**Conditional Statements:**

1. A computer salesman gets commission on the following basis:  
               Sales                        Commission Rate  
               Rs. 0 - 20,000                      3%  
               Rs. 20,000 - 50,000           12%  
               Rs. 50,001 and more         31%  
   After accepting the sales as input, calculate and print his commission amount and rate of commission.
2. Write a program to enter the three sides of a triangle. Decide whether it is a scalene, isosceles or equilateral triangle.
3. The telephone department wishes to compute monthly telephone bills for its customers using the following rules. Minimum Rs. 250 for first 80 message units, plus 60 paise per unit for next 60 units, plus 50 paise per unit for next 60 units, plus 40 paise per unit for any units above 200. Write a program that calculates the monthly bill, with input MESSAGE (the number of message units) and CUSTNO (the registration number of a customer). Then Display the bill in following format.  
               CUSTOMER NO :  
               MESSAGE UNITS :  
               AMOUNT (Rs.) :
4. A security man paid at the hourly rate (R) for the first 40 hours of work in a week. Thereafter, he is paid at 1.25 times of the hourly rate (R) for the next 16 hours and at 1.5 times of the hourly rate (R) for the further hours of work in the week. Taking the numbers of hours (H) and the rate per hour (R) as input, the weekly wages (W) is to be calculated.
5. Write a program to compute BI-monthly telephone charges for subscriber. Use the following information:  
           Fixed BI-monthly rent: Rs.380  
           Free calls during two months: 120  
           Charge/call beyond free limits upto 100 calls: Rs.1  
           Charge per call in excess of 100 calls: Rs. 1.25
6. Write a program to input the code of a particular item, quantity purchased and rate. Then calculate the purchased price and print it along with gift to be presented. The gifts to the customers are given in the following manner:  
           Amount of Purchase (Rs.)              Gift  
           Between 100 to 500                 A key ring  
           Between 500 to 1000                A leather purse  
           Above 1000                         A pocket calculator
7. Write a program to take the monthly salary from the user, find and display income tax with the help of the following slab:  
      Monthly Salary                 Income Tax  
      8000 or less                           Nil  
      8000-9000                      20% of Monthly salary  
      9000-10000                    30% of Monthly salary  
      10000 or above              40% of Monthly salary
8. A salesman earns a commission on the value of his sales as per the following table.  
      Value of sales(Rs.)            Commission(%)  
         1 - 999                               1  
      1000 - 9999                          5  
     10000 - 99999                      10  
   Write a program to calculate and print the commission using sale value as input. The program is to keep on calculating the commission for various salesmen until a sales value zero is input.
9. A company wants to set target for each of the four regions (EAST, WEST , NORTH and SOUTH). The company allots the following percentage target for each region.  
                 East      15%  
                 West      25%  
                 North     30%  
                 South     30%  
   Write a program to pass through command line parameters, the total target amount proposed by the company and print out the breakup of the target for each region.
10. Write a program to find the car bill for a particular tourist.  
    Type of car         Distance        Charge              Driver.  
    Maruti              < =  100          Rs.800              Rs.100.  
                        >100 & < = 200    Rs.800+Rs10/km      Rs 300.  
                                               above 100  
                        >200            Rs.15per km         Rs 500  
    Sumo                < = 100           Rs.600              Rs 100.  
                        >100 & < =  200   Rs.600+Rs.8/km      Rs 300  
                                              above 100       
                        > 200           Rs.12 per km        Rs.500
11. Write a program using method to calculate the salary increment of employees based on their basic pay. Calculate the final salary after increment.  
                 Basic Pay      Rise  
                 10700/-        550/-  
                 12500/-        750/-  
                 15000/-        1050/-
12. Write a program to calculate the prize amount for a cricketer depending upon his text average. Use the following date.  
      Test Average             Graduate                 Prize Amount  
        > = 80                    A                      Rs. 1,00,000.00  
        80> & > = 65              B                      Rs. 50,000.00  
        50> & > = 40              C                      Rs. 25,000.00  
        <40                     D                      Rs. 10,000.00
13. There are 55 employees in an organization. You have to display the number of employees getting Net-Salary above 20000 by taking only Basic\_Salary as input and following the table given below.  
      Basic Salary          DA (% Basic\_salary)      IT (% Gross\_Salary)  
      Below 5000                     8%                     6%  
      5000 to < 10000                15%                    9%  
      10000and above                 18%                    12%  
    Where DA and IT are Dearness Allowance and income Tax respectively.  
      Gross\_Salary  =  Basic\_Salary + DA  
      Net\_Salary  =  Gross\_Salary – IT
14. Write a program to assign values the variable basic salary and calculate the DA and the gross salary and print them. The DA is calculated as per the rules given below:  
        if basic< 2000             then DA is 5% of basic  
        if basic> = 2000 & <7000     then DA is 8% of basic  
        if basic> = 7000& <10000     then DA is 10% of basic  
        if basic> = 10000            then DA is 12% of basic  
        Gross Salary  =  Basic + DA.
15. Calculate and display the traveling allowance for 50 employees of an organization by taking distance traveled as input. The organization gives traveling allowance according to the following table.  
        Distance               Amount.  
        < = 20                   Rs 200  
        >20 and < = 50           Rs 200 + Rs 5 per extra km above 20  
        >50 and < =  100         Rs 500 + Rs 5 per extra km above 50.  
        >100                   Rs 15 per km.
16. Commission according to the following tables:

