

<p>Certificate in</p> <p>Software Programming</p> <p>under SCVT Craftsman Training Scheme</p>

**Certificate in
Software Programming
under SCVT Craftsman Training Scheme**

Eligibility : 12th Class pass under 10+2 system or duly recognized Diploma in Engineering from any AICTE approved Polytechnic Diploma of 3yrs duration after class 10th.

Fees : 25,000/-

Age : As per Department's normal ITI Admission norms

Duration of Training : 52 Weeks (1 year) @ 30 hrs/week.
- 2 hrs/week for Library
- 2 hrs/week for Week End Exam
- 2 hrs/week for Extra Curricular Activity

Total : 6 hrs/week

30 - 6 = 24 hrs/week total course hours.

Total Practical hrs/week : 12 hrs

Total Theory hrs/week : 12 hrs

Total Course duration : 52 x 24 hrs = 1248 hrs

Total no. of hours for Practical : 52 x 12 hrs = 624 hrs

Total no. of hours for Theory : 52 x 12 hrs = 624 hrs

Total Students per Batch : 25

Objectives of the Course :

- 1) Learning Fundamental of Computer.
- 2) To attain data entry speed.
- 3) To attain optimum skill level for Web page hoisting and designing.
- 4) Learning various packages on Linux, HTML, DHTML, Oracle 8.0, Java 2.0, V.B 6.0,
- 5) Learning basics of programming techniques.
- 6) A student can successfully do Project work.

Minimum Hardware and Furniture required for Software Programming trade under the aegis of SCVT pattern

Sr. No.	Hardware and Furniture Specification	Quantity Reqd. for 4 Batches
1	Server with P- III or P- IV Processor @ 500 MHz with 128 MB RAM, 10.2 GB HDD, 1.44 MB FDD, 16 Bit Ethernet Card, 52x CD ROM Drive, SVGA Color Monitor, 101 Keyboard, Mouse, Sound Card and Speakers + Microphone Separate Telephone line for Internet connection with 56.6 Kbps Modem Web Camera and Mpeg Encoder	1
2	Nodes with P-III Processors @ 500 MHz. with 64 MB RAM, 10.2 GB HDD, 1.44 MB FDD, 16 Bit Ethernet Card, SVGA Color Monitor, 101 Keyboard, Mouse	25
3	5 KVA Stabilizer	2
4	0.5 KVA UPS for Server	1
5	16 Port Hub for LAN RJ 45 connectors an UTP cable	2 Hubs (Cable and connectors as per requirement)
6	132 Column Dot Matrix Printer	1
7	Desk-Jet or Laser or Inkjet Printer	1
8	Scanner	1
9	Window A.C. With 1.5 and 2 ton capacity	2 (one of 1.5 ton / one of 2 ton)
10	Vacuum Cleaner	1
11	Computer tables with Sunmica top, having sliding tray for keyboard and one shelf for storage	25
12	Student chairs with castor and adjustable height having cushion	25
13	Cushion fix chairs with rest arm and movable writing pad support	25
14	White Board	2
15	Over Head Projector (OHP) or any other Multi-media type display device	1

Note : Each Batch Comprising of 25 Students.

Software required for Software Programming trade under the aegis of SCVT pattern

Software Specification
Windows NT (Server) , Windows NT (Workstation) ,C, C++, Java 2.0, JDK 1.3, Oracle 8.0, Internet Connection, Linux 7.0, FrontPage 2000, Flash 4.0, MS-Office 2000. All Softwares should be license version

Faculty Qualification :Diploma in Computer Science/Computer Application/Computer Technology (2 years OR more) by any Institution approved by AICTE.
OR BCA (3 year course) or MCA or BE (Computer Science) from any recognized university.

In addition to above, the faculty should have minimum 3 years of teaching experience in any reputed Computer Institute in respect of topics covered in the course.

Faculty Requirement :**FOR ONE BATCH** Minimum 2 faculties are needed with above qualification for 1 batches each of 25 students. (1 Faculty for theory and 1 faculties as a lab coordinator)
FOR TWO BATCHS Minimum 3 faculties are needed with above qualification for 2 batches each of 25 students. (1Faculty for theory and 2 faculties as a lab coordinator)

Note : Theory and practical should be conducted simultaneously for each batch of 25 students

Area Requirement : For Practical Lab : 300 Sq. ft.
For Theory Room : 200 Sq. ft.
For Library Room : 150 Sq. ft.

Office Space, Pantry, etc.. should be there. Separate Toilet Facility for ladies and gents should be there.

Total Area requirement for Institute is 1200 Sq. Ft. minimum in good locality.

Reference Books : ABCs of Windows 98, Computer Basics, LINUX Complete, Java 2 Complete, Visual Basic 6 Complete,

Exam Pattern : 1 Hour Theory (100 marks) & 2 hours Practical (300 marks). Mid-term exam should be conducted after six months. Final examination should be conducted at the end of the course.

Software Programming Subjects & Duration

Sr. No	Topics	Duration of course in Weeks	Total Theory Hrs	Total Practical Hrs.
1	Computer Fundamentals & DOS	2	24	24
2	Windows NT 4.0	2	24	24
3	MS-Word 2000	2	24	24
4	MS-Excel 2000	2	24	24
5	MS-PowerPoint 2000	1	12	12
6	MS-FrontPage 2000	2	24	24
7	Linux	2	24	24
8	Programming Techniques & Principles	2	24	24
9	C, C++	6	72	72
10	Oracle 8.0 DBA	8	96	96
11	Visual Basic 6.0	6	72	72
12	Java 2.0 Programming	8	96	96
13	XML Introduction	2	24	24
14	Cutting Edge Technology	3	36	36
15	Project (Simulated)	4	48	48
	Total :	52	624	624

Note : In Cutting edge technology we have to give the knowledge of the latest technology in the market.

Software Programming
Week wise Break-up

Computer Fundamentals & DOS

Week - 1

Introduction

Booting process

What is Computer?

