

**B. Sc. (H) Computer Science Semester II**  
**BHCS03 – Programming in JAVA**

Chapter	Topic	Contents
1	The History and Evolution of Java	Complete
2	An Overview of Java	Complete
3	Data Types, Variables and Arrays	Complete
4	Operators	Complete
5	Control Statements	Complete
6	Introducing Classes	Complete
7	A Closer Look at Methods and Classes	Upto pg 156
8	Inheritance	Complete
9	Packages and Interfaces	Complete
10	Exception Handling	Complete
13	I/O, Try-with-Resources, and Other Topics	Upto pg 322 (before The transient and volatile Modifiers)
24	Event Handling	Complete
25	Introducing the AWT: Working with Windows, Graphics and Text	Upto pg 817
26	Using AWT Controls, Layout Managers, and Menus	Upto pg 837 (before Applying Check Boxes)
31	Introducing Swing	Complete
32	Exploring Swing	Upto pg 1037

**References**

1. Schildt, H. (2018). Java: The Complete Reference. 10<sup>th</sup> edition. McGraw-Hill Education.

**Additional Resources**

1. Balaguruswamy, E. (2014). Programming with JAVA: A Primer. 5<sup>th</sup> edition. India: McGraw Hill Education
2. Horstmann, C. S. (2017). Core Java - Vol. I – Fundamentals (Vol. 10). Pearson Education
3. Schildt, H., & Skrien, D. (2012). Java Fundamentals - A Comprehensive Introduction. India: McGraw Hill Education.

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**Practical List**

- 1) Design a class Complex having a real part (x) and an imaginary part (y). Provide methods to perform the following on complex numbers:
  - a) Add two complex numbers.
  - b) Multiply two complex numbers.
  - c) toString() method to display complex numbers in the form:  $x + i y$
- 2) Create a class TwoDim which contains private members as x and y coordinates in package P1. Define the default constructor, a parameterized constructor and override toString() method to display the co-ordinates. Now reuse this class and in package P2 create another class ThreeDim, adding a new dimension as z as its private member. Define the constructors for the subclass and override toString() method in the subclass also. Write appropriate methods to show dynamic method dispatch. The main() function should be in a package P.
- 3) Define an abstract class Shape in package P1. Inherit two more classes: Rectangle in package P2 and Circle in package P3. Write a program to ask the user for the type of shape and then using the concept of dynamic method dispatch, display the area of the appropriate subclass. Also write appropriate methods to read the data. The main() function should not be in any package.
- 4) Create an exception subclass UnderAge, which prints “Under Age” along with the age value when an object of UnderAge class is printed in the catch statement. Write a class exceptionDemo in which the method test() throws UnderAge exception if the variable age passed to it as argument is less than 18. Write main() method also to show working of the program.
- 5) Write a program to implement stack. Use exception handling to manage underflow and overflow conditions.
- 6) Write a program that copies content of one file to another. Pass the names of the files through command-line arguments.
- 7) Write a program to read a file and display only those lines that have the first two characters as '/'/' (Use try with resources).
- 8) Write a program to create a frame using AWT. Implement mouseClicked(), mouseEntered() and mouseExited() events such that:
  - a) Size of the frame should be tripled when mouse enters it.
  - b) Frame should reduce to its original size when mouse is clicked in it.
  - c) Close the frame when mouse exits it.
- 9) Using AWT, write a program to display a string in frame window with pink color as background.
- 10) Using AWT, write a program to create two buttons named “Red” and “Blue”. When a button is pressed the background color should be set to the color named by the button’s label.
- 11) Using AWT, write a program using appropriate adapter class to display the message (“Typed character is: <typedCharacter>”) in the frame window when user types any key.
- 12) Using AWT, write a program to create two buttons labelled ‘A’ and ‘B’. When button ‘A’ is pressed, it displays your personal information (Name, Course, Roll No, College) and when button ‘B’ is pressed, it displays your CGPA in previous semester.
- 13) Rewrite all the above GUI programs using Swing.