

**UNIT I**

**Chapter 1 : Abstract Windowing Toolkit (AWT)**

**1-1 to 1-44**

**Syllabus :** Component, container, window, frame, panel. Creating windowed programs and applets. AWT controls and layout managers : use of AWT controls - labels, buttons, checkbox, checkbox group, scroll bars, text field, text area. Use of layout managers : flowLayout, BorderLayout, GridLayout, CardLayout, GridBagLayout, menubars, menus, dialog boxes, file dialog.

1.1	Introduction.....	1-1
1.2	Component Class Hierarchy .....	1-1
1.3	Creating Windowed Programs and Applets .....	1-2
1.3.1	Creating Windowed Programs using Frame .....	1-3
1.3.2	Creating Windowed Programs using Applet.....	1-5
1.4	AWT Controls.....	1-6
1.4.1	Button.....	1-7
1.4.2	Label.....	1-8
1.4.3	Checkbox.....	1-9
1.4.4	CheckboxGroup.....	1-11
1.4.5	Choice .....	1-12
1.4.6	List.....	1-14
1.4.7	Scrollbar .....	1-16
1.4.8	TextField.....	1-17
1.4.9	TextArea.....	1-19
1.4.10	Panel .....	1-20
1.5	Layout Managers .....	1-23
1.5.1	FlowLayout .....	1-23
1.5.2	BorderLayout.....	1-24
1.5.3	GridLayout.....	1-26
1.5.4	CardLayout.....	1-27
1.5.5	GridBagLayout.....	1-30
1.6	Working with Menu and Menu Bar .....	1-31
1.7	Working with Dialogbox .....	1-35
1.8	Working with File Dialog .....	1-38
1.9	Color Class and its Methods .....	1-40
1.10	Setting Font .....	1-42

**UNIT II**

**Chapter 2 : Swings**

**2-1 to 2-35**

**Syllabus :** Introduction to swing : Swing features, Difference between AWT and Swing. Swing Components : JApplet, Icons and Labels, Text Fields, Combo Boxes. Buttons: The JButton, Check Boxes, Radio Buttons. Advanced Swing Components : Tabbed Panes, Scroll Panes, Trees, Tables, Progress bar, tool tips. MVC Architecture.

2.1	Introduction to Swing .....	2-1
2.1.1	Swing Features.....	2-1
2.2	Origin of Swing .....	2-2
2.3	Difference between AWT and Swing .....	2-2
2.4	Swing's JComponent and JContainer .....	2-2
2.4.1	Components .....	2-3
2.4.2	Containers .....	2-3
2.4.3	The Top-Level Container Panes .....	2-3
2.5	Swing Components.....	2-4
2.5.1	JFrame .....	2-4
2.5.2	JApplet .....	2-6
2.5.3	ImageIcon.....	2-8
2.5.4	JLabel.....	2-9
2.5.5	JTextField.....	2-10
2.5.6	JTextArea .....	2-11
2.5.7	JComboBox .....	2-12
2.6	Swing Buttons.....	2-14
2.6.1	JButton .....	2-14
2.6.2	JCheckBox .....	2-15
2.6.3	JRadioButton.....	2-17
2.7	Advanced Swing Components.....	2-19
2.7.1	JTabbedPane .....	2-19
2.7.2	JScrollPane .....	2-22
2.7.3	JTree .....	2-24
2.7.4	JTable .....	2-26
2.7.5	JProgressBar.....	2-28
2.7.6	JToolTip.....	2-30
2.7.7	JSlider .....	2-31
2.7.8	JDialog .....	2-33
2.8	MVC Architecture ? .....	2-34

**UNIT III**

**Chapter 3 : Event Handling 3-1 to 3-33**

**Syllabus :** The delegation Event Model : Event sources, Event listeners Event classes: The Action Event class, the Item Event class, the Key Event class, the Mouse Event class, the Text Event class, the Window Event class. Adapter classes. Inner classes. Event listener interfaces : ActionListener Interface, ItemListener Interface, KeyListener Interface, MouseListener Interface, MouseMotion Interface, TextListener Interface, WindowListener Interface.

3.1	Introduction.....	3-1
3.2	The Delegation Event Model.....	3-1
3.3	Event Classes.....	3-2
3.3.1	Class ActionEvent .....	3-2
3.3.2	Class ItemEvent .....	3-3
3.3.3	Class KeyEvent .....	3-3
3.3.4	Class MouseEvent.....	3-4
3.3.5	Class TextEvent .....	3-4
3.3.6	Class WindowEvent.....	3-5
3.4	Event Sources .....	3-5
3.5	Event Listener Interface.....	3-6
3.5.1	Interface ActionListener .....	3-7
3.5.2	Interface ItemListener.....	3-9
3.5.3	Interface KeyListener.....	3-10
3.5.4	Interface MouseListener .....	3-12
3.5.5	Interface MouseMotionListener.....	3-13
3.5.6	Interface TextListener .....	3-14
3.5.7	Interface WindowListener .....	3-15
3.6	Adapter Classes .....	3-17
3.7	Additional Event Handling Programs .....	3-21

**UNIT IV**

**Chapter 4 : Networking Basics 4-1 to 4-28**

**Syllabus :** Socket Overview : Client/Server, Reserved Sockets , Proxy Servers, Internet Addressing. Java and the Net : The Networking Classes and interfaces. InetAddress : Factory Methods, Instance Methods. TCP/IP Client Sockets : Whois URL: Format, The URL Class. URLConnection : TCP/IP Server Sockets. Datagrams : Datagram Packet, Datagram Server and Client.