History of Computer

- A Tribute To The Past
- Generations Of Computer

Types Of Computers

- Micro Computer
- Mini Computer
- Main Frames
- Super Computer

Applications of Computers

Advantages of Computers

Computers and Human Beings

Basic Computer Organization

- Input Devices
- Memory
- Processor
- Output Devices

Units of Memory

Types of Memory

Storage Devices

- Tapes
- Disks

Difference Between Data and Information

Need of Information

Types of Programming Languages

- High Level Languages
- Low Level Languages

Data Organization

What are Data Files

What are Program Files

What are Batch Files

What are Command Files

The Numbering Systems

Decimal System

Binary System

Binary Coded System

What are ASCII Text Files
Role of ROM-BIOS in a Computer System
Software
Different Types of Software
- System Software
- Application Software
- Custom Software
Interpreters
Compilers
Assemblers
Editors
Hardware
Types of Computer Hardware
Latest in Computer Hardware

DOS

Week - 2

Concepts of an Operating System
- DOS Buffers
Types of Operating Systems
- Single User
- Multi User
Functions of an Operating System
- Device Management
- Memory Management
- Disk Organization
Understanding Disk Organization
- Tracks
- Clusters
- Sectors
Role of Config.sys
Understanding the Concepts of System Area on the disk
Understanding the Concepts of User Area on the disk
DOS file naming Conventions
DOS Wildcards (* , ?)
Importance of MS-DOS.SYS, IO.SYS, COMMAND.COM
DOS Internal Commands
DOS External Commands
DOS Device Descriptors
- CON, PRN
- LPT1, LPT2, LPT3
- COM1, COM2, COM3, COM4

Windows NT 4.0

Week - 3

Introduction to Windows NT 4.0

Understanding Windows NT
Differences between Windows NT Server and Windows NT Workstation
Features of Windows NT Server 4.0
Customizing Windows NT Server 4.0
Hardware and software requirements

- Hardware requirements
- Software requirements
- Getting more information
- Using Windows NT Help
- Using troubleshooting wizards in Help

Installing Windows NT Server 4.0

Before you begin

- Pre-installation checklist
- Running Windows NT Server Setup
 - Upgrading to Windows NT Server 4.0
- Selecting Setup options
 - FAT vs. NTFS
 - Choosing a licensing option
 - Network protocols
 - Logging on to Windows NT Server 4.0

Windows NT Workstation 4.0 Basics

- Introducing Windows NT Workstation
 - Starting and shutting down Windows NT Workstation
 - Windows NT Security
- Touring the Windows NT Desktop
- Customizing your work environment
 - Changing how your desktop looks
 - Creating shortcuts to files and folders
 - Customizing the Start menu
- Viewing the contents of your computer
 - Organizing files and folders
- Starting, closing, and switching between programs
 - Starting programs automatically
 - Using the Task Manager to quit a program
- Getting connected to the World Wide Web
 - Touring Internet Explorer 5.0
 - Exploring the World Wide Web
- Understanding Control Panel
- Printer Settings
- Task Bars
- Understanding Accessories in Windows NT 4.0 Workstation

Week - 4

Windows NT Server 4.0 Basics

- Understanding networks
 - LAN vs. WAN
 - Making the connection
- Components of a Windows NT network
 - Workgroups and domains
 - Servers: Primary Domain Controllers, Backup Domain Controllers, and member servers
 - User accounts
 - Groups
 - Built-in accounts and groups
- Account policies, user profiles, and user rights
 - Account policies
 - User profiles

User rights
Understanding Control Panel
Printer Settings
Task Bars
Understanding Accessories in Windows NT 4.0 Server

MS-Word 2000

Week - 5

Getting Started with Word 2000

What's New with Word 2000?
Installing Word 2000
Starting Word 2000
Exiting Word 2000
Understanding Elements of the Word Window
Working with Menus
Working with Toolbars
Working with Dialog Boxes
Controlling Word Window
Getting Help Using Office Assistant
Microsoft Word Help Window

Entering & Edit Text and Moving Around the Document

Typing Text
Navigating Through Text
Moving Directly to Specific Page
Creating, Saving and Opening files
Accessing File & Folders
Creating Folders
Renaming and Deleting Files
Moving and Copying Files
Understanding Templates and Wizards
Selecting a Template or Wizard for a New Document
Inserting new text into existing text
Deleting, Moving & Copying Text
Undoing Mistakes in Text
Restoring deleted Text

Viewing & Printing Documents

Switching Views
Arranging Multiple Document on the Desktop
Zooming Document
Previewing document before printing
Printing Document

Formatting Characters & Paragraphs, Pages

Changing Fonts, Font size, Color
Applying Boldface, Italic, Underline, Text Effects
Removing & Copying Font Formatting
Changing Line Spacing & Alignment
Setting Tabs Spots & Indents
Creating Bulleted and Number Lists

Coping and Removing Paragraph Formatting
Adding Borders & Shading to Paragraph
Changing Margins, Page Orientation and Size
Adding Page Numbers, Page Borders, Headers & Footers
Inserting Page Breaks, Section Breaks
Creating Footnotes & Endnotes
Creating Table of Contents
Adding hyperlinks to your Text

BookMarking Specific Locations in Your Document

Working with Styles, Checking Spelling & Grammar, Thesaurus

Applying Styles to Text
Modifying Styles
Fixing Spelling & Grammar Errors
Working with Thesaurus
Correcting Text Automatically
Inserting Standard Blocks

Week - 6

Editing Shortcuts

AutoCorrect Text
Finding & Replacing Text
Inserting the Date, Symbols, Fields
Sorting Lists

Working with Tables Columns and Graphics

Creating, Formatting & Modifying Tables & Columns
Navigating, Typing, Selecting & Changing Tables
Sorting Text within Table
Inserting Images from Clipart Gallery & other Places
Drawing Shapes with Drawing Tools
Using WordArt
Sizing, Moving & Cropping Images

Generating a Multiple Mailing using Mail Merge

What is Mail Merge?
Starting your Form Letter
Creating your List of Recipient Data
Merging the Letter and Data
Editing Recipient Data
Merging Envelops and Labels
Merging Selected Record

Inserting Data From Other Office 2000 Applications in Word 2000 Documents

Inserting Data from Excel Worksheet into Word 2000 document
Embedding Data from Excel in Word document
Exporting PowerPoint Presentation to a Word 2000 document
Adding an Individual PowerPoint slide to Word document