            Sale (in Rs.)               Commission(% of sale)  
                8000 or less                   Nil  
                8000 - 9000                    12%  
                9000 - 10000                   15%  
                10000 or above                 18%  
apart from this each salesman gets a fixed allowance of Rs 550 and also a bonus of Rs 500 if a salesman achieves the target of 10000. Display the total income of each salesman along with the sales. Also display the number of salesman having income of 5000 or above.

1. A company has 120 employees who are divided into four grades as follows:  
    Grade   Basic( Rs. per month)   D.A.(% of Basic)   H.R.A.(% of Basic)  
      1        10,000 or more              40%                30%  
      2        5,000 - 10,000              40%                25%  
      3        < 5,000 but > 2,000         30%                20%  
      4        2,000 or less               30%                15%  
   If the salary which is the total of Basic, D.A., and H.R.A., is above Rs.50,000 per month then Income Tax at the rate of 30% of the annual salary exceeding 50,000 is deducted on monthly basis at source. Taking name of the employees and the Basic(monthly) pay as inputs, a pay slip, which contains Name, Basic monthly pay, DA, HRA, Monthly Income Tax and Net Monthly Salary, for each employee is to be printed. Write a java program to perform this job.
2. Write a program to accept ages (in year) of 100 peoples. Then count & display the number of people lies between each age categories. The output is look like this,

INDIAN AGE SURVEY

Children (1-9) :

Toddlers (10-17) :

Adults (18-25) :

Married (26-60) :

Retired (61-80) :

Elder (81-99) :

Centurion (above 100) :

1. ABC stand decided to take charge for the parking of 2wheeler, 3wheeler and 4wheller (same charges) as per the following criteria:  
       No. of Hrs. Parked Charge  
       upto 8 hrs Rs 10  
       next 8 hrs Rs. 6 for additional 8 hours  
       above 16 hours Rs. 5 for each addition 8 hrs.  
   Input number of hours parked and prints the charges as per given criteria.
2. Write a Java program to accept an amount from the user and hence  
   find in each case:-  
   a) No of Rs. 100 notes and the remainder amount.  
   b) No of Rs. 50 notes and the remainder amount.  
   c) No of Rs. 20 notes and the remainder amount.  
   d) No of Rs. 10 notes and the remainder amount.  
   Eg. In Rs. 542; No of Rs. 100  =  5, Remainder  =  Rs. 42  
   No of Rs. 50  =  10, Remainder  =  Rs. 42  
   No of Rs. 20  =  27, Remainder  =  Rs. 2.  
   No of Rs. 10  =  54, Remainder  =  Rs. 2.
3. An employee wants to deposit certain sum of money under “Term Deposit” scheme in Syndicate Bank. The bank has provided the tariff of the scheme which is given below:

NO. OF DAYS RATE OF INTERES NO. OF DAYS RATE OF INTEREST

Up to 180 days 5.5% Exact 365 days 9.0%

181 to 364 days 7.5% More than 365 days 8.5%

1. Electronic world' has announced an off-Season discount on the purchase of certain items as per the given bellow

Amount Discount on A/C Discount on LCD TV

up to Rs. 20,000 5% 2.5%

Rs. 20,001 - Rs. 40,000 7.5% 5%

Rs. 40,001 - Rs. 60,000 10% 7% more than Rs. 60,000 12% 8.5%

1. . Mr. Kumar is an LIC agent. He offers discount to his policy holders on the annual premium. However, he also gets commission on the sum assured as per the given tariff.

