JAVA Programming

All the programs should be *User Input.*

1. Write a program to input the length and breadth of a rectangle. Calculate and display the area, perimeter or diagonal of the rectangle as per the User's choice.
2. Write a program to enter three angles of a triangle and check whether a triangle is possible or not. If possible, then display whether it is an Acute- Angled triangle, a Right-Angled Triangle or an Obtuse-Angled Triangle otherwise, display 'Triangle is not possible'.
3. Write a program to enter the side and find the area of a square.
4. Write a program to find the surface area of a sphere.
5. Write a program to find the volume of the cube.
6. Write a program to input three numbers (positive or negative). If they are unequal then display the greatest number otherwise, display they are equal. The program also displays whether the numbers entered by the user are 'All positive', 'All negative' or 'The combination of both'.
7. Write a program to accept a number and check whether the number is prime or not.
8. Write a program to accept two numbers and find the Greatest Common Divisor (G.C.D) of two numbers. (HCF).
   Sample Input: 25, 45
   Sample Output: The Greatest Divisor: 5
9. Write a program to accept a number and check whether the number is perfect or not. A number is said to be perfect, if the sum of the factors (including 1 and excluding the number itself) is same as the original number.
   Sample Input: 6
   Sample Output: It is a perfect number.
   The factor of 6 = 1, 2, 3 and 1+ 2+3=6
10. Write a program to accept 10 different numbers. Display the greatest and the smallest numbers from a set of numbers entered by the user.
11. You want to calculate the sum of all positive even numbers and the sum of all negative odd numbers from a set of numbers. You can enter 0 (zero) to quit the program and thus it displays the result. Write a program to perform the above task.
12. In a game of tossing a coin, you want to know the number of times getting 'Head' and 'Tail'. You keep the record as '1' (one) for getting 'Head' and '0' (zero) for 'Tail'. Write a program to perform the above task. Suppose, you have tossed a coin for 20 times in this game.
13. Write a program in Java to display the first 10 numbers of series 0, 1, 2, 3,.....
14. Write a program to find the sum 'n' from the user. of series, taking the values of 'a' and
    S= a/2 + a/3 + a/4 +.....a/n
15. Write a program to calculate and display the fifty 'Prime Numbers' from a given number entered by the user.
16. Using switch statement, write a menu driven program:
    - To check and display whether a number input by the user is a composite number or not. (A number is said to be a composite, if it has one or more than one factor excluding one and the number itself).
      Example: 4, 6, 8, 9
- To find the smallest digit of an integer that is input.
  Sample input: 6524

Sample output: Smallest digit is 2.
For an incorrect choice, an appropriate error message should be displayed.

17. Write a program to enter a number and check whether the number is 'Neon' or not. A number is said to be 'Neon', if sum of the digits of square of a number is equal to the number itself.
    Sample Input: 9
    Sample Output: 9*9 = 81, 8 + 1 = 9
    : 9 is a Neon number.
18. Write a program in Java to enter a number and check whether the number is a Palindrome or not.
19. A number is said to be a Palindrome, if the new number obtained after reversing the digits is same as the original number.
    Sample Input: 232
    Sample Output: 232 is a Palindrome Number.
20. Write a program in Java to enter a number and check whether the number is an Armstrong or not.
21. A number is said to be an Armstrong, if the sum of cubes of digits is equal to the original number.
    Sample Input: 153
    Sample Output: 153 is an Armstrong Number because 13 + 53 + 33 = 153
22. Write a program in Java to find the sum of the series, taking the value of 'a' and 'n' from the user.
    S= $1+\frac{a^2}{1!}+\frac{a^3}{2!}+\frac{a^4}{3!}+$..... to n
23. Write a program to enter two numbers and check whether they are co-prime or not.
    Sample Input: 14, 15
    Sample Output: They are co-prime.
24. Write a program to find the factors of a number including 1 and the number itself.
    Sample Input: 18
    Sample Output: 1, 2, 3, 6, 9, 18
25. Write a program to accept a number and dispSamplelay the sum of its digits.
    Input: 542
    Sample Output: 5 + 4 + 2 = 11
26. Write a program to print the sum of negative numbers, sum of positive odd numbers and sum of positive even numbers from a list of numbers entered terminates when the user enters zero.
27. Write a program to accept a number and display the new number after removing all zeros.
    Sample Input: 5400207
    Sample Output: 5427
28. Write a program to accept a number and display the frequency of each digit present in the number.
    Sample Input: 341124
    Sample Output: The frequency of 1 = 2
    The frequency of 4 = 2
29. Write a program to accept a number and check whether the number is present in the Fibonacci series or not. The program displays the message accordingly.
    Sample Input: 55
    Sample output: 55 is present in the Fibonacci series.
30. A prime number is said to be 'Twisted Prime', if the new number obtained after reversing the digits is also a prime number. Write a program to accept a number and check whether the number is 'Twisted Prime' or not.
    Sample Input: 167
    Sample Output: 761
    167 is a 'Twisted Prime'.