4.1	Introduction.....	4-1
4.2	Socket Overview.....	4-1

4.2.1	Client-Server.....	4-2
4.2.2	Reserved Sockets .....	4-2
4.2.3	Proxy Servers .....	4-2
4.2.4	Internet Addressing .....	4-3
4.3	Java and the net : The Networking Classes and Interfaces.....	4-4
4.4	Class InetAddress .....	4-4
4.4.1	Factory Methods.....	4-5
4.4.2	Instance Methods .....	4-6
4.5	TCP/IP Client Socket.....	4-7
4.5.1	Steps to Create Client Application .....	4-9
4.6	TCP/IP Server Sockets.....	4-9
4.6.1	Step to Create Server Program .....	4-10
4.7	Class URL .....	4-11
4.8	Class URLConnection .....	4-14
4.8.1	Multistep Process to Create Connection to URL .....	4-14
4.9	Datagrams : DatagramPacket, DatagramSocket, Datagram Server and Client .....	4-17
4.9.1	java.net.DatagramPacket .....	4-18
4.9.2	java.net.DatagramSocket .....	4-19
4.9.3	Sending and Receiving Data Packets using DatagramSocket and DatagramPacket.....	4-20
4.9.3(A)	Sending DatagramPackets using DatagramSocket ...	4-20
4.9.3(B)	Receiving DatagramPackets using DatagramSocket.	4-21
4.10	Difference between TCP and UDP .....	4-22
4.11	Important Programs on Sockets .....	4-22

**UNIT V**

**Chapter 5 : Interacting with Database 5-1 to 5-28**

**Syllabus :** Introduction to JDBC, ODBC, JDBC Architecture : Two tier and three tier models, Types of JDBC Drivers, Driver Interfaces and Driver Manager class : Connection Interface, Statement Interface, Prepared Statement Interface, ResultSet Interface. The essential JDBC Program

5.1	Introduction to JDBC and ODBC .....	5-1
5.1.1	Steps to Add Java DB Driver in Project Library.....	5-1
5.2	Java as Front End .....	5-2
5.3	What is JDBC ?.....	5-3
5.3.1	Characteristics of JDBC.....	5-3
5.4	JDBC Architecture .....	5-3

5.5	Types of JDBC Drivers .....	5-4	6.6.6	Class GenericServlet .....	6-13
5.6	The java.sql Package or the JDBC API : java.sql .....	5-7	6.6.7	Class ServletInputStream .....	6-14
5.6.1	Purpose of JDBC API .....	5-8	6.6.8	Class ServletOutputStream .....	6-14
5.7	Exploring Major Classes and Interfaces of JDBC.....	5-8	6.7	The javax.servlet.http Package .....	6-15
5.7.1	Class Class .....	5-8	6.7.1	Interface HttpServletRequest.....	6-16
5.7.2	Class DriverManager .....	5-9	6.7.2	Interface HttpServletResponse .....	6-17
5.7.3	Interface Connection.....	5-9	6.7.3	Interface HttpSession .....	6-18
5.7.4	Interface Statement .....	5-10	6.7.4	Interface HttpSessionBindingListener .....	6-18
5.7.5	Interface PreparedStatement.....	5-11	6.7.5	Class Cookie .....	6-19
5.7.6	Interface CallableStatement.....	5-12	6.7.6	Class HttpServlet.....	6-20
5.7.7	Interface ResultSet .....	5-12	6.7.7	Class HttpSessionEvent .....	6-21
5.7.8	Interface ResultSetMetadata .....	5-13	6.7.8	Class HttpSessionBindingEvent .....	6-21
5.8	Essential JDBC programs.....	5-14	6.8	Handling HTTP Requests And Responses .....	6-22

**UNIT VI**

**Chapter 6 : Servlets** **6-1 to 6-48**

**Syllabus :** The Life Cycle of a Servlet, Creating simple Servlet : The Servlet, API, javax.Servlet Package, Servlet Interface, ServletConfig Interface, ServletContext Interface, ServletRequest Interface, ServletResponse Interface, GenericServlet Class. The javax.servlet.http Package : HttpServletRequest Interface , HttpServletResponse Interface, HttpSession Interface , Cookie Class, HttpServlet Class, HttpSessionEvent Class, HttpSessionBindingEvent Class. Handling HTTP Requests and Responses, Handling HTTP GET Requests, Handling HTTP POST Requests. Cookies and Session Tracking. Introduction to JSP

