**Bascom**

**Practice Programs for Programming Languages**

C, C++, Java, Kotlin, JavaScript, Python, Dart, C#,R

horizontal line

Basic Programs

1. Write a program to perform input/output of all basic data types.
2. Write a program to enter two numbers and find their sum.
3. Write a program to enter two numbers and perform all arithmetic operations.
4. Write a program to enter the length and breadth of a rectangle and find its perimeter.
5. Write a program to enter the length and breadth of a rectangle and find its area.
6. Write a program to enter the radius of a circle and find its diameter, circumference and area.
7. Write a program to enter length in centimeters and convert it into meters and kilometers.
8. Write a program to enter temperature in Celsius and convert it into Fahrenheit.
9. Write a program to enter temperature in Fahrenheit and convert to Celsius
10. Write a program to convert days into years, weeks and days.
11. Write a program to find power of any number x ^ y.
12. Write a program to enter any number and calculate its square root.
13. Write a program to enter two angles of a triangle and find the third angle.
14. Write a program to enter the base and height of a triangle and find its area.
15. Write a program to calculate the area of an equilateral triangle.
16. Write a program to enter marks of five subjects and calculate total, average and percentage.
17. Write a program to enter P, T, R and calculate Simple Interest.
18. Write a program to enter P, T, R and calculate Compound Interest[.](https://codeforwin.org/2015/05/c-program-to-calculate-compound-interest.html)

Conditional Operator Programs (not in python)

1. Write a program to find the maximum between two numbers using the conditional operator.
2. Write a program to find a maximum between three numbers using a conditional operator.
3. Write a program to check whether a number is even or odd using a conditional operator.
4. Write a program to check whether year is leap year or not using a conditional operator.
5. Write a program to check whether a character is an alphabet or not using a conditional operator.

If-else Programs

1. Write a program to find the maximum between two numbers.
2. Write a program to find a maximum between three numbers.
3. Write a program to check whether a number is negative, positive or zero.
4. Write a program to check whether a number is divisible by 5 and 11 or not.
5. Write a program to check whether a number is even or odd.
6. Write a program to check whether a year is a leap year or not.
7. Write a program to check whether a character is in the alphabet or not.
8. Write a program to input any alphabet and check whether it is vowel or consonant.
9. Write a program to input any character and check whether it is alphabet, digit or special character.
10. Write a program to check whether a character is uppercase or lowercase alphabet.
11. Write a program to input week numbers and print week day.
12. Write a program to input month number and print number of days in that month.
13. Write a program to count the total number of digit in a given amount.
14. Write a program to input angles of a triangle and check whether triangle is valid or not.
15. Write a program to input all sides of a triangle and check whether the triangle is valid or not.
16. Write a program to check whether the triangle is equilateral, isosceles or scalene triangle.
17. Write a program to find all roots of a quadratic equation.
18. Write a program to calculate profit or loss.
19. Write a program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:  
    Percentage >= 90% : Grade A  
    Percentage >= 80% : Grade B  
    Percentage >= 70% : Grade C  
    Percentage >= 60% : Grade D  
    Percentage >= 40% : Grade E  
    Percentage < 40% : Grade F
20. Write a program to input basic salary of an employee and calculate its Gross salary according to following:  
    Basic Salary <= 10000 : HRA = 20%, DA = 80%  
    Basic Salary <= 20000 : HRA = 25%, DA = 90%  
    Basic Salary > 20000 : HRA = 30%, DA = 95%
21. Write a program to input electricity unit charges and calculate total electricity bill according to the given condition  
    For first 50 units Rs. 0.50/unit  
    For next 100 units Rs. 0.75/unit  
    For next 150 units Rs. 1.20/unit  
    For unit above 250 Rs. 1.50/unit  
    An additional surcharge of 20% is added to the bill

Switch case Programs and match in python

1. Write a program to print day of week name using switch case.
2. Write a program print total number of days in a month using switch case.
3. Write a program to check whether an alphabet is vowel or consonant using switch case.
4. Write a program to find the maximum between two numbers using the switch case.
5. Write a program to check whether a number is even or odd using a switch case.
6. Write a program to check whether a number is positive, negative or zero using a switch case.
7. Write a program to find the roots of a quadratic equation using a switch case.
8. Write a program to create a Simple Calculator using a switch case.

