables in the database which contain the details of items (books in our case like Book name, Price, Quantity, Amount)) of each category. Modify your catalogue page in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.
13. Telephone Directory Example: With Database Connectivity with searching and sorting facility
14. Sessional and test results of CSVTU students are to be displayed on the web access to the web pages is given only to restricted users/students. Define MS Access database with user profile, accept name and password from web page and match it from database if it matches display the result page, otherwise show the message the permission is denied. Make the provision for changing password too
15. HTTP is a stateless protocol. Session is required to maintain the state. The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time (i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate() ). Modify your catalogue and cart JSP/SERVLET pages to achieve the above mentioned functionality using sessions.
Objective:
The course is introduced to develop managerial skills tremendously and enrich the abilities to enable one to meet the challenges associated with different job levels. Managerial skills are essential for overall professional development of an individual apart from gaining technical knowledge in the subject.

Course Objectives
Upon completion of this course, the student shall be able
- To define and explain the concept of managerial, written and oral communication skill;
- To understand the leadership skill;
- To develop self-appraisal and understand distinction between leader and manager;
- To develop positive attitude and thinking; and
- To understand managerial functions and develop creativity.

UNIT I Managerial Communication Skills: Importance of Business Writing: writing business letters, memorandum, minutes, and reports- informal and formal, legal aspects of business communication, oral communication- presentation, conversation skills, negotiations, and listening skills, how to structure speech and presentation, body language.

UNIT II Managerial skills - Leadership: Characteristics of leader, how to develop leadership; ethics and values of leadership, leaders who make difference, conduct of meetings, small group communications and Brain storming, Decision making, How to make right decision, Conflicts and cooperation, Dissatisfaction: Making them productive.

UNIT III Proactive Manager: How to become the real you: The journey of self-discovery, the path of self-discovery, Assertiveness: A skill to develop, Hero or developer, Difference between manager and leader, Managerial skill check list, team development, How to teach and train, time management, Stress management, Self-assessment.

UNIT IV Attitudinal Change: Concept of attitude through example, benefits of right attitude, how to develop habit of positive thinking, what is fear? How to win it? How to win over failure? How to overcome criticism? How to become real you? How to Motivate? How to build up self confidence?

UNIT V Creativity: Creativity as a managerial skill, Trying to get a grip on creativity. Overview of Management Concepts: Function of Management: Planning, organizing, staffing, controlling.

Course Outcome
- The students will be able to develop formal and informal, negotiation, written and oral communication skill;
- The students will be able to develop groups, resolve conflicts and leadership skill and decision making qualities;
- The students will be able to develop self-appraisal, teaching, training and managing stress and time;
- The students will be able develop positive thinking, motivating team members and winning race; and
- The students will be able to develop creativity and fundamental management functions.

Text Books:
1. Basic Managerial Skills for all by E.H. Mc Grawth, Prentice Hall India Pvt Ltd.,2006

Reference Books:
1. How to develop a pleasing personality by Atul John Rego, Better yourself books, Mumbai, 2006
2. The powerful Personality by Dr. Ujjjawal Patni & Dr. Pratap Deshmukh, Fusion Books, 2006
3. How to Success by Brian Adams, Better Yourself books, Mumbai, 1969
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Computer Science & Engineering
Subject: Digital Signal Processing (Professional Elective – I)

Semester: VI
Code: 322671(22)

Duration of the Programme: Four Years

Course Objective:
- This course introduces students to the fundamental techniques and applications of digital signal processing.
- To develop skills for analyzing and synthesizing algorithms and systems that process discrete time signals, with emphasis on realization and implementation.

Course Outcome:
Upon completion of this course, students will be able to:
- Describe and analyze discrete time signals in the time domain and frequency domain.
- Apply digital signal processing techniques to analyze & design discrete time signals and systems.
- Design and apply digital filters.

UNIT I DISCRETE-TIME SIGNALS: Signal classifications, frequency domain representation, time domain representation, representation of sequences by Fourier transform, properties of Fourier transform, discrete time random signals, and energy and power theorems.

UNIT II SAMPLING OF TIME SIGNALS: Sampling theorem, application, frequency domain representation of sampling, and reconstruction of band limited signal from its samples. Discrete time processing of continuous time signals, changing the sampling rate using discrete time processing.

UNIT III Z-TRANSFORM: Introduction, properties of the region of convergence, properties of the Z-transform, inversion of the Z-transform, applications of Z-transform.

