

OBJECT ORIENTED PROGRAMMING

1. Write a Java program to create a class called "Person" with a name and age attribute. Create two instances of the "Person" class, set their attributes using the constructor, and print their name and age.
2. Write a Java program to create a class called "Dog" with a name and breed attribute. Create two instances of the "Dog" class, set their attributes using the constructor and modify the attributes using the setter methods and print the updated values.
3. Write a Java program to create a class called "Rectangle" with width and height attributes. Calculate the area and perimeter of the rectangle.
4. Write a Java program to create a class called "Circle" with a radius attribute. You can access and modify this attribute. Calculate the area and circumference of the circle.
5. Write a Java program to create a class called "Book" with attributes for title, author, and ISBN, and methods to add and remove books from a collection.
6. Write a Java program to create a class called "Employee" with a name, job title, and salary attributes, and methods to calculate and update salary.
7. Write a Java program to create a class called "Bank" with a collection of accounts and methods to add and remove accounts, and to deposit and withdraw money. Also define a class called "Account" to maintain account details of a particular customer.
8. Write a Java program to create class called "TrafficLight" with attributes for color and duration, and methods to change the color and check for red or green.
9. Write a Java program to create a class called "Employee" with a name, salary, and hire date attributes, and a method to calculate years of service.
10. Write a Java program to create a class called "Student" with a name, grade, and courses attributes, and methods to add and remove courses.
11. Write a Java program to create a class called "Library" with a collection of books and methods to add and remove books.

12. Write a Java program to create a class called "Airplane" with a flight number, destination, and departure time attributes, and methods to check flight status and delay.
13. Write a Java program to create a class called "Inventory" with a collection of products and methods to add and remove products, and to check for low inventory.
14. Write a Java program to create a class called "School" with attributes for students, teachers, and classes, and methods to add and remove students and teachers, and to create classes.
15. Write a Java program to create a class called "MusicLibrary" with a collection of songs and methods to add and remove songs, and to play a random song.
16. Write a Java program to create a class called "Shape" with abstract methods for calculating area and perimeter, and subclasses for "Rectangle", "Circle", and "Triangle".
17. Write a Java program to create a class called "Movie" with attributes for title, director, actors, and reviews, and methods for adding and retrieving reviews.
18. Write a Java program to create a class called "Restaurant" with attributes for menu items, prices, and ratings, and methods to add and remove items, and to calculate average rating.
19. Write a Java program to create a class with methods to search for flights and hotels, and to book and cancel reservations.
20. Write a Java program to create a class called "BankAccount" with attributes for account number, account holder's name, and balance. Include methods for depositing and withdrawing money, as well as checking the balance. Create a subclass called "SavingsAccount" that adds an interest rate attribute and a method to apply interest.
21. Write a Java program to create a class called "Vehicle" with attributes for make, model, and year. Create subclasses "Car" and "Truck" that add specific attributes like trunk size for cars and payload capacity for trucks. Implement a method to display vehicle details in each subclass.

22. Write a Java program to create a class called "Customer" with attributes for name, email, and purchase history. Implement methods to add purchases to the history and calculate total expenditure. Create a subclass "LoyalCustomer" that adds a discount rate attribute and a method to apply the discount.

23. Write a Java program to create a class called "Course" with attributes for course name, instructor, and credits. Create a subclass "OnlineCourse" that adds attributes for platform and duration. Implement methods to display course details and check if the course is eligible for a certificate based on duration.

24. Write a Java program to create a class called "ElectronicsProduct" with attributes for product ID, name, and price. Implement methods to apply a discount and calculate the final price. Create a subclass "WashingMachine" that adds a warranty period attribute and a method to extend the warranty.

25. Write a Java program to create a class called "Building" with attributes for address, number of floors, and total area. Create subclasses "ResidentialBuilding" and "CommercialBuilding" that add specific attributes like number of apartments for residential and office space for commercial buildings. Implement a method to calculate the total rent for each subclass.

26. Write a Java program to create a class called "Event" with attributes for event name, date, and location. Create subclasses "Seminar" and "MusicalPerformance" that add specific attributes like number of speakers for seminars and performer list for concerts. Implement methods to display event details and check for conflicts in the event schedule.

27. Write a Java program to create a class called "CustomerOrder" with attributes for order ID, customer, and order date. Create a subclass "OnlineOrder" that adds attributes for delivery address and tracking number. Implement methods to calculate delivery time based on the address and update the tracking status.

28. Write a Java program to create a class called "Reservation" with attributes for reservation ID, customer name, and date. Create subclasses "ResortReservation" and "RailwayReservation" that add specific attributes like room number for hotels and seat number for flights. Implement methods to check reservation status and modify reservation details.

29. Write a Java program to create a class called "Pet" with attributes for name, species, and age. Create subclasses "Dog" and "Bird" that add specific attributes like favorite toy for dogs and wing span for birds. Implement methods to display pet details and calculate the pet's age in human years.

30. Write a Java program to create a class called "GymMembership" with attributes for member name, membership type, and duration. Create a subclass "PremiumMembership" that adds attributes for personal trainer availability and spa access. Implement methods to calculate membership fees and check for special offers based on membership type.