Sending E-mail through Word 2000

Sending Word document as an E-mail message
Sending Word document as an Attachment through an E-mail

Sending any Document as an E-mail Attachment

MS-EXCEL 2000

Week - 7

Getting Started with Excel 2000

What is Excel 2000?
How to Start Excel 2000?
Understanding Excel 2000 Screen
Excel Toolbars, Menus and Dialog Boxes
Using Help in Excel 2000
Getting Help Using Office Assistant
Entering Data in Excel 2000
Types of Excel Data
Automating your Work
Creating a Simple Spreadsheet
Entering Values
Choose Number Styles
Working with Decimal Places
Hiding Zeros
Designing Custom Numeric Formats
Working with Dates and Times
Copying from Cell to Cell
Making Changes to the Worksheet
Inserting and Deleting Cells
Working with Rows and Columns

Organizing & Managing your Workbooks, Files & Folders

Saving Workbook
Saving your work for the First Time
Exploring Save As Dialog Box
Understanding Excel Extensions
Protecting Your Work with AutoSave
Saving existing Workbook with a New Name
Protecting Your Files
Other Save Options
Rearranging Files
Creating a Blank Workbook
Opening Workbooks
Working with Range Name
Navigating Workbooks and Worksheets

Working With Formulas & Functions

What is Formula?
How to Create Simple Formula
Using AutoSum
Using Range names in Formulas
Using Relative and Absolute Addressing
Coping Formulas
Troubleshoot Formula Errors
Why us Excel Functions?
Using Formula Palette
Paste Function Dialog Box
Using Financial, Logical, Lookup, Date & Time Function

Using Excel 2000 Templates

What is Templates?
How to Open and Change an Excel Template
Create your own Template
Save a Worksheet as a Template

Formatting the Text

Using fonts
Changing Cell Alignment
Copy Formatting with the Format Painter
Adjusting Column Width & Row Height
Working with Comments
Adding Borders, Colors and Fills
Using AutoFormat

Working with Graphics

What is Graphic Object
Using Drawing Toolbars
Adding Clipart
Adding Special Effects with WordArt
Combine Multiple Objects
Manipulating & Deleting Objects

Week - 8

Analyzing your Data

Using Scenario Manager
Using Goal Seek
Using Report Manager
Working with Pivot Tables

Working with Chart

What is Chart?
Understanding Charts Elements
Types of Charts
Creating Charts using Chart Wizard
Working with Charts
Formatting Charts

Working with Workbooks

- Arranging Workbooks
- Switch between Workbooks
- Move & Copy Data between Workbooks
- Creating links between Worksheets and Workbooks
- Customize Excel
- How to Protect your Worksheet Data
- Add-ins in Excel

Integrating Excel with Other Office Application

- Linking & Embedding Objects
- Inserting Objects from the Menu & the Clipboard Toolbar
- Creating Hyperlinks
- Sending Excel documents via E-mail with the help of Outlook Express.

Automating Tasks with Macros

- What are Macros?
- How to Run Macros & Fix Macros Error
- Attach Macros to a Toolbar
- Use of Macros in other Workbooks

Building Database in Excel 2000

- Database Concepts
- Creating a Database Structure
- Creating Database
- Entering Data in Database
- Adding Data in Database
- Searching Data in Database
- Saving the Database

Working With Database

- Working with Subtotals
- Using Advanced AutoFilter Functions
- Setting a Criteria range

Printing In Excel 2000

- Understanding Page Setup
- Adding Headers & Footers
- Selecting the Printing Area
- Inserting Page Break

MS-PowerPoint 2000

Week - 9

Getting Started

- What's New in PowerPoint 2000?
- Starting PowerPoint 2000
- Using Help
- Using Office Assistant
- Exiting PowerPoint 2000
- Creating Your First Presentation
- Using AutoContent Wizard
- PowerPoint Opening Screen

Types of Toolbars
Types Of View
Customizing the Sample Slides
Spell Checking the Presentation
Printing Presentation
Saving, Opening and Creating Presentations
Using AutoLayout
Adding New Slides
Creating Bulleted or Numbered Slides

Moving Slide
Deleting Slides
Page Setup

Text Objects in PowerPoint 2000

Difference Between Text Objects & Text Boxes
Move and Copy a Text Object
Change Font properties such as font type, size, and color
Format Bulleted or Numbered Text
Change Text Object Attributes
Find and Replace Command

Working with Clip Art and Pictures

Inserting a Clip Art Image or Picture
Move Copy and Resize Images
Grouping & Ungrouping Clip Art
Image Objects Enhancing with Borders, Fill Color, Brightness & Shadows
Animate Images
Add Images to Clip Gallery

Customizing the Presentation

Creating Custom Color Scheme, Custom Background
Creating & Printing Speaker's Notes
Creating Handout for Audience

Working With the Masters

Types of Masters
Formatting the Masters
Saving a Presentation as a Template

Slide Show Basics

Viewing Presentation
Adding Temporary Annotations to the Presentation
Slide Timings
Hide Slide
Create a Summary Slide

Adding Special Features to a Slide

Adding Special Effects such as Transitions and Animation
Customizing the Same Slide Show for Two different Audiences
Working with Text Boxes, WordArt and PowerPoint Guides
Using AutoShape
Grouping & Ungrouping Object
Rotating Objects

Special Effects to the Lines and Objects

Creating and Using Tables

Embedding or Linking a Preexisting Excel Worksheet in PowerPoint Slide

Creating & Editing Charts and Graphs with Microsoft Graph

Using Microsoft Organization Chart

Inserting Multimedia Elements into a PowerPoint Presentation

Using and Creating Macros to Automate Tasks

Creating Web Pages in PowerPoint

MS-FrontPage 2000

Week - 10

Creating a Site

Using Wizards and Themes

Setting Up Style Sheets

Checking Links and Spelling

Working with Frames

Creating Frames Pages

Splitting Frames

Editing Frames Pages

Altering Images

Cropping and Resizing

Working with Images and Text

Creating a Transparency

Week - 11

Adding DHTML and Other Media

Adding DHTML Effects

This is a Good Place for a Plug-In

Adding Video

ActiveX

Managing a Site

Security

Adding and Removing Users

Checking Files Out and In

Other Timesavers and New Features

Adding a Hit Counter

Adding an Ad Banner

Add a Search Form

Linux 7.0

Week - 12

Installing and Learning about Your System

Introduction
Getting Started with Red Hat Linux 7.0
Installing Red Hat Linux 7.0
Linux Basics
Exploring the Red Hat Linux Filesystem
Using the Visual Editor
Xfree86 - The Linux Window System