UNIT IV BASICS OF DIGITAL FILTERS: Classification, properties, time invariant system, finite impulse Response (FIR) system, infinite Impulse response (IIR) system. Fundamentals of digital filtering, various types of digital filters, design techniques of digital filters: window technique for FIR, bi-linear transformation and backward difference methods for IIR filter design, analysis of finite word length effects in DSP, DSP algorithm implementation consideration. Applications of DSP.

UNIT V DISCRETE AND FAST FOURIER TRANSFORM DFT and FFT: Discrete Fourier transforms properties of DFT, circular convolution, linear convolution using DFT, fast Fourier transform: Radix 2 FFT algorithm, decimation in time, decimation in frequency, bit reversal.

TEXT BOOKS:
1. Digital Signal Processing: Proakis and Manolakis; PHI
2. Digital Signal Processing: Salivahanan, Vallavaraj and Gnanapriya; TMH

REFERENCE BOOKS:
1. Digital Signal Processing: Alon V. Oppenheim; PHI

Name of the Programme: Bachelor of Engineering
Duration of the Programme: Four Years
Name of the Programme: Bachelor of Engineering  Duration of the Programme: Four Years

Semester: VI
Subject: Advanced Microprocessors & Micro-Controllers
Total Theory Periods: 40
Total Marks in End Semester Exam: 80
ESE Duration: Three Hours

Course Objective:
- To understand the architecture 80286, 80386 and 80486 microprocessors.
- To study the architecture of microcontroller 8051.
- To study the instruction set and programming of 8051.
- To understand various interfacing concepts.

Course Outcome:
- After successful completion of this course students will be able to explain
- The architecture, programming and addressing modes of Intel 86 family processors.
- Various interfacing concepts circuits necessary for various applications.
- Concepts of microcontroller 8051

UNIT-I
Intel 80286,80386 and 80486 microprocessors- System architecture, Modes- Real mode- Protected mode - Virtual 8086 mode, Segmentation and Paging, Protection schemes, Management of task, Enhanced instructions

UNIT-II
Intel Pentium processor –System architecture-Branch prediction-Pentium memory management, Pentium Pro –Architecture and Special features, Pentium 4- Architecture-memory system-Hyper Threading Technology.

UNIT-III
Reduced Instruction Set Computers (RISC)- Instruction execution characteristics, The use of a large register file, Compiler based Register optimization, Reduced Instruction Set Architecture, RISC Pipelining, MIPS R4000, SPARC.

UNIT-IV
The ARM processors- ARM registers- ARM instructions- Memory access instructions and addressing modes, register move instructions, arithmetic and logic instructions and branch instructions (Programming not required) , CISC vs RISC.

UNIT-V

Text Books:

Reference Books:
1. The 8051 Microcontroller and Embedded Systems – Mohammed Ali Mazidi and Janice Gillispie Mazidi, Pearson Education Asia
5. The Intel Microprocessors 8086/88, 80286,80386,80486,Pentium ,Pentium Pro, PentiumII, PentiumIII, Pentium 4
6. Architecture,Programming and interfacing – Barry.B.Brey, PHI.
7. Microprocessors and Microcontrollers : Architecture, Programming and System Design 8085, 8086, 8051, 8096  K. Kant, PHI.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

| Branch: Computer Science & Engineering | Semester: VI |
| Subject: Multimedia and Virtual Reality (Professional Elective – I) | Code: 322673(33) |

| Total Theory Periods: 40 | Total Tutorial Periods: 10 |
| No. of class Tests to be conducted: 2 (Minimum) | No. of assignments to be submitted: One per Unit |
| ESE Duration: Three Hours | Maximum Marks in ESE: 80 Minimum Marks in ESE: 28 |

**Course objective:**
- To understand the fundamental issues and problems in the representation, manipulation, and delivery of multimedia content particularly in a networked environment.
- To understand the concepts of multimedia components.
- To understand the concepts and application of Virtual Reality System.
- 

**Course Outcomes:** Upon the completion of the course, the student should be able to:
- Know the fundamental video, audio, image, text processing techniques
- Acquire the basic skill of designing video compression, audio compression, image compression, text compression.
- Know the basic techniques in designing video transmission systems: error control and rate control
- Know the technologies related to virtual reality and application of virtual reality system.
- Familiar with VRML programming.

**UNIT I**  **INTRODUCTION:** Concept of Multimedia, media & data stream, Main properties of multimedia system, Data stream characteristics of continuous media, multimedia Applications, Hardware and software requirements, Multimedia Products & its evolution.

