

UNIVERSITY OF MADRAS
BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
SYLLABUS WITH EFFECT FROM 2020-2021

BCA-DSC06

CORE-VI: JAVA PROGRAMMING

II YEAR/ III SEM

OBJECTIVES:

- To understand the concepts of Object Oriented Programming.
- To learn about the control structures, class with attributes and methods used in Java.

OUTCOMES:

- Knowledge of the structure and model of the Java programming language.
- Understand the basic principles of creating Java applications with GUI.
- Demonstrate use of string and String Buffers, Develop multithreaded programs in Java.

UNIT - I

Introduction to OOPS: Paradigms of Programming Languages – Basic concepts of Object Oriented Programming – Differences between Procedure Oriented Programming and Object Oriented programming - Benefits of OOPs – Application of OOPs. Java: History – Java features – Java Environment – JDK – API. Introduction to Java: Types of java program – Creating and Executing a Java program – Java Tokens- Java Virtual Machine (JVM) – Command Line Arguments –Comments in Java program.

UNIT - II

Elements: Constants – Variables – Data types - Scope of variables – Type casting – Operators: Special operators – Expressions – Evaluation of Expressions. Decision making and branching statements- Decision making and Looping– break – labeled loop – continue Statement. Arrays: One Dimensional Array – Creating an array – Array processing – Multidimensional Array – Vectors – ArrayList – Advantages of Array List over Array Wrapper classes.

UNIT - III

Class and objects: Defining a class – Methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members –Nesting of Methods – this keyword – Command line input. Inheritance: Defining inheritance –types of inheritance– Overriding methods – Final variables and methods – Final classes – Final methods - Abstract methods and classes – Visibility Control- Interfaces: Defining interface – Extending interface - Implementing Interface - Accessing interface variables. Strings: String Array – String Methods – String Buffer Class.

UNIT - IV

Packages: Java API Packages – System Packages – Naming Conventions –Creating & Accessing a Package – Adding Class to a Package – Hiding Classes. Exception Handling: Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling – try blocks – throwing an exception – catching an exception – finally statement. Multithreading: Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization –Implementing Runnable interface – Thread Scheduling.

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UNIT - V

I/O Streams: File – Streams – Advantages - The stream classes – Byte streams –Character streams. Applets: Introduction – Applet Life cycle – Creating & Executing an Applet –Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines – Rectangles – Polygon – Circles – Arcs – Line Graphs – Drawing Bar charts AWT Components and Even Handlers: Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels – Text Component – Action Event – Buttons – Check Boxes – Item Event – Choice– Scrollbars – Layout Managers- Input Events – Menus.

TEXT BOOKS:

1. E. Balagurusamy, “*Programming with Java*”, TataMc-Graw Hill, 5th Edition.
2. Sagayaraj, Denis, Karthick and Gajalakshmi, “*Java Programming for Core and advanced learners*”, Universities Press (INDIA) Private Limited 2018.

REFERENCES:

1. Herbert Schildt, “*The complete reference Java*”, TataMc-Graw Hill, 7th Edition.

WEB REFERENCES:

- NPTEL & MOOC courses titled Java
- <https://nptel.ac.in/courses/106105191/>