Programming in Java
(BSCS08B)
Skill-Enhancement Elective Course - (SEC) Credit:4

Course Objective

This course introduces fundamental concepts of Object Oriented Programming using Java. Basic concepts such as data types, expressions, control structures, functions and arrays are covered. Students are exposed to extensive Java programming to solve practical programming problems.

Course Learning Outcomes

On successful completion of the course, students will be able to:

1. develop and execute Java programs using iteration and selection.
2. create classes and their objects.
3. implement OOPS concepts to solve problems using JAVA

Theoretical questions → Marks
Chapter 1 — History → No Marks
Chapter 2 — Setting → Chapter 3.
Chapter 3 — Data types
Chapter 4 — Objects & classes (4.7 Packages)
4.8 — Input

Unit 1

Introduction to Java: Features of Java, JDK environment, structure of Java programs.

Unit 2

Programming Fundamentals: Data types, variables, operators, expressions, arrays, keywords, naming convention, decision making constructs , iteration, type casting, methods.

For, while-do, do-while, IF-Else
Loops in Java. (Chapter-3 — Loops)

Unit 3

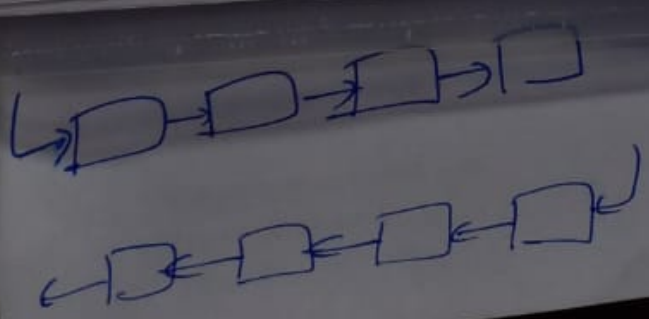
Object Oriented Programming Overview: Abstraction, encapsulation, inheritance, polymorphism.

Chapter 5 — Classes & superclasses.

Unit 4

Classes and Objects: Creating classes and objects, modifiers and access control, constructors, implementation of single and multilevel inheritance, implementation of polymorphism using overloading, overriding and dynamic method dispatch.

Unit 5



JAVA — (GUI Environment)
(GUI - Component)

Strings: String class methods, string buffer methods (chapter 1 – 5)

Practical

9. Write a program to find the largest of n natural numbers.
10. Write a program to find whether a given number is prime or not.
11. Write a menu driven program for following:
    a) display a Fibonacci series
    b) compute Factorial of a number
    c) to check whether a given number is odd or even.
    d) to check whether a given string is palindrome or not.
12. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
13. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
14. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
15. Design a class named Car, having registration number, model and engine as its private members. Here engine is an object of a class called Engine with the private members: Chassis number and make. Define a suitable constructor of Car and override toString() Method to print the details of a car. Assume appropriate data types for the instance Members of the classes. Write a Java program to test the above class.
16. Write a program that computes the area of a circle, rectangle and a Cylinder using function overloading.

References

1. Horstmann, C. S. (2017). *Core Java - Vol. I – Fundamentals (10th Edition)*. Pearson.

Additional Resources

1. Balagurusamy, E. (2014). *Programming with JAVA: A Primer (5th Edition)*. McGraw Hill Education (India) Private Limited.
2. Schildt, H. (2018). *Java: The Complete Reference (10th Edition)*. McGraw-Hi Education.
3. Schildt, H. & Skrien, D. (2013). *Java Fundamentals - A comprehensive Introductio* TMH.

Teaching Learning Process

- Talk and chalk method
- Computer based presentations by teachers.
- Group Discussions
- Assignments