Core JAVA

1. What is Java?
    - History
    - Features
2. JDK, JRE and JVM
3. How to set path?
4. Hello Java Program
5. Compile & Runtime errors
6. Command line arguments
7. Naming Convention
8. Data types
    - Primitive
    - Non Primitive(Wrapper classes)
9. Variables & its types
    - Local
    - Instance
    - Static
10. Decision Making in Java
    - Simple if Statement
    - if…else Statement
    - if...else if…else statement
    - Switch statement
11. Looping Statements in Java
    - For
    - While
    - Do…while
    - For-Each Loop
12. Branching Statements in Java
    - Break
    - Continue
13. Java Comments
14. Java Array
    - Single Dimensional
    - Multi-Dimensional
15. Methods
    - Syntax of Methods
    - Static
    - Call static methods & variables
    - Invoking Parameterized Methods & different Return types
    - Method Overloading with static methods
    - Instance(explain briefly)

16. Instance methods
    - Object and Class
    - Constructor syntax
    - Default constructor
    - Parameterized constructor
    - Call instance methods & variables
    - Example for static & instance variable memory allocation using constructor
17. String Class
    - String class methods(length, equals, equalIgnoreCase, contains, charAt, etc)
    - StringBuffer class
    - StringBuilder class
18. this keyword and it's uses
19. Package
20. Access Modifiers
21. Inheritance(IS-A)
    - Types of Inheritance
22. super keyword and it's uses
23. this vs super
24. Aggregation(HAS-A)
25. Polymorphism
    - Method Overloading
    - Method Overriding
    - Method Overloading vs Method Overriding
26. Encapsulation
27. final keyword
    - variable
    - method
    - class
28. Abstraction
    - Abstract class
    - Interface
29. Abstract vs Interface
30. Exception Handling
    - Checked Exception
    - Unchecked Exception
    - Exception handling
    - Try, catch, finally
    - Throw & throws
31. Collections
    - Generic vs Non generic
    - ArrayList[add(),contains(),remove(),size() etc
    - Two ways to retrieve data (Iterator & advanced for loop)

32. Maven
    - Install Maven in Eclipse
    - Data Driven Framework
    - Download and add Apache POI
    - Apache POI – Excel read write
    - Excel write

WorkSheet ⟶

WORKSHEET

1. Sample Hello world.
2. Write a program to add two numbers. Accept numbers using command line arguments.
3. Write a program to
    a) add two integer numbers
    b) add one float number and one integer number
    c) print your name and age
    d) calculate area of Triangle
4. Write a program to swap two numbers with temporary variable. Print the numbers before and after swap.
5. Write a program to swap two numbers 'without' temporary variable. Print the numbers before and after swap.
6. Write a program to check the given number is positive.
7. Write a program to check whether the candidate is eligible for driving license.
8. Write a program to check whether the given number is Odd/Even.
9. Write a program to find largest of three Numbers
10. Write a program to find the grade of a Student based on total marks
    - Mark less than 40- Failed
    - 40 to 60–Grade D
    - 61 to 70-Grade C
    - 71 to 80-Grade B
    - 81 to 100-Grade A
11. Write a program to check whether the given character is Vowel/not (Use switch-case).
12. Write a program to print Fibonacci series[0 1 1 2 3 5].
13. Write a program to find the reverse of number.
14. Write a program to check whether the given number is Palindrome/Not.
15. Write a program to check whether the given number is Armstrong/Not.
16. Write a program to check whether the given number is Prime/Not.
17. Write a program to find the count of even numbers and odd numbers from 10 to 20.
18. Write a program to sum up all the elements of an array.
19. Write a program to add two matrices.
20. Write a program to search array element with Linear Search.
21. Write a program to sort array element with Bubble Sort.
22. Write a program to set your name and age by a static method and get them in an another static method.
23. Write a program to find the factorial of a number(**static method**)
    - Output – "Factorial of <given number> is <result>.
24. Write a program to check whether the given number is Palindrome/Not by using **static methods**.
    - Method 1- to find the reverse(pass the number in argument)
    - Method 2-to check palindrome/not
25. Write a program to check whether the candidate is eligible for Voting(Use **static method** and boolean return type).