**UNIT II**  **COMPONENTS OF MULTIMEDIA:** Text, Basic sound concepts, MIDI, Speech, Basic concept of Images, Graphics format, Overview of image processing, Basic concepts of Video & animation, Conventional system, Transmission, Enhanced system, High Definition system, Computer based animation, Design & authoring Tools, Categories of Authority Tools, Types of products

**UNIT III**  **DATA COMPRESSION:** Coding requirement, Source, entropy, hybrid coding, JPEG, MPEG, Text compression using static Huffman technique, Dynamic Huffman Technique, Statistical coding techniques.


**UNIT V**  **VIRTUAL REALITY:** Introduction to Virtual reality & Virtual reality Systems, Related Technologies: Tele-operation & augmented reality system VRML Programming, Domain Dependent Application like Medical, Visualisation Visibility computation Time Critical rendering.

**TEXT BOOKS:**

**REFERENCE BOOKS:**
Name of the Programme: Bachelor of Engineering  Duration of the Programme: Four Years
Name of the Programme: Bachelor of Engineering  ::::::::  Duration of the Programme: Four Years

Chhattisgarh Swami Vivekanand Technical University, Bhilai

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<td>Management Information Systems</td>
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| Total Theory Periods: | 40 |
| Total Tutorial Periods: | 10 |
| No. of class Tests to be conducted: | 2 (Minimum) |
| No. of assignments to be submitted: | One per Unit |
| ESE Duration: | Three Hours |
| Maximum Marks in ESE: | 80 |
| Minimum Marks in ESE: | 28 |

Course Objective:
- Understand the importance of determining information system requirements for all management levels by describing the differences between various types of information systems
- Understand how information systems are developed
- Apply critical-thinking skills in identifying information systems problems and investigate existing literature about hardware and software solutions to problems.

Course Outcome: At the completion of the course student will be able to -
- Describe the advances in networking, data communications and the Internet and how they affect the way business is conducted.
- Identify which information technology tools are used to solve various business problems.
- Display proficiency solving business problems using modern productivity tools (e.g., spreadsheet, database) or creating custom programs.

UNIT I  MANAGEMENT & ORGANIZATIONAL SUPPORT SYSTEMS FOR DIGITAL FIRM: Definition of MIS; Systems approach to MIS: Report writing s/w, MIS and Human factor considerations, concept of organizational information sub-system, MIS & problem solving. Case Studies.

UNIT II  INFORMATION SYSTEMS & BUSINESS STRATEGY: Information Management. Who are the users? Manager & Systems, Evolution of Computer based information system (CBIS), Model of CBIS. Information services organization: Trend to End-User computing, justifying the CBIS, Achieving the CBIS, Managing the CBIS, Benefits & Challenges of CBIS implementation. Strategic Information System, Business level & Firm level Strategy, Case Studies.


UNIT IV  INFORMATION TECHNOLOGY FOR COMPETITIVE ADVANTAGE: Firm in its environment, What are the information resources? Who manages the information resources? Strategic planning for information resources. End-User Computing as a strategic issue, Information resource management concept. Case Studies.


Text Books:
1. MIS A Concise Study, S.A. Kelkar, PHI, 2nd Ed.
2. MIS managing the digital firm, Kenneth C. Laudon & Jane P. Laudon (Pearson Education).

Reference Books :
1. MIS, Suresh K. Basandra (Wheelers)
2. Introduction to computer Information System for Business, Mark G. Simkin, S. Chand & Co., 1996.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Computer Science & Engineering
Subject: Advanced Operating System (Professional Elective – I)

Semester: VI
Code: 322676(22)

Total Theory Periods: 40
No. of class Tests to be conducted: 2 (Minimum)
ESE Duration: Three Hours

Total Tutorial Periods: 10
No. of assignments to be submitted: One per Unit

Maximum Marks in ESE: 80
Minimum Marks in ESE: 28

Course Objectives:
To understand the main concepts of advanced operating systems (parallel processing systems, distributed systems, real time systems, network operating systems, and open source operating systems); Hardware and software features that support these systems.

Course Outcomes: At the end of this course student will be able to:
- Outline the potential benefits of distributed systems.
- Describe the internal architecture of Unix operating system.
- Summarize the major security issues associated with distributed systems along with the range of techniques available for increasing system Security.
- Operate different operating system with ease.

UNIT I

UNIT II
SECURITY AND DISTRIBUTED ALGORITHM : Overview of security techniques, Cryptographic algorithms, digital signatures, Cryptographic pragmatics. Distributed Algorithms: Distributed algorithm design principles and issues such as coordination, agreement. Examine source of difficulties such as timing, interaction models, and failures.

UNIT III

UNIT IV
STRUCTURE OF WINDOWS OPERATING SYSTEM : Overview of WINDOWS OS, Internal architecture of WINDOWS OS, Classification of WINDOWS OS command, Handling files, Handling directories, File – Memory – I/O – Process management in WINDOWS OS, Administration of WINDOWS OS system, WINDOWS programming environment.