Sum Assured Discount Commission

Up to Rs. 1,00,000 5% 2%

Rs. 1,00,001 and up to Rs. 2,00,000 8% 3%

Rs. 2,00,001 and up to Rs. 5,00,000 10% 5%

More than Rs. 5,00,000 15% 7.5%

Write a program to input name of the policy holder, the sum assured and first annual premium. Calculate the discount of the policy holder and the commission of the agent. The program displays all the details as:

Name of the policy holder :

Sum assured :

Premium :

Discount on the first premium :

Commission of the agent :

1. Given below is a hypothetical table showing rate of income tax for an India citizen, who is below or up to 60 years.

Taxable income (TI) in Rs. Income Tax in Rs.

Up to Rs. 2,50,000 Nil

More than Rs. 2,50,000 and less than (TI - 1,60,000) \* 10%

or equal to Rs. 5,00,000

More than Rs. 5,00,000 and less than or (TI - 5,00,000) \* 20% + 34,000

equal to Rs. 10,00,000

More than Rs. 10,00,000 (TI - 10,00,000) \* 30% + 94,000

Write a program to input the name, age and taxable income of a person. If the age is more than 60 years then display the message "Wrong Category". If the age is less than or equal to 60 years then compute and display the income tax payable along with the name of tax payer, as per the table given above

**Switch statement:**

1. Write a program to read a weekday number and print weekday name using switch statement
2. Write a java program that takes a grade letter from the user (A, B, C, D, or F) and prints the corresponding GPA value

### **Write a java program that uses a switch statement to print the name of the month corresponding to a given integer value.**

### **Write a java program that calculates the total cost of an order based on the number of items and a per-item cost that varies depending on the type of item**

### Using the switch statement, write a menu-driven program to:

### (i) To find and display all the factors of a number input by the user (including 1 and excluding the number itself)

### (ii) To find and display the factorial of a number input by the user. The factorial of a non-negative integer n, denoted by n!, is the product of all integers less than or equal to n.

### Using the switch statement, write a menu-driven program to calculate the maturity amount of a bank deposit. The user is given the following options: (i) Term Deposit (ii) Recurring Deposit

### For option (i) accept Principal (p), rate of interest (r) and time period in years (n). Calculate and output the maturity amount (a) receivable using the formula a = p[1 + r / 100]n.

### For option (ii) accept monthly installment (p), rate of interest (r) and time period in months (n). Calculate and output the maturity amount (a) receivable using the formula a = p \* n + p \* n(n + 1) / 2 \* r / 100 \* 1 / 12.

### For an incorrect option, an appropriate error message should be displayed.

### Using the 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 composite if it has one or more than one factor excluding 1 and the number itself.). Example: 4, 6, 8, 9, …

### To find the smallest digit of an integer that is input: Sample Input: 6524 Output: Smallest digit is 2.

### Using the switch statement, write a menu-driven program to:

### Generate and display the first 10 terms of the Fibonacci series 0, 1, 1, 2, 3, 5, … The first two Fibonacci numbers are 0 and 1, and each subsequent number is the sum of the previous two.

### (ii) Find the sum of the digits of an integer that is input. Sample Input: 15390 Sample Output: Sum of the digits = 18. For an incorrect choice, an appropriate error message should be displayed.

1. Write a menu-driven program to accept a number and check and display whether it is a prime number or not, or an automorphic number or not. Use switch-case statement.

(a) Prime number: A number is said to be a prime number if it is divisible only by 1 and itself and not by any other number. Example: 3, 5, 7, 11, 13, etc.

(b) Automorphic number: An 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.