26. Write a program to deposit and withdraw amount from bank account(Withdrawal amount do not exceeds the current balance). Add an extra method to check the account balance. (**static methods**)
27. Write a program to check whether the customer have discount (get 20% discount if total amount is greater than 5000) or not and get the final amount in main method. (**static methods**)
    - Get prices of items using parameterized method
    - Method 1 - Calculate total amount
    - Method 2 - Check discount

28. Write a program to find the
    a) Average of three integer numbers, three float numbers(should have same method name)
    b) Area of figures(circle, rectangle, square) by using three methods(should have same method name)
29. Write the above program with parameterized constructor (to calculate total amount). (**instance methods**)
30. Write a program to find the grade of 2 students based on total marks(3 subjects)
    - Get the student's marks by constructor
    - Return total mark to in main method
    - Find the grade of each student.
31. Write a program to find the Area of figures
    a) Circle (pi*r*r)
    b) Rectangle(l*b)
    c) Square(a*a)
    - Prompt the user to select the options(a/b/c) from command prompt.
    - Get the inputs that needs to find area.
32. Program to check whether the given Strings are Palindrome or not.
    a) Java
    b) Malayalam
33. Program to find the total salary by hand of an Employee
    - Class 1
      Get basic pay, deduction and bonus from console.
    - Class 2
      Calculate hra (5% of basic pay) and pf (20% of basic pay).
    - Class 3
      Find the total salary (basicpay+hra-pf-deduction+bonus) and get the salary slip
      Salary slip should contains :- basic pay, deduction, hra, pf, bonus and total salary by hand.

34. Program to find the reverse of a number
    - Two constructors, one for calculation reverse and other for display "Finding reverse…"
    - Argument variable and instance variable should be same
    - Main method allows to invoke only one constructor

35. Program to find the factorial of a number
    - Two methods, one for find calculate and other for print result.
    - Pass the number as argument
    - Main method allows to invoke only one method
36. Program to check the addition result is divisible by 10
    - Class 1
      Return addition result of two numbers
    - Class 2
      Check the addition result is divisible by 10(use **super** keyword)
37. Write a program to get the details of a Student
    - Class 1 - Student
      Get the student name and roll number
    - Class 2- Address
      Get the address of student
      Print Student name, roll number with address
    - There is no IS-A relationship
38. Program to calculate discount
    If customer purchase clothes on Offseason, set discount 15% and on Onseason 40%
    - Should use two classes, Onseason and Offseason
    - Use two methods- discount(method name should be same)
39. Program to withdraw amount from an ATM
    - Class 1- Bank
      One method to set pin from 'User' class and validate Pin in another method
      [Valid pins – 1001, 1234, 1212]
      Pin number should declared as private
    - Class 2 – User
      Get the pin from User
40. Let's first create the superclass Employee and define a method called calculateSalary() as an abstract method. The Contractor class inherits all properties from its parent Employee but have to provide its own implementation of calculateSalary() method and multiply the value of payment per hour with given working hours. The FullTimeEmployee also has its own implementation of calculateSalary()method. In this case we just multiply by constant 8 hours.

41. Write a program, where RBI will be an interface, have a method recurringDeposit which can accept the amount and duration. This must be implemented in class HDFC.
    - When a customer deposit amount in HDFC, they must be able to know how much amount they will get after depositing for n period of time.
    - Interest rate is defined in RBI interface.
42. Collection
    a) Write a Java program to create a new array list, add some colors (string) and print out the collection.
    b) Write a Java program to retrieve an element (at a specified index) from a given array list.
    c) Write a Java program to iterate through all elements in a array list.

d) Write a Java program to remove the third element from a array list.
e) Write a Java program to search an element in a array list.

43. Using Maven read excel

- Calculate Simple Interest, Compound Interest and check whether PAN is needed or not
- Read interest, principle amount and number of years from Excel
- Write Simple interest/Compound interest in Excel