Using Red Hat Linux 7.0

Using the GNOME Desktop Environment
Setting Up a Printer and Other Devices
Connecting to the Internet Part 1
Using the Internet
Linux Application
Linux Productivity Application

Week - 13

Linux Foundations

The Linux 2.4 Kernel
Working with Shells
Administering the System
Using linuxconf and Graphical Administration Tools
Setting Up a Simple Network

Advanced Topics

Integrating Linux and Windows
What Every User Should Know About Security
Automating Tasks with Shell Scripting
Troubleshooting and Getting Help
Compiling and Installing Applications from Source Code
Introduction to Linux Programming

Programming Techniques & Principles (PTP)

Week - 14

Why Flowcharting?
Ways to Tackle a Problem
Symbols Used to Draw a Flowchart
Data Types: Variables and Constants
Flowcharting Techniques
Differentiate between Character, Field, Records, Files
Reading from Files
Writing to Files
Structured Flowcharting

Week - 15

Report Generation
Control Break Process
Multiple File Handling
Transaction Log
Flowcharting v/s Programming
Structured Programming Concepts

C Programming

Week - 16

Overview of C

'C' history
Features of C
Application of C
Rules for writing a C Program
Structure of a C Program
Writing, Compiling and running a C Program
C Character Set
Identifiers
Keywords
Data Types
Constants
Variables
Arrays
Declarations
Expressions
Statements

Operators & I/O Functions

Arithmetic Operators
Unary Operators
Relational & Logical, Assignment, Conditional Operators
Precedence of Operators
getchar, putchar, scanf, printf & escape sequence, gets, puts

Conditions Branching & Looping

While, Do while, For, If, Switch case, Break, Continue, Goto

Week - 17

Functions

Function Overview
Function Declaration
Defining a Function
Return Statement
Accessing a Function
Passing Arguments to a Function
Specifying Argument Data Type
Recursive Function

Storage Classes

What is Storage Classes
Automatic Variables
External Variables
Static Variables
Register Variables

Arrays

What is an Array?

Defining an Array
Initializing Arrays
Processing an Array
Passing Arrays to a Function
Multidimensional Arrays
Arrays and Strings

Pointers

Introduction to Pointers
Declaring a Pointer
Passing Pointers to a Function
Pointers and One-Dimensional Arrays
Operations on Pointers
Pointers on Pointers
Pointers and Multidimensional Arrays

OOP's with C++

Week - 18

Principals of Object-Oriented Programming

Software Evolution
A look at Procedure-Oriented Programming
Object-Oriented Programming Paradigm
Basic Concepts of Object-Oriented Programming
Benefits of OOP
Object-Oriented Languages
Applications of OOP

Starting with C++

What is C++
Applications of C++
A Simple C++ Program
C++ Statements
Class Examples
Structure of C++ Program
Creating the Source File
Compiling and Linking

Tokens, Expressions and Control Structures

Tokens

- Keywords
- Identifiers
- Basic Data Types
- User-Defined Data Types
- Derived Data Types
- Symbolic Constants
- Type Compatibility
- Declaration of Variables
- Dynamic Initialization of Variables
- Reference Variables
- Operators in C++
- Scope Resolution Operators
- Member Dereferencing Operators
- Memory Management Operators
- Manipulators
- Type Cast Operator
- Expressions and Implicit Conversions
- Operator Overloading
- Operator Precedence
- Control Structures

Week - 19

Functions in C++

- The Main Function
- Function Prototyping
- Call by Reference
- Return by Reference
- Inline Functions
- Default Arguments
- const Arguments
- Function Overloading
- Friend and Virtual Functions

Classes and Objects

- C Structures Revisited
- Specifying a Class
- Defining Member Functions
- C++ Program with Class
- Making an Outside Function Inline
- Nesting of Member Functions
- Private Member Functions
- Arrays Within a Class
- Memory Allocation for Objects
- Static Data Members
- Static Member Functions
- Arrays of Objects
- Objects as Function Arguments
- Friendly Functions
- Returning Objects
- const Member Functions
- Pointers to Members

Constructors and Destructors

- Constructors
- Parameterized Constructors
- Multiple Constructors in a Class

Constructors with Default Arguments
Dynamic Initialization of Objects
Copy Constructors
Dynamic Constructors
Constructing Two-Dimensional Arrays
Destructors

Week -20

Operator Overloading and Type Conversions

Defining Operator Overloading
Overloading Unary Operators

Overloading Binary Operators
Overloading Binary Operators Using Friends
Manipulation of Strings Using Operators

- Rules for Overloading Operators
- Type Conversions

Inheritance : Extending Classes

Defining Derived Classes
Single Inheritance
Making a Private Member Inheritable
Multilevel Inheritance
Multiple Inheritances
Hierarchical Inheritance
Hybrid Inheritance
Virtual Base Classes
Abstract Classes
Constructors in Derived Classes
Member Classes: Nesting of Classes

Pointers, Virtual Functions and Polymorphisms

Pointers to Objects
this Pointer
Pointers to Derived Classes
Virtual Functions
Pure Virtual Functions

Week - 21

Managing Console I/O Operations

C++ Streams
C++ Stream Classes
Unformatted I/O Operations
Formatted Console I/O Operations
Managing Output with Manipulators

Working with Files

Classes for File Stream Operations
Opening and Closing a File
Detecting End-of-File
More About Open() : File Modes
File Pointers and Their Manipulations
Sequential Input and Output Operations
Updating a File: Random Access

Error Handling During File Operations
Command-Line Arguments

Object-Oriented Systems Development

Procedure-Oriented Paradigm
Procedure-Oriented Development Tools
Object-Oriented Paradigm
Object-Oriented Notations and Graphs
Steps in Object-Oriented Analysis
Steps in Object-Oriented Design
Implementation
Prototyping Paradigm

