

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B.Sc. COMPUTER SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Programming in Java-I
Code No. : CS-335

Semester IV

Total Lectures: 48

Prerequisite:

- Knowledge of C Programming language

Objective:

- To learn Object Oriented Programming language
- To handle abnormal termination of a program using exception handling
- To create flat files
- To design User Interface using Swing and AWT

1. An Introduction to Java **[4]**

- 1.1 A Short History of Java
- 1.2 Features or buzzwords of Java
- 1.3 Comparison of Java and C++
- 1.4 Java Environment
- 1.5 Simple java program
- 1.6 Java Tools – jdb, javap, javadoc
- 1.7 Java IDE – Eclipse/NetBeans (Note: Only for Lab Demonstration)

2. An Overview of Java **[4]**

- 2.1 Types of Comments
- 2.2 Data Types
- 2.3 Final Variable
- 2.4 Declaring 1D, 2D array
- 2.5 Accepting input using Command line argument
- 2.6 Accepting input from console (Using BufferedReader class)

3. Objects and Classes **[8]**

- 3.1 Defining Your Own Classes
- 3.2 Access Specifiers (public, protected, private, default)
- 3.3 Array of Objects
- 3.4 Constructor, Overloading Constructors and use of 'this' Keyword
- 3.5 static block, static Fields and methods
- 3.6 Predefined class – Object class methods (equals(), toString(), hashCode(), getClass())
- 3.7 Inner class
- 3.8 Creating, Accessing and using Packages
- 3.9 Creating jar file and manifest file
- 3.10 Wrapper Classes
- 3.11 Garbage Collection (finalize() Method)
- 3.12 Date and time processing

4. Inheritance and Interface **[7]**

- 4.1 Inheritance Basics (extends Keyword) and Types of Inheritance
- 4.2 Superclass, Subclass and use of Super Keyword
- 4.3 Method Overriding and runtime polymorphism

- 4.4 Use of final keyword related to method and class
- 4.5 Use of abstract class and abstract methods
- 4.6 Defining and Implementing Interfaces
- 4.7 Runtime polymorphism using interface
- 4.7 Object Cloning

5. Exception Handling [4]

- 5.1 Dealing Errors
- 5.2 Exception class, Checked and Unchecked exception
- 5.3 Catching exception and exception handling
- 5.4 Creating user defined exception
- 5.5 Assertions

6. Strings, Streams and Files [7]

- 6.1 String class and StringBuffer Class
- 6.2 Formatting string data using format() method
- 6.2 Using the File class
- 6.3 Stream classes
 - Byte Stream classes
 - Character Stream Classes
- 6.4 Creation of files
- 6.5 Reading/Writing characters and bytes
- 6.6 Handling primitive data types
- 6.7 Random Access files

7. User Interface Components with AWT and Swing [10]

- 7.1 What is AWT ? What is Swing? Difference between AWT and Swing.
- 7.2 The MVC Architecture and Swing
- 7.3 Layout Manager and Layouts, The JComponent class
- 7.4 Components –
JButton, JLabel, JText, JTextArea, JCheckBox and JRadioButton,
JList, JComboBox, JMenu and JPopupMenu Class, JMenuItem and JCheckBoxMenuItem,
JRadioButtonMenuItem , JScrollBar
- 7.5 Dialogs (Message, confirmation, input), JFileChooser, JColorChooser
- 7.6 Event Handling: Event sources, Listeners
- 7.7 Mouse and Keyboard Event Handling
- 7.8 Adapters
- 7.9 Anonymous inner class

8. Applet [4]

- 8.1 Applet Life Cycle
- 8.2 appletviewer tool
- 8.3 Applet HTML Tags
- 8.4 Passing parameters to Applet
- 8.5 repaint() and update() method

References:

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press

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T.Y. B.Sc. COMPUTER SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Programming in Java-II
Code No. : CS-345

Semester IV

Total Lectures : 48

Prerequisite:

- Knowledge of Core Java (CS – 345)

Objectives:

- To learn database programming using Java
- To study web development concept using Servlet and JSP
- To develop a game application using multithreading
- To learn socket programming concept

1. Collection

[6]

- 1.1 Introduction to the Collection framework
- 1.2 List – ArrayList, LinkedList and Vector, Stack, Queue
- 1.3 Set - HashSet, TreeSet, and LinkedHashSet
- 1.4 Map – HashMap, LinkedHashMap, Hashtable and TreeMap
- 1.5 Interfaces such as Comparator, Iterator, ListIterator, Enumeration

2. Database Programming

[10]

- 2.1 The design of jdbc, jdbc configuration
- 2.2 Types of drivers
- 2.3 Executing sql statements, query execution
- 2.4 Scrollable and updatable result sets
- 2.5 Metadata – DatabaseMetadata, ResultSetMetadata
- 2.6 Transactions – commit(), rollback(), SavePoint
(Database : PostgreSQL)

3. Servlet

[12]

- 3.1 Introduction to Servlet and Hierarchy of Servlet
- 3.2 Life cycle of servlet
- 3.3 Tomcat configuration (Note: Only for Lab Demonstration)
- 3.4 Handling get and post request (HTTP)
- 3.5 Handling a data from HTML to servlet
- 3.6 Retriving a data from database to servlet
- 3.7 Session tracking – User Authorization, URL rewriting, Hidden form fields, Cookies and HttpSession

4. JSP

[10]

- 4.1 Simple first JSP program
- 4.2 Life cycle of JSP
- 4.2 Implicit Objects
- 4.3 Scripting elements – Declarations, Expressions, Scriptlets, Comments
- 4.4 JSP Directives – Page Directive, include directive
- 4.5 Mixing Scriptlets and HTML
- 4.6 Example of forwarding contents from database to servlet, servlet to JSP and displaying it using JSP scriptlet tag

5. Multithreading

[6]

- 5.1 What are threads?
- 5.2 Life cycle of thread
- 5.3 Running and starting thread using Thread class
- 5.4 Thread priorities
- 5.5 Running multiple threads
- 5.6 The Runnable interface
- 5.7 Synchronization and interthread communication

6. Networking

[4]

- 6.1 Networking basics – Protocol, Addressing, DNS, URL, Socket, Port
- 6.2 The java.net package – InetAddress, URL, URLConnection class
- 6.3 SocketServer and Socket class
- 6.4 Creating a Socket to a remote host on a port (creating TCP client and server)
- 6.5 Simple Socket Program Example

References:

- 1) Complete reference Java by Herbert Schildt(5th edition)
- 2) Java 2 programming black books, Steven Horlzner
- 3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
- 4) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press
- 5) Core Java Volume-II-Advanced Features, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press