

B.Sc. Programme (Computer Science)
Semester V
BSCS09A - Advanced Programming in Java

Guidelines

Topic	Chapters	References
Unit 1: Review of Object Oriented Programming and Java Fundamentals	1 – 5	[1]
Unit 2: Interfaces	Ch 9 (pg 198 – 213)	[2]
Unit 3: Packages	Ch 9 (pg 189 – 198)	[2]
Unit 4: Exception Handling	Ch 10 (pg 217 – 230)	[2]
Unit 5: File Handling	Ch 13 (upto pg 322)	[2]
Unit 6: GUI Programming	Ch 24, 25 (upto pg 817), 26 (upto pg 837)	[2]

References

1. Horstmann, C. S. (2017). Core Java - Vol. I – Fundamentals (10th Edition). Pearson.
2. Schildt, H. (2018). Java: The Complete Reference (10th Edition). McGraw-Hill Education.

Practical List

1. Write a program to calculate the area of rectangle and triangle using interfaces.
2. Design a class named Car in package P1, having registration number, model and engine as its private members. Here engine is an object of a class called Engine in package P2 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.
3. Define a class Figure in package P1, having dim1 and dim2 as two private members. Inherit two more classes: Rectangle and rightAngledTriangle. Write a Java program (in package P2) 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.
4. Write a program in Java that reads an integer numberOfRows and handles NumberFormatException if any invalid integer is entered by the user. If numberOfRows is negative, then display a message to the user to enter a positive number. If numberOfRows is positive, then display the following pattern (e.g. - numberOfRows in the figure below is 4):

```
1
 1 2 1
 1 2 3 2 1
1 2 3 4 3 2 1
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5. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.
6. 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.
7. Using AWT, write a program to display a string in frame window with pink color as background.
8. 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.
9. 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.
10. 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.