Oracle 8 DBA

Database Architecture

Week - 22

The ORACLE Architecture

An Overview of Databases and Instances

Databases

- Tablespaces
- Files

Instances

Internal Databases Structures

- Tables, Columns, and Datatypes
- Constraints
- Abstract Datatypes
- Partitions
- Users
- Schemas
- Indexes
- Clusters
- hash Clusters
- Views
- Sequences
- Procedures
- Functions
- Packages
- Triggers
- Synonyms
- Privileges and Roles
- Database Links
- Segments, Extents, and Blocks
- Rollback Segments

Internal Memory Structures

- System Global Area(SGA)
- Context Areas
- Program Global Area(PGA)

Background Processes

External Structures

- Redo Logs
- Control Files

- Trace Files and the Alert Log
- Basic Database implementation
- Backup/Recovery Capabilities
 - Security Capabilities
 - Sample Logical Database Layout
 - Sample physical Database Layout
- Understanding Logical Modeling Conventions
- One-To-One Relationships
 - One-To-Many Relationships
 - Many-To-Many Relationships

Hardware Configurations and Considerations and Considerations

Architecture Overview

Stand-Alone Hosts

- Stand-Alone Hosts With Disk Arrays
- Stand-Alone Hosts With Disk shadowing
- Stand-Alone Hosts With Multiple Databases

Networked Hosts

- Networks of Databases
- Remote Updates: The Advanced Replication Option
- Clustered Servers: The ORACLE Parallel Server

Multiple Processors: The Parallel Query and parallel Load

- Options

Client-Server Database Applications

Week 23

Logical Database Layouts

The End Product

The Optimal Flexible Architecture (OFA)

- The Starting Point:
- Separating Application

Beyond OFA

- Separating Low- Usage
- Separating Low - Usage
- Separating Tools Indexes: TOOLS_1
- Separating Specialty
- Separating User-Specific Temporary Segments: TEMP_USER
- Additional Application - Specific

Common -Sense Logical Layouts

Physical Database Layouts

Database File Layout

- I/O Contention Among Datafiles
- I/O bottlenecks Among All Database Files
- Concurrent i/o Among Background Processes
- Defining the Recoverability and Performance Goals for the system
- Defining the System hardware and Mirroring Architecture
- Identifying Disks That Can Be Dedicated to the Database
- Choosing the Right Layout

Verification of I/O weighting Estimates

- The Sixth Iteration : Back to the Planning Stage

File Location

Database Space Usage Overview

- Implications of the Storage Clause
- Table Segments
- Index Segments
- Rollback Segments
- Temporary Segments
- Free Space

Resizing Datafiles in ORACLE 7.2 and Above

- Automating Datafile Extensions

How to Move Database Files

- Moving Datafiles
- Moving Online Redo Log Files
- Moving Control Files

How to Deal locate Space in ORACLE7.2 and ORACLE7.3

- Shrinking Datafiles
- Shrinking Tables, Cluster, and Indexes
- How to Rebuild Indexes

Physically Fit

Database Management

Week 24

Managing the Development Process

The Three Critical

- Elements of success

Cultural Processes

Management Processes

- Defining the Environment
- Role Definitions
- Deliverables
- Sizing Database Objects
- Iterative Development

Technology

- CASE Tools
- Shared Directories
- Project Management Databases
- Discussion Databases

Managing package Development

- Generation Diagrams
- Space Requirements
- Tuning Goals
- Security Requirements
- Data Requirements
- Execution Plans
- Acceptance Test Procedures

The Managed Environment

Monitoring Multiple Databases

Common Problem Areas

- Running Out of Free Space in a Tablespace
- Insufficient Space for Temporary Segments
- Rollback Segments That Have Reached Their maximum Extension
- Fragmentation of Data Segments

- Fragmented Free Space
- Improperly Sized SGA areas

Target Selection

The End Product

Creating the Command Center Database

- Getting the Data
- Generating Alert Reports
- The Space Summary Report
- Purging Data

Monitoring memory Objects

- Necessary Modifications to UTLBSTAT and UTLESTAT
- Interpreting the Statistics Reports
- Extensions to the Statistics Reports

The Well - Managed Database

Week 25

Managing Rollback Segments

Rollback Segments Overview

- How the Database Uses Rollback Segments
- Activating Rollback Segments
- Specifying a Rollback Segment for a Transaction

Space Usage Within

- Rollback Segments

Monitoring Rollback

- Segment Usage
- Monitoring Dynamic Extensions
- Transactions Per Rollback Segment
- Data Volumes in Rollback Segments

Choosing the Number and Size

- Transaction Entry Volume
- Number of Transactions
- Determining the optimal Size
- Creating the Rollback Segments
- Production Versus Data

Database Tuning

Tuning Application Design

- Effective Table Design
- Distribution of CPU Requirements
- Effective Application Design

Tuning SQL

Tuning Memory Usage

- Using the Cost-Based Optimizer

Tuning Data Storage

- Defragmentation of Segments
- Defragmentation of Free Extents
- Identifying Chained Rows
- Increasing The ORACLE block size

Tuning Data Manipulation

- Bulk Inserts: Using the SQL* Loader Direct path Option
- Bulk Deletes : The Truncate Command

Tuning Physical Storage

- Tuning File Fragmentation
- Using Raw Devices

Tuning Logical Storage

- Reducing Network Traffic
 - Replication of Data
 - Using Remote Procedure Calls

Week - 26

Database Security and Auditing

Security Capabilities

- Account Security
- Object Privileges
- System - Level Roles and Privileges

Implementing Security

- The Starting Point Operating System Security
- Creating users
- Dropping Users
- System-Level Privileges
- User Profiles
- Password Management
- Preventing Password Reuse
- Setting Password Complexity
- Tying Database Accounts
- Password Protection
- Object-Level privileges
- Listing Privileges

Limiting Available Commands: product User Profiles

Password Security During Logins

Password encryption and Trickery

- How Passwords Are Stored
- Setting impossible Passwords
- Becoming Another User