For, While, Do-while and Number conversion programs

1. Write a program to print all natural numbers from 1 to n. - using while loop
2. Write a program to print all natural numbers in reverse (from n to 1). - using while loop
3. Write a program to print all alphabets from a to z. - using while loop
4. Write a program to print all even numbers between 1 to 100. - using while loop
5. Write a program to print all odd numbers between 1 to 100.
6. Write a program to find the sum of all natural numbers between 1 to n.(1..100)
7. Write a program to find the sum of all even numbers between 1 to n.
8. Write a program to find the sum of all odd numbers between 1 to n.
9. Write a program to print a multiplication table of any number.
10. Write a program to count the number of digits in a number.
11. Write a program to find the first and last digit of a number.
12. Write a program to find the sum of the first and last digit of a number.
13. Write a program to swap first and last digits of a number.
14. Write a program to calculate the sum of digits of a number.
15. Write a program to calculate the product of digits of a number.
16. Write a program to enter a number and print its reverse.
17. Write a program to check whether a number is palindrome or not.
18. Write a program to find the frequency of each digit in a given integer.
19. Write a program to enter a number and print it in words.
20. Write a program to print all ASCII characters with their values.
21. Write a program to find the power of a number using a for loop.
22. Write a program to find all factors of a number.
23. Write a program to calculate the factorial of a number.
24. Write a program to find HCF (GCD) of two numbers.
25. Write a program to find LCM of two numbers.
26. Write a program to check whether a number is Prime number or not.
27. Write a program to print all Prime numbers between 1 to n.
28. Write a program to find the sum of all prime numbers between 1 to n.
29. Write a program to find all prime factors of a number.
30. Write a program to check whether a number is an Armstrong number or not.
31. Write a program to print all Armstrong numbers between 1 to n.
32. Write a program to check whether a number is a Perfect number or not.
33. Write a program to print all Perfect numbers between 1 to n.
34. Write a program to check whether a number is a Strong number or not.
35. Write a program to print all Strong numbers between 1 to n.
36. Write a program to print Fibonacci series up to n terms.
37. Write a program to find one's complement of a binary number.
38. Write a program to find two's complement of a binary number.
39. Write a program to convert the Binary to Octal number system.
40. Write a program to convert the Binary to Decimal number system.
41. Write a program to convert Binary to Hexadecimal number system.
42. Write a program to convert Octal to Binary number system.
43. Write a program to convert Octal to Decimal number system.
44. Write a program to convert Octal to Hexadecimal number system.
45. Write a program to convert Decimal to Binary number system.
46. Write a program to convert Decimal to Octal number systems.
47. Write a program to convert Decimal to Hexadecimal number system.
48. Write a program to convert Hexadecimal to Binary number system.
49. Write a program to convert Hexadecimal to Octal number system.
50. Write a program to convert Hexadecimal to Decimal number systems.
51. Write a program to print Pascal triangle upto n rows.