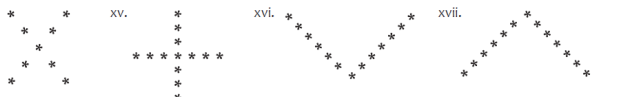
**Loops:**

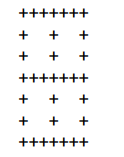
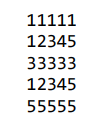
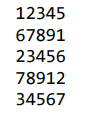
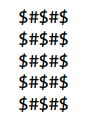
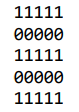
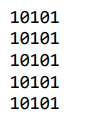
1. The present population of a country is PO and it increases by 5% every year. The population (P) after n years is given by the formula: P  =  PO (1.05)n. Write a program to find the population every year for the next ten years.
2. Generate the following series:

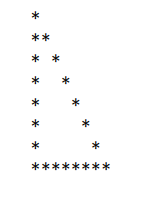
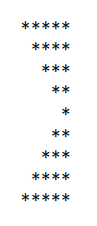
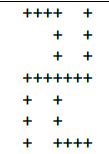
Note: you can use any predefined methods of Math class.

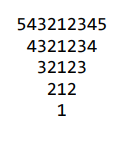
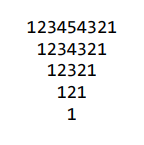
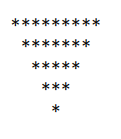
1. 1 2 4 7 11 16 22
2. 0 1 3 6 10 15 21
3. 0 3 8 15 24 35
4. 1 2 2 4 8 32
5. 2 3 4 6 6 9 8 12 10 15
6. 1 5 2 4 3 3 4 2 5 1
7. 0 7 26 63 124
8. S  =  (1+2) + (1+2+3) + (1+2+3+4) + ………… + (1+…………+15)
9. Write a program to display the factorial of the first ten natural numbers.
10. Write a program to generate all Perfect numbers up to 1000.
11. Write a program to accept a number then print the sum of digits and number of digits present in it.
12. Write a program to check whether all digits of the given number are same type or not (i.e. all are odd, all even numbers or both present)
13. Write a program to accept a number and then add all digits until you found a single digit number. If that single digit number is 1, then that number is called lucky number. (e.g. if number is 2345 then sum of its digits becomes 14, further sum of this digits is 5, so the number is not a lucky number)
14. Write a program to accept any 10 numbers. Then count how many numbers are odd, even or zero among them.
15. Write a program to accept any 10 numbers. Then count how many numbers are positive, negative or zero among them.
16. Write a program to accept any number between 1 to 10, and then display the number in word.
17. Write a program to accept 10 numbers. Display the second highest number among them.
18. Write a program to accept 10 numbers and count how many numbers are divisible by 2 & 3 among them.

Patterns:









**Programs on Method Calling:**

1. Write a class to check whether a given number is Armstrong or not using a function name int checkArmstrong(int num). Function should return a value 1 if number is Armstrong otherwise it return 0 if not.
2. Write a class using a function primeCheck(int num) to check whether a given number is Prime or not. Function should return a value 1 if number is prime otherwise it return 0 if not.
3. Write a class using a function as follows: int num (int) the function accepts a number and finds whether it is even and divisible by 8 or not. It returns '1' if condition is satisfied otherwise '0'. Use a main program to pass the number by value to the function.
4. Develop a class "Array" with the following Specifications:  
   instant Variables- int a[20], k  
   Member functions-  
     public void input() To input integer members to array A and a number separately to variable k.  
     public void search() To find and print 'Search Successful' if number is found 'Search Unsuccessful' otherwise.
5. Define a subclass sub1 in which define a method f1() to calculate and print hcf (highest common factor) by division method of any two given numbers entered by user in the main class. Define another subclass sub2 in which define a method f2() to calculate and print the area and perimeter of a rectangle by using the required parameters accepted in main class. Define main class to input the parameters required in the above two methods and also call the two functions.
6. Write a program to print the few lines of the following patter (number of lines is given by user). Use one function for printing alphabets and another function to print the number.  
     A A A A A 1  
     B B B B 1 2  
     C C C 1 2 3  
     D D 1 2 3 4  
     E 1 2 3 4 5
7. The number 151 is a prime palindrome, because it is both a prime number and a palindrome. Write a class that find all prime palindromes between two given numbers a and b. Accept the values for a and b from the user in function main(). Use two function in your class, boolean isPrime(int) for check number is prime or not, int isPalindrome(int) to check number is palindrome or not.
8. Write a MENU Driven program using separate function to calculate and return the answer of the following options from a given sentence:  
   a) Total number of digits present in it.  
   b) Total number of small letters and capital letters present in it.  
   c) Total number of alphabets used in it.  
   d) Total number of vowels presents in it.  
   e) Total Number words present in that sentence.
9. Write a program to print all elements of Fibonacci series (between 1 to 1000),which is also a prime number using a defined function.
10. A number is called Armstrong number if the sum of cube of each digit of the number is equal to that number. (e.g. 153 is a Armstrong number because 153 =  13 + 53 +33).  
    Define a class armStrong that has the following functions.  
      private int sumOfDigit(int N) -> which return the sum of cube of each digits present in N.  
      public static void main(int x, int y) -> which display all the arm strong number between the range x and y.