31. A number is said to be Unique if digits of a number are not repeated in it. Write a program to accept a number and check whether the number is Unique or not. The program displays the message accordingly.
    Sample Input: 5463
    Sample Output: It is a unique number.
    Sample Input: 3272
    Sample Output: It is not a unique number.
32. Write a program to accept two numbers and find the Lowest Common Multiple (LCM) of the numbers.
    Hint: LCM = Product of two numbers/HCF
33. Write a program to accept two numbers and check whether they are twin prime or not.
    [Hint: Twin prime numbers are the prime numbers whose difference is two.
    e.g.: (5, 7), (11, 13).....
34. A number is said to be Duck if the digit zero is (0) present in it. Write a program to accept a number and check whether the number is Duck or not. The program displays the message accordingly. (The number must not begin with zero)
    Sample Input: 5063
    Sample Output: It is a Duck number.
    Sample Input: 7453
    Sample Output: It is not a Duck number.
35. Write a program to accept a number and check whether the number is Automorphic or not.
    Automorphic number: (Automorphic number is the number, which is contained in the last digit(s) of its square.)
    Example: 25 is an Automorphic number as its square is 625 and 25 is present as the last two digits.
36. Write a java program to complete and display the sum of the following series.
    S= $\frac{1+2}{1*2}+\frac{1+2+3}{1*2*3}+\ldots\ldots\ldots\ldots+\frac{1+2+3+\ldots\ldots n}{1*2*\ldots\ldots n}$
37. Write a java program to complete and display the sum of the following series.
    9+99+8+89+7+79+6…….to n
38. Write a java program to complete and display the sum of the following series.
    2-4+6-8+.....to n
39. Write a java program to complete and display the sum of the following series.
    S=1!+2!+3!+4!+.....to n
40. Write a java program to complete and display the sum of the following series.
    $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+$.....to n
41. Given two positive numbers M and N, such that M is between 100 and 10000 and N is less than 100. Find the smallest integer that is greater than M and whose digits add up to N. For example, if M = 100 and N = 11, then the smallest integer greater than 100 whose digits add up to 11 is 119.
42. Twins primes are consecutive prime numbers whose difference is 2.
    For example, (3,5), (11,13), (17,19) are all twin primes. Write a program that reads in a positive integer n and prints out the twin prime pair that has the least distance from n.
    For example:
    (a) if n is 30 then the pair is (29, 31),
    (b) if n is 13 it is (11,13), if n is 49 it is (41,43).
    (c) if n is 54 it is (59, 61).
43. Write a program in Java to enter any number from 2 to 5 (both inclusive) and print all the combinations of digits starting from 1 to that number. Display the total number of combinations formed for the given input.
    Sample Input: Enter any number from 2 to 5 (both inclusive): 3

Sample Output:
123
132
213
231
312
321
Total number of combinations: 6

44. Write a program in Java to convert Binary to Octal.
45. Write a program in Java to convert Octal to Decimal.
46. Write a program in Java to convert Decimal to Octal.
47. Write a program in Java to convert Hexadecimal to Decimal.
48. Write a program in Java to convert Decimal to Hexadecimal.
49. Write a program in Java to convert Decimal to Binary.
50. Write a program in Java to check whether a given year is a Leap Year or not.