Star Pattern programs

| 1. Rectangle and Square Pattern  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\* | 2. Hollow Square Pattern  \*\*\*\*\*  \* \*  \* \*  \* \*  \*\*\*\*\* |
| --- | --- |
| 3. Hollow Square Pattern with Diagonal  \*\*\*\*\*  \*\* \*\*  \* \* \*  \*\* \*\*  \*\*\*\*\* | 4. Rhombus Pattern  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\* |
| 5.Hollow Rhombus Pattern  \*\*\*\*\*  \* \*  \* \*  \* \*  \*\*\*\*\* | 6. Mirrored Rhombus Pattern  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\*  \*\*\*\*\* |
| 7.Right Triangle Pattern  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\* | 8.Hollow Right Triangle Pattern  \*  \*\*  \* \*  \* \*  \*\*\*\*\* |
| 9.Mirrored Right Triangle Pattern  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\* | 10.Hollow Mirrored Right Triangle Pattern  \*  \*\*  \* \*  \* \*  \*\*\*\*\* |
| 11. Inverted Right Triangle Pattern  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \* | 12. Hollow Inverted Right Triangle Pattern  \*\*\*\*\*  \* \*  \* \*  \*\*  \* |
| 13. Mirrored Inverted Right Triangle  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \* | 14. Hollow and Mirrored Inverted Right Triangle  \*\*\*\*\*  \* \*  \* \*  \*\*  \* |
| 15. Pyramid Pattern  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\* | 16. Hollow Pyramid Pattern  \*  \* \*  \* \*  \* \*  \*\*\*\*\*\*\*\*\* |
| 17. Inverted Pyramid Pattern  \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*  \*\*\*  \* | 18. Inverted Hollow Pyramid Pattern  \*\*\*\*\*\*\*\*\*  \* \*  \* \*  \* \*  \* |
| 19. Half Diamond Pattern  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \* | 20. Mirrored Half Diamond Pattern  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \* |
| 21. Diamond Pattern    \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*  \*\*\*  \* | 22. Hollow Diamond Pattern  \*\*\*\*\*\*\*\*\*\*  \*\*\*\* \*\*\*\*  \*\*\* \*\*\*  \*\* \*\*  \* \*  \* \*  \*\* \*\*  \*\*\* \*\*\*  \*\*\*\* \*\*\*\*  \*\*\*\*\*\*\*\*\*\* |
| 23. Right Arrow Star Pattern  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\* | 24. Left Arrow Pattern    \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\* |
| 25. Plus Pattern  +  +  +  +  +++++++++  +  +  +  + | 26. X Pattern  \* \*  \* \*  \* \*  \* \*  \*  \* \*  \* \*  \* \*  \* \* |
| 29. 8 Pattern  \*\*\*  \* \*  \* \*  \* \*  \*\*\*  \* \*  \* \*  \* \*  \*\*\* | 30. Heart Pattern  \*\*\*\*\* \*\*\*\*\*  \*\*\*\*\*\*\* \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*  \*\*\*  \* |

Number Pattern Programs

| 1.  11111  11111  11111  11111  11111 | 2.  11111  00000  11111  00000  11111 |
| --- | --- |
| 3.  01010  01010  01010  01010  01010 | 4.  11111  10001  10001  10001  11111 |
| 5.  11111  11111  11011  11111  11111 | 6.  10101  01010  10101  01010  10101 |
| 7.  11011  11011  00000  11011  11011 | 8.  10001  01010  00100  01010  10001 |
| 9.  01110  10001  10001  10001  01110 | 10.  11111  22222  33333  44444  55555 |
| 11.  12345  12345  12345  12345  12345 | 12.  12345  23456  34567  45678  56789 |
| 13.  1 2 3 4 5  6 7 8 9 10  11 12 13 14 15  16 17 18 19 20  21 22 23 24 25 | 14.  55555  54444  54333  54322  54321 |
| 15.  12345  23455  34555  45555  55555 | 16.  12345  23451  34521  45321  54321 |
| 17.  12345  21234  32123  43212  54321 | 18.  555555555  544444445  543333345  543222345  543212345  543222345  543333345  544444445  555555555 |
| 19.  1  22  333  4444  55555 | 20.  55555  4444  333  22  1 |
| 21.  11111  2222  333  44  5 | 22.  5  44  333  2222  11111 |
| 23.  1  12  123  1234  12345 | 24.  12345  1234  123  12  1 |
| 25.  1  21  321  4321  54321 | 26.  54321  4321  321  21  1 |
| 27.  5  54  543  5432  54321 | 28.  54321  5432  543  54  5 |
| 29.  5  45  345  2345  12345 | 30.  12345  2345  345  45  5 |
| 31.  1  23  345  4567  56789 | 32.  56789  4567  345  23  1 |
| 33.  13579  3579  579  79  9 | 34.  1  10  101  1010  10101 |
| 35.  1  00  111  0000  11111 | 36.  1  01  010  1010  10101 |
| 37.  1  11  101  1001  11111 | 38.  1  24  135  2468  13579 |
| 39.  1  131  13531  1357531  135797531 | 40.  1  24  135  2468  13579 |
| 41.  2  242  24642  2468642  2468108642 | 42.  1  121  12321  1234321  123454321 |
| 43.  1  3 2  4 5 4 3  5 6 7 6 5 4  6 7 8 9 8 7 6 5 | 44.  1  21  123  4321  12345 |
| 45.  1  2 3  4 5 6 7  8 9 1 2 3 4 5 6  7 8 9 1 2 3 4 5 6 7 8 9 1 2 3 4 | 46.  1 1  12 21  123 321  1234 4321  1234554321 |
| 47.  1  2 6  3 7 10  4 8 11 13  5 9 12 14 15 | 48.  1  2 4  7 11 16  22 29 37 46  56 67 79 92 106 |
| 49.  1  3 2  4 5 6  10 9 8 7  11 12 13 14 15 | 50.  1  22  333  2222  11111 |
| 51.  1  12  123  1234  12345  1234  123  12  1 | 52.  1  123  12345  1234567  123456789  1234567  12345  123  1 |
| 53.  1  121  12321  1234321  123454321  1234321  12321  121  1 | 54.  \*  \*1\*  \*121\*  \*12321\*  \*1234321\*  \*123454321\*  \*1234321\*  \*12321\*  \*121\*  \*1\*  \* |
| 55.  1 1  2 2  3 3  4 4  5  4 4  3 3  2 2  1 1 | 56. Toran  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*  \*\*\* \*\*\*\*\* \*\*\*\*\* \*\*\*\*\* \*\*\*\*\* \*\*\*  \*\* \*\*\* \*\*\* \*\*\* \*\*\* \*\*  \* \* \* \* \* \* |