**Programs on Arrays:**

1. Accept 10 numbers into an array and then calculate the sum of numbers present in odd positions and even positions respectively.
2. Accept 10 numbers into an array and then calculate the sum of even numbers present in odd positions.
3. Create an array of size 10. Automatically fill the array with the factorial of number between 1 to 10, and then display the content of array.
4. Create two arrays A and B of size 5 and C of size 10. Accept numbers in two arrays A and B. Fill the array C in such a way that the all odd positions occupy the numbers present in array A and all even positions occupy the numbers present in array B.
5. Accept data into two integers array A & B of size 5 elements each. The program should create another array T that finds the intersection of the two arrays.  
   For e.g. if A  =  {1,3,5,7,8} & B  =  {7,4,2,8,9} Then T  =  {7,8}
6. Accept the name, physics, chemistry and math marks of 25 students. The display a list of the given data with Total and Average.
7. Write a JAVA program to accept the temperature of any 10 cities in degrees Fahrenheit. Convert temperature to degree centigrade using the given formula: Centigrade  =  (Fahrenheit - 32) X 5/9

Display the information in the given format. Also at the end print the total number of cities where the temperature is more then 35 degree centigrade and the city name with maximum temperature.  
   City Name    Fahrenheit Temperature    Centigrade Temperature  
   ---------    ----------------------    ----------------------

Number of cities more then 35-degree centigrade temperature:  
Name of the city with maximum temperature:

1. There are 100 elements in an array, Write a program in JAVA to arrange first 50 elements of the array in ascending order and rest 50 elements into descending order.
2. Write a program in Java to open 3 arrays of name A, P & N. Store 15 numbers in array A. Shift all the positive even numbers in array P and all the negative odd numbers in array N. Finally print the array P & N.

**Programs on Recursion:**

1. Write a program to print the array elements using recursion
2. Write a program to count the digits of a given number using recursion
3. Write a program to get the largest element of an array using recursion
4. Write a program to check if a number is a prime number or not using recursion.
5. Write a program to print even or odd numbers in a given range using recursion
6. Write a program to check whether a given string is a palindrome or not using recursion
7. Write a program to calculate the power of any number using recursion.
8. Write a program to find largest number in an array using recursion
9. Write a program to find LCM of two given numbers using recursion
10. Write a program to find the prime factors of a given number using recursion

**Programs on Strings:**

1. Write a program to accept a name. Then display the ASCII value of each character present in that name.
2. Write a program to read a word. Print the position of the first vowel occurring in the word. If there is no vowel in the word then print 'Sorry no vowel'.
3. Write a program to accept a name (in first name & last name format), then display that name in short format. (Example - SACHIN TENDULKAR becomes S. TENDULKAR)
4. Write a program to accept any name (full name) and convert it to Proper Case.
5. Write a program to accept any string and then convert each 'A' to 'AN' present in that string. Then print the string. (Note: remember 'A' should not be a part of a word?).
6. Sankalp has a terrible habit of deleting the last two letters of a word beginning with 'E' and adding a single letter 'O' in their place. Write a program to convert a given word according to Sankalp habit.
7. In Piglatin a word such as KING becomes INGKAY, TROUBLE becomes OUBLETRAY as so on. The first vowel of the original word becomes the starting of the translation and proceeding letter being shifted towards the end and followed by AY. Word that begins with a vowel is left unchanged. Write a program to accept a word and convert in to Piglatin word.
8. Accept two strings, a word and a sentence. Then find number of times the word is present in given string. If I enter 'THE' and 'THE BIG FAT THE ODORE', then the computer should display 2.
9. Write a program to accept a sentence then convert each character to second next character. The character A becomes C, Y becomes A and Z becomes B.
10. A name is to be said as odd name if the ASCII code of each character become an odd number. Write a program to accept a name and check whether the given name is odd name or not.