UNIT V
CASE STUDY OF OPERATING SYSTEMS: Case Study of Process Management, Memory Management, File Management, I/O Management, System calls for WINDOWS, UNIX, LINUX etc.

Text Books:
1. Distributed OS, A.S Tanenbaum, PHI.
2. Distributed Operating System By P. K. Singha , IEEE Press
3. Understanding UNIX, K. Srirengan, PHI.

Reference Books:
2. Operating System , Milan, TMH.
3. LINUX OS, BPB publication.
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<th>Branch: Computer Science &amp; Engineering</th>
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<td>Subject: Advanced Data Base Systems</td>
<td>Code: 322677(22)</td>
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<td>(Professional Elective – I)</td>
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<td>Total Theory Periods: 40</td>
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<td>No. of class Tests to be conducted: 2 (Minimum)</td>
<td>No. of assignments to be submitted: One per Unit</td>
</tr>
<tr>
<td>ESE Duration: Three Hours</td>
<td>Maximum Marks in ESE: 80 Minimum Marks in ESE: 28</td>
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**Course Objective:**
- Introduce basic concepts and major techniques in DBMS implementations. These include concepts and techniques for data storage, query processing, and transaction management.
- Introduce research development ability in databases.

**Course Outcome:** Upon completion of this course, students should be able to:
- Explain in detail DBMS architecture,
- Explain in detail query processing and techniques involved in query optimization.
- Explain the principles of concurrency control and recovery management.
- Explain the Security management in Databases

**UNIT I** DISTRIBUTED DATABASE DESIGN: Design strategies, Distribution design issues, Fragmentation, Allocation, Oracle DDB design, Distributed database system architecture, Date’s rule for DDBS.

**UNIT II** DATA REPLICACTION & QUERY PROCESSING IN DDBS: Classification of replica control strategies, Consistency & Request ordering, The Gossip Architecture, Process groups & ISIS, Replication in Oracle, Query optimization in Centralized system, Objective of query processing, Query decomposition, Distributed query optimization algorithms, Query optimization in Oracle.

**UNIT III** TRANSACTION PROCESSING & RECOVERY: Centralized & client server architecture, server systems architectures, parallel & distributed systems, distributed data storage, Transaction property, distributed transactions, commit protocols, concurrency control in distributed database, availability heterogeneous distributed databases, Distributed deadlock management, recovery concepts, recovery techniques based on deferred update & on immediate update shadow paging, The ARIES Recovery Algorithm, Recovery in multi-database systems, database backup and recovery from catastrophic failures, Reliability concept & measure, Site failure & network portioning, directory systems, Database recovery in Oracle.


**Text book:**
1. Database system concepts , 4th edition, Silberschatz-Korth-Sudarshan, TMH

**References:**
1. Database concepts & systems ,2nd edition , Ivan Bayross, SPD
2. Database Management System, Rajesh Narang, PHI.
3. An Introduction to database systems, 7th edition, C.J. Date , Pearson education

Name of the Programme: Bachelor of Engineering Duration of the Programme: Four Years
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Computer Science & Engineering
Subject: Object Oriented Modeling & Design (Professional Elective – I)

Semester: VI
Code: 322678(22)

Total Theory Periods: 40
Total Tutorial Periods: 10
No. of class Tests to be conducted: 2 (Minimum)
No. of assignments to be submitted: One per Unit
ESE Duration: Three Hours

Maximum Marks in ESE: 80
Minimum Marks in ESE: 28

Course Objective:
- Understand the basic steps of Object Oriented Analysis and Design.
- Gain practical knowledge in the UML diagrams and notations.
- Build an object-oriented model for a project using UML.

Course Outcome: Upon completion of this course student will be able to-
- Understand basic object-oriented concepts for designing a solution.
- Apply an iterative, use case-driven process to the development of a robust design model.
- Use the UML to represent the design model.
- Apply the OO concepts abstraction, encapsulation, inheritance, hierarchy, modularity, and polymorphism to the development of a robust design model.
- Design a software system using object-oriented software engineering paradigm.

UNIT I


UNIT II


UNIT III


UNIT IV


Class design: Overview of Object Design, Bridging the gap, Realizing Use Cases, Designing Algorithms, Recursing Downward, Refactoring, Design Optimization, Reification of Behavior, Adjustment of Inheritance, Organizing a Class Design, ATM Example

UNIT V


Text Books:

Reference Books:
1. Object Oriented Analysis & Design, Atul Kahate, Tata McGraw-Hill Education