Auditing

- Login Audits
- Action Audits
- Object Audits

Protecting the Audit Trail

Security in A Distributed Environment

Optimal Backup and Recovery Procedures

Capabilities

Logical Backups

- Export
- Import

Physical Backups

- Offline Backups
- Online (Archive log)Backups

Implementations

- Export
- Import
- Offline Backups
- Online (ARCHIVELOG) Backups
- Standby Databases

Integration of Backup Procedures

- Logical and Physical Backups Integration
- Database and Operating System Backups Integration

Recovery Scenarios When Using These Procedures Instance Failure

- Media (Disk) Failure

- Recovering Accidentally Dropped or Altered Objects
- Parallel Recovery
- Recovery Manager

Week - 27

Managing Oracle Financials and Other Packages and Utilities

General Guidelines for Managing Packages

- Customizing Database Structures
- Security and Data Access Control
- Transaction Management
- File Locations

- Monitoring
- Versioning considerations
- The DBA'S role

Specific Guidelines for Managing ORACLE financials

- Database Structures
- Database Access
- Concurrent managers
- The Demo Database
- Versioning
- File Locations
- init.ora parameters
- Most Active Tables and Indexes
- The Optimizer

Specific Guidelines for Managing Designer/2000

- Database Structures
- init.ora Parameters
- Most Active Tables and Indexes
- The Optimizer

Managing other Packages and Utilities

- Context
- Export
- SQL* Loader
- Programmatic Interfaces
- Using PRODUCT_USER_PROFILE in SQL* Plus

Managing Large Databases

Setting Up the Environment

- Sizing Large Databases
- Sizing Support Areas
- Choosing a Physical Layout
- Partitions
- Creating Fully Indexed Tables
- Creating and Managing Index-Only Tables
- Creating and Managing Bitmap Indexes

Managing Transactions

- Configuring the Batch Transaction Environment
- Loading Data
- Inserting Data
- Deleting Data

Backups

- Evaluating Backup needs and Strategies
- Developing the Backup Plan

Tuning

- Tuning Queries of Large Tables

Networked ORACLE

Week - 28

SQL* Net V2 and Net8

Overview of SQL* Net V2 and Net 8

- Connect Descriptors
- Service names
- Listeners

Using The net 8 Assistant

- The Multi-Protocol Interchange
- Using Connection manager
- Using ORACLE names

Usage Example : client-Server Applications

Usage Example : Database Links

Usage Example : The Copy Command

Tuning SQL* Net and net 8

Networking in UNIX

Identification of Hosts

Identification of Databases

Identification of Services

Starting the Listener Server Process

Controlling the Listener Server Process

Debugging connection Problem

Week - 29

Managing Distributed Databases

Overview of Distributed Databases

- remote Queries
- Remote Data manipulation : Two - Phase commit
- Dynamic Data Replication

Managing Distributed Data

- The Infrastructure : Enforcing Location transparency
- Managing Database Links
- Managing Database triggers
- Managing Snapshots
- Choosing the Refresh Type
- Offline Instantiation of Snapshots
- Purging the Snapshots Log

Managing Distributed Transactions

- Resolving In- Doubt Transactions

Database Domains and Communities

Monitoring Distributed Database

Tuning Distributed Databases

Using the Job Queues

- Managing Jobs

Configuring Client-Server and Network Computing Environments

Overview of Client - Server Processing

- The Network Computer
- Configuring the Server
- Identifying Available Hosts
 - Identifying Available Services
 - Identifying Available Databases
 - Starting SQL* net
- Configuring the Client
- Identifying Available Hosts
 - Identifying Available Services
 - Client Machine Specifications
 - Running SQL* Net
- Toward a Network Computer Configuration

Visual Basic 6.0

Week 30

Introduction to Application Development Using Visual Basic

Features of Visual Basic
Editions of Visual Basic
Visual Basic Terminology
Working in the Development Environment
Event-Driven Programming
Creating a Program in Visual Basic
Project and Executable Files
Visual Basic Reference Materials
Creating a Simple Application

Visual Basic Fundamentals

Introduction to Objects
Controlling Objects
Properties, Methods, and Events
Working with Forms
Introduction to Controls
Basic Controls
Creating a Visual Basic Application

Week 31

Working with Code and Forms

Understanding Modules
Using the Code Editor Window
Other Code Navigation Features
Code Documentation and Formatting
Setting Environment Options
Setting Code Formatting Options
Automatic Code Completion Features
Interacting with the User
Using the MsgBox Function
Using the InputBox Function
Working with Code Statements
Managing Forms

Working with Forms

Variables and Procedures

Overview of Variables
Declaring Variables
Variable Scope
Using Arrays
User-Defined Data Types
Converting Data Types
Using Constants
Working with Procedures
Working with Dates and Times
Using the Format Function
Manipulating Text Strings
Writing Procedures

Week - 32

Controlling Program Execution

Comparison and Logical Operators
Using If...Then Statements
Using Select Case Statements
Overview of Looping Structures
Using Do...Loop Structures
For...Next Statement
Exiting a Loop
Controlling Program Flow

Debugging

Types of Errors
Break Mode
Using the Debug Toolbar
Using the Watch Window
Using the Immediate Window
Using the Locals Window
Tracing Program Flow with the Call Stack
Using Visual Basic Debugging Tools

Week - 33

Working with Controls

Types of Controls
Overview of Standard Controls
Using ComboBox and ListBox Controls
Using OptionButton and Frame Controls
Working with Selected Text
Advanced Standard Controls
ActiveX Controls
Insertable Objects
Working with Controls

Data Access Using the ADO Data Control

Overview of ActiveX Data Objects
Visual Basic Data Access Features
Relational Database Concepts
Using the ADO Data Control to Access Data

Structured Query Language (SQL)
Manipulating Data
Using the Data Form Wizard
Accessing Databases

Week - 34

Input Validation

Field-Level Validation
Using Text Box Properties to Restrict Data Entry
Using the Masked Edit Control
Form-Level Validation
Form Events Used When Validating Data

Error Trapping

Overview of Run-Time Errors
Overview of the Error-Handling Process
The Err Object
Errors and the Calling Chain
Errors in an Error-Handling Routine
Inline Error Handling
Error-Handling Styles
General Error-Trapping Options in Visual Basic
Error Trapping