6.1	Introduction to Servlet.....	6-1	6.10.4	Session Tracking Methods .....	6-33
6.1.1	Advantages of Servlet over various Technologies.....	6-1	6.11	Introduction to JSP .....	6-34
6.2	Servlet : A Better Replacement of CGI Technology ....	6-2	6.11.1	What is JSP ?.....	6-34
6.3	Servlet Life-Cycle.....	6-3	6.11.2	Why to use JSP ?.....	6-35
6.4	Creating Simple Servlet .....	6-4	6.11.3	Advantages of JSP .....	6-35
6.5	Servlet API .....	6-8	6.11.4	Architecture of a JSP page .....	6-35
6.6	The javax.Servlet Package .....	6-8	6.11.5	Life cycle of a JSP page .....	6-36
6.6.1	Interface Servlet .....	6-9	6.11.7	JSP Skeleton and Writing First JSP .....	6-38
6.6.2	Interface ServletContext .....	6-10	6.12	Essential Examples on Servlet and JSP	
6.6.3	Interface ServletConfig .....	6-11		Co-ordination .....	6-39
6.6.4	Interface ServletRequest .....	6-11		• List of Practicals .....	L-1 to L-38
6.6.5	Interface ServletResponse.....	6-12			



## List of Practicals

Sr. No.	Description	Page No.
Program 1	Write a program to demonstrate the use of components like Label, TextField, TextArea, Button, Checkbox, CheckboxGroup.	L-1
Program 2	Write a program to design a form using the components List and Choice.	L-2
Program 3	Write a program to demonstrate the use of Border Layout; showing four buttons at four sides of an applet with captions "left", "right", "top" and "bottom".	L-3
Program 4	Write a program to design a simple calculator to demonstrate the use of GridLayout.	L-4
Program 5	Use of GridBagLayout to write a program to create a NUM pad on keyboard.	L-4
Program 6	Use of CardLayout to write a program to create a two-level card deck that allows the user to select an operating system.	L-7
Program 7	Write a program using AWT to create a menubar where menubar contains menu items such as File, Edit, View and create a submenu under the File menu: New and Open.	L-9
Program 8	Write a program using swing to display a ScrollPane and JComboBox in an JApplet with the items: English, Marathi, Hindi, Sanskrit.	L-10
Program 9	Write a program to create a JTree and recognize mouse clicks on it in JApplet.	L-11
Program 10	Write a program to create a JTable on JApplet Window.	L-13
Program 11	Write a program to launch a progressbar on button click.	L-14
Program 12	Write a program to accept keyboard input to show the presses/released status of each key on Applet window.	L-16
Program 13	Write a program to demonstrate use of some special keys (for example: F1, pgdown, etc.) on Applet Window using KeyEvent class.	L-17
Program 14	Write a program to demonstrate MouseEvents on Applet Window.	L-18
Program 15	Write a program to demonstrate MouseMotionEvents on Applet Window.	L-20
Program 16	Write a program to perform basic arithmetic operations on two numbers using TextField and Button to handle ActionEvent in an applet	L-21
Program 17	Write a program to select checkbox item by using ItemEvent class in an applet.	L-22
Program 18	Write a program that creates the user name and password screen using TextEvent class in an applet.	L-24
Program 19	Write a program to handle window operations like minimize, maximize, close etc. to handle Window Events.	L-25
Program 20	Write a program to demonstrate the use of Adapter class.	L-27
Program 21	Write a program to retrieve hostname and IP address in InetAddress class.	L-28
Program 22	Write a program to use URLConnection class and display (I) Protocol (II) Host Name (III) Port Number (IV) File name.	L-28
Program 23	Write a program (Procedure for Server Program) that demonstrates TCP/IP based communication between client and Server. Client send a message to Server and Server replies back the acknowledgement of received message to Client.	L-29
Program 24	Write a program (Procedure for Client Program) that demonstrates TCP/IP based communication between Client and Server. Client send a message to Server and Server replies back the acknowledgement of received message to Client.	L-30

Sr. No.	Description	Page No.
Program 25	Write a program (Procedure for Server Program) that demonstrates UDP based communication between Client and Server. Client send a message to Server and Server replies back the acknowledgement of received message to Client.	L-30
Program 26	Write a program (Procedure for Client Program) that demonstrates UDP based communication between Client and Server. Client send a message to Server and Server replies back the acknowledgement of received message to Client.	L-31
Program 27	Write a program to establish successful connection to database.	L-31
Program 28	Write a program to send data to Table( for ex. "Student" table) in database using prepared statement and retrieve data from same Table " Student" and display on screen. (Part – I)	L-32
Program 29	Write a program to send data to Table( for ex. "Student" table) in database using prepared statement and retrieve data from same Table "Student" and display on screen. (Part – II)	L-33
Program 30	Write a Servlet (procedure for Client side) to display the user name and password accepted from the client.	L-34
Program 31	Write a Servlet (procedure for Server side) to display the user name and password accepted from the client.	L-35
Program 32	Write a Servlet for demonstrating the concept of Session and Cookies.	L-36



