Java Assignment Questions : Complete Java Developer

(Questions to practice for better understanding)

1.Create a Java program that functions as a basic calculator. It should take two numbers and perform operations like addition, subtraction, multiplication, and division based on user input.

2.Create a class named "Car" with attributes like make, model, and year. Implement methods to set and display these attributes for different car objects.

3.Create a Java program to calculate the simple interest. Ask the user to input principal amount, interest rate, and time period. Calculate and display the simple interest.

4.Construct a Java program that checks if a given string is a palindrome (reads the same forwards and backwards). Prompt the user to input a string and display whether it's a palindrome or not.

5.Create a simple Java game where the computer generates a random number, and the user has to guess it within a certain number of attempts. Provide hints like "higher" or "lower" for incorrect guesses.

6.Build a Java application to handle library operations. Include functions like adding books, checking out books, returning books, and displaying available books.

7.Create a class "Product" with attributes like name, price, and quantity. Implement multiple constructors to initialize objects with different sets of parameters.

8.Construct a class representing a "Person" with private attributes like name, age, and ID. Implement public methods to access and modify these attributes in a controlled manner.

9.Develop a Java program that calculates the payroll for employees based on hours worked and hourly rates. Incorporate different pay rates for regular hours and overtime.

10.Construct a superclass called "Shape" with methods to calculate the area and perimeter. Create subclasses such as "Rectangle" and "Circle" that inherit from the Shape class and implement their specific area and perimeter calculations.

12.Design an abstract class "BankAccount" with abstract methods for deposit, withdrawal, and displayBalance. Create concrete subclasses like "SavingsAccount" and "CheckingAccount" that extend the BankAccount class and implement these methods.

13.Construct an interface "Shape" with methods for area and perimeter calculation. Implement this interface in classes like "Square," "Triangle," etc., providing specific logic for area and perimeter calculations.

14.Create a class "Calculator" with methods for basic arithmetic operations like division, ensuring proper exception handling for divide-by-zero scenarios using try-catch blocks.

15.Develop a program using HashMap to store student details. Utilize the student ID as the key and include attributes like name, age, and grade. Implement methods to add, display, update, and remove student records.

16.Create a contact list application using a HashMap to store contact information like name, phone number, and email. Implement functionalities to add contacts, retrieve details based on the name, and remove contacts.

17.Develop a Java program that showcases the usage of wildcards in collections. Create a method that accepts a List of any type and displays its contents. Demonstrate this method with different types of Lists.

18.Create a program that demonstrates the differences between ArrayList and LinkedList. Allow users to add, remove, and retrieve elements from both collections. Compare and display the time taken for these operations in each collection type.

19.Implement a generic class called "CustomList" that functions like a simple list. It should support adding elements, retrieving elements by index, and displaying the list contents. Include methods to add, get, and display elements.

20.Design a restaurant menu using a HashMap to store dish names and their prices. Allow users to add new dishes, update prices, display the menu, and remove items from the menu.