Week - 35

Enhancing the User Interface

Menus
Status Bars
Toolbars
Adding Menus

Drag-and-Drop Operations

Overview of Drag-and-Drop Features
Mouse Events
Drag-and-Drop Editing Basics
Adding Drag and Drop

More About Controls

Collections
Using Control Arrays

Finishing Touches

User Interface Design Principles
Distributing an Application
Creating a Default Project
Review: Steps to Creating a Visual Basic Program
Development Resources
Using the Package and Deployment Wizard

Advance Java 2.0

Week - 36

An Introduction to Java

Java as a Programming Tool
Advantages of Java
The Java "White Paper" Buzzwords:
 Simple
 Object-Oriented
 Distributed
 Robust
 Secure
 Architecture Neutral
 Portable
 Interpreted and High Performance
 Multithreaded
 Dynamic
Java and the Internet
Applets at Work
Server-side Java
A Short History of Java
Common Misconceptions About Java

The Java Programming Environment

Installing the Java Software Development Kit
Setting the Execution Path
Installing the Library Source and Documentation
Installing the Core Java Program Examples
Navigating the Java Directories
Development Environments
Using the Command Line Tools
Troubleshooting Hints
Using an Integrated Development Environment
Locating Compilation Errors
Compiling and Running Programs from a Text Editor
Graphical Applications
Applets

Fundamental Programming Structures in Java

A Simple Java Program
Comments
Data Types
Integers
Floating-Point Types
The Character Type
The Boolean Type
Variables
Assignments and Initializations
Constants
Operators
Increment and Decrement Operators
Relational and Boolean Operators
Bitwise Operators
Mathematical Functions and Constants
Conversions Between Numeric Types
Casts
Parentheses and Operator Hierarchy

- Strings
- Concatenation
- Substrings
- String Editing
- Testing Strings for Equality
- Reading the On-line API Documentation
- Reading Input
- Formatting Output
- Control Flow
- Block Scope
- Conditional Statements
- Indeterminate Loops
- Determinate Loops

- Multiple Selections-the switch Statement
- Breaking Control Flow
- Big Numbers
- Arrays
- Array Initializers and Anonymous Arrays
- Copying Arrays
- Command Line Parameters
- Sorting an Array
- Multidimensional Arrays
- Ragged Arrays

Week - 37

Objects and Classes

- Introduction to Object-Oriented Programming
- The Vocabulary of OOP
- Objects
- Relationships Between Classes
- Contrasting OOP with Traditional Procedural Programming Techniques
- Using Existing Classes
- Objects and Object Variables
- The Gregorian Calendar Class of the Java Library
- Building Your Own Classes
- An Employee Class
- Using Multiple Source Files
- Analyzing the Employee Class
- First Steps with Constructors
- The Methods of the Employee Class
- Method Access to Private Data
- Private Methods
- Final Instance Fields
- Static Fields and Methods
- Static Fields
- Constants. Static Methods
- Factory Methods
- The main Method
- Method Parameters
- Object Construction
- Overloading
- Default Field Initialization
- Default Constructors
- Explicit Field Initialization

- Parameter Names
- Calling Another Constructor
- Initialization Blocks
- Object Destruction and the finalize Method
- Packages
- Using Packages
- Documentation Comments
- How to Insert Comments
- Class Comments
- Method Comments
- Field Comments
- General Comments
- Package and Overview Comments
- How to Extract Comments
- Class Design Hints

Inheritance

- Extending Classes
- Inheritance Hierarchies
- Polymorphism
- Dynamic Binding
- Preventing Inheritance: Final Classes and Methods
- Casting
- Abstract Classes
- Protected Access
- Object: The Cosmic Superclass
- The equals and to String methods
- Generic Programming
- Array Lists
- Object Wrappers
- The Class Class
- Reflection
- Using Reflection to Analyze the Capabilities of Classes
- Using Reflection to Analyze Objects at Run Time
- Using Reflection to Write Generic Array Code
- Method Pointers! Design Hints for Inheritance

Week - 38

Interfaces and Inner Classes

- Interfaces
- Properties of Interfaces
- Interfaces and Abstract Classes
- Interfaces and Callbacks
- Object Cloning
- Inner Classes
- Using an Inner Class to Access Object State
- Special Syntax Rules for Inner Classes
- Are Inner Classes Useful?
- Are They Actually Necessary?
- Are They Secure?
- Local Inner Classes
- Static Inner Classes
- Proxies
- Properties of Proxy Classes

Graphics Programming

- Introduction to Swing
- Creating a Frame
- Frame Positioning
- Displaying Information in a Panel
- 2D Shapes
- Colors
- Filling Shapes
- Text and Fonts
- Images

Event Handling

- Basics of Event Handling

- Example: Handling a button click
- Selecting Event Listeners
- Example: Changing the Look and Feel
- Example: Capturing Window Events
- The AWT Event Hierarchy
- Semantic and Low-Level Events in the AWT
- Event Handling Summary
- Low-Level Events
- Focus Events
- Keyboard Events
- Consuming Events
- Mouse Events
- Actions
- Multicasting
- The Event Queue
- Adding Custom Events

Week - 39

User Interface Components With Swing

- The Model-View-Controller Design Pattern
- A Model-View-Controller Analysis of Swing Buttons
- An Introduction to Layout Management
- Border Layout
- Panels
- Text Input
- Text Fields
- Input Validation
- Password Fields
- Text Areas
- Labels and Labeling Components
- Selecting Text
- Editing Text
- Making Choices
- Check Boxes
- Radio Buttons
- Borders
- Combo Boxes
- Sliders
- Menus
- Building Menus

- Icons in Menu Items
- Check Box and Radio Button Menu Items
- Pop-up Menus
- Keyboard Mnemonics and Accelerators
- Enabling and Disabling Menu Items
- Tool Bars
- Tool Tips
- Sophisticated Layout Management
- Grid Layout
- Box Layout
- Grid Bag Layout;
- The gridx, gridy, gridwidth, and gridheight Parameters
- Weight Fields
- The fill and anchor Parameters
- Padding
- An Alternative Method to Specify the gridx, gridy, gridwidth, and gridheight Parameters
- Using No Layout Manager
- Custom Layout Managers
- Traversal Order
- Dialog Boxes
- Option Dialogs
- Creating Dialogs
- Data Exchange
- File Dialogs
- Color Choosers

Applets

- Applet Basics
- A Simple Applet
- Running the Applet Viewer
- Viewing an Applet in a Browser
- Converting Applications to Applets
- Life Cycle of an Applet
- Security Basics
- Pop-Up Windows in Applets
- The Applet HTML Tags and Attributes
- Applet Attributes for Positioning
- Applet Attributes for Code
- Applet Attributes for Java-Challenged Viewers
- The OBJECT Tag
- Java Plug-In Tags
- Passing Information to Applets
- Multimedia
- URLs
- Obtaining Multimedia Files
- The Applet Context
- Inter-Applet Communication
- Displaying Items in the Browser
- A Bookmark Applet
- It's an Applet
- It's an Application
- It's Both! JAR Files
- The Manifest
- Jar Caching
- Self-Running JAR files
- Resources

Optional Packages
Sealing

Week - 40

Exceptions and Debugging

Dealing with Errors
The Classification of Exceptions
Advertising the Exceptions That a Method Throws
How to Throw an Exception
Creating Exception Classes
Catching Exceptions

Catching Multiple Exceptions
Re-throwing Exceptions
A Final Look at Java Error- and Exception-Handling
Some Tips on Using Exceptions
Debugging Techniques
Useful Tricks for Debugging
Assertions
Using a Console Window
Tracing AWT Events
The AWT Robot
Profiling
Coverage Testing
Using a Debugger
The JDB Debugger
The Forte Debugger

Streams and Files

Streams
Reading and Writing Bytes
The Complete Stream Zoo
Layering Stream Filters
Data Streams
Random-Access File Streams
ZIP File Streams
Putting Streams to Use
Writing Delimited Output
String Tokenizers and Delimited Text
Reading Delimited Input
Random-Access Streams
Object Streams
Storing Objects of Variable Type
Object Serialization File Format
The Problem of Saving Object References
Output Format for Object References
Security
Versioning
Using Serialization for Cloning
File Management

Week - 41

Java Swing

- Introduction to Swing
- Swing Packages
- Swing Component Hierarchy
- JApplet
- Icons and Labels
- Text Fields
- Buttons
- CheckBoxes
- RadioButtons
- Combo Boxes
- Menus
- TREES
- Simple Trees
- Tables
- Progress Table Models
- Progress Bar and Progress Monitor
 - Jprogress Bar
 - Jprogress Monitor
- Component Organizer
 - Tabbed Pane
 - Scroll Panes
 - Split Panes
- Look and Feel

Remote Method Invocation

An overview of RMI Application

- Requirements of Distributed Object
 - Remote Interfaces, Objects, and Methods
 - Creating distributed applications using RMI
- Authoring An RMI Server
 - Designing a Remote Interface
 - Implementing a Remote Interface
- Creation of A Client Program
- Compiling the server and the client
 - Compiling the server and the client Programs
- Running the Server and the Client Programs
 - Start the Server

Week - 42

Servlets

- Background
- The Life Cycle of a Servlet
- The Java Servlet Development Kit
- A Simple Servlet
 - Create and Compile the Servlet Source Code
 - Start the Servletrunner Utility
 - Start a Web Browser and Request the Servlet
- The Servlet API
- The javax.servlet Package
 - The Servlet Interface
 - The ServletConfig Interface
 - The ServletContext Interface

- The ServletResponse Interface
- The Single ThreadModel Interface
- The GenericServlet Class
- The ServletInputStream Class
- The ServletOutputStream Class
- The ServletException Class
- The Unavailable Exception Class

Reading Servlet Parameters

Reading Initialization Parameters

The javax.servlet.http Package

- The HttpServletRequest Interface
- The HttpServletResponse Interface
- The HttpSession Interface
- The HttpSessionBinding Listener Interface
- The HttpSessionContext Interface
- The Cookie Class
- The HttpServlet Class
- The HttpSession Binding Event Class
- The HttpUtils Class

Handling HTTP Request and Response

- Handling HTTP GET Requests

- Handling HTTP POST Requests

Using Cookies

Session Tracking

Security Issues

Exploring Servlets

Week - 43

Network Programming

Networking Basics

Java and the Net

InetAddress

TCP/IP Server Sockets

A Caching Proxy HTTP Server

Datagrams

Net Worth

Java Database Connectivity

JDBC Introduction

JDBC API

JDBC versus ODBC and other APIs

Two-tier and Three-tier Models

JDBC Drivers

JDBC Products

- JDBC Driver Manager

- JDBC Driver Test Suite

- JDBC-ODBC Bridge

JDBC Driver Types

Basic Steps to JDBC

Establishing a Connection

- Loading Drivers

Setting Up Tables

- Creating a Tables

Creating JDBC Statements
Executing Statements
Entering Data into a Table
Getting Data from a Table
Retrieving Values from Result Sets
Using the Method Sets
Using the getXXX Methods
Updating Tables
Time and Data Literals
Outer Joins
ResultSetMetaData Interface
Important Methods of Driver Manager Class
Database Security

XML (eXtensible Markup Language)

Week - 44

Introduction to XML

What is XML?
How does it differ from HTML?

How XML can be used

Different ways of using XML

XML Syntax

The simple and very strict syntax rules of XML

XML Elements

XML Elements, Relationships, Content and Naming Rules

XML Attributes

How XML attributes can be used to describe elements
Use of XML attributes to provide additional information about elements

XML Validation

The difference between a Well Formed and a Valid XML document
How a DTD is used to define the XML document.

Week - 45

XML support in Netscape and Explorer

The support for XML in the two most famous browsers

Viewing XML in Internet Explorer

How to use Internet Explorer to view an XML file

Displaying XML with CSS

How to use Internet Explorer and CSS to display an XML file

Displaying XML with XSL

How to use Internet Explorer and XSL to display an XML file

XML embedded in HTML

Embedding XML inside HTML documents

The Microsoft XML Parser

Use of the Microsoft XML parser to open and manipulate XML documents

XML in Real Life

Take a look at some real life use of XML

Week - 46 to 48

Cutting Edge Technology

(Introductions of the latest software in the Market)

Week - 49 to 52

Project (Simulated)