Functions Programs

1. Write a C program to find cube of any number using a function.
2. Write a C program to find diameter, circumference and area of circle using functions.
3. Write a C program to find maximum and minimum between two numbers using functions.
4. Write a C program to check whether a number is even or odd using functions.
5. Write a C program to check whether a number is prime, Armstrong or perfect number using functions.
6. Write a C program to find all prime numbers between given intervals using functions.
7. Write a C program to print all strong numbers between given intervals using functions.
8. Write a C program to print all Armstrong numbers between given intervals using functions.
9. Write a C program to print all perfect numbers between given intervals using functions.

Recursive Functions Programs

1. Write a C program to find power of any number using recursion.
2. Write a C program to print all natural numbers between 1 to n using recursion.
3. Write a C program to print all even or odd numbers in a given range using recursion.
4. Write a C program to find the sum of all natural numbers between 1 to n using recursion.
5. Write a C program to find the sum of all even or odd numbers in a given range using recursion.
6. Write a C program to find the reverse of any number using recursion.
7. Write a C program to check whether a number is palindrome or not using recursion.
8. Write a C program to find the sum of digits of a given number using recursion.
9. Write a C program to find factorial of any number using recursion.
10. Write a C program to generate nth Fibonacci term using recursion.
11. Write a C program to find GCD (HCF) of two numbers using recursion.
12. Write a C program to find LCM of two numbers using recursion.

Arrays Programs // List in Python

1. Write a C program to read and print elements of an array. - using recursion.
2. Write a C program to print all negative elements in an array.
3. Write a C program to find the sum of all array elements. - using recursion.
4. Write a C program to find maximum and minimum elements in an array. - using recursion.
5. Write a C program to find the second largest element in an array.
6. Write a C program to count the total number of even and odd elements in an array.
7. Write a C program to count the total number of negative elements in an array.
8. Write a C program to copy all elements from an array to another array.
9. Write a C program to insert an element in an array.
10. Write a C program to delete an element from an array at specified position.
11. Write a C program to count the frequency of each element in an array.
12. Write a C program to print all unique elements in the array.
13. Write a C program to count the total number of duplicate elements in an array.
14. Write a C program to delete all duplicate elements from an array.
15. Write a C program to merge two arrays to a third array.
16. Write a C program to find the reverse of an array.
17. Write a C program to put even and odd elements of an array in two separate arrays.
18. Write a C program to search an element in an array.
19. Write a C program to sort array elements in ascending or descending order.
20. Write a C program to sort even and odd elements of an array separately.
21. Write a C program to left rotate an array.
22. Write a C program to right rotate an array.

Matrix Programs

1. Write a C program to add two matrices.
2. Write a C program to subtract two matrices.
3. Write a C program to perform Scalar matrix multiplication.
4. Write a C program to multiply two matrices.
5. Write a C program to check whether two matrices are equal or not.
6. Write a C program to find the sum of main diagonal elements of a matrix.
7. Write a C program to find the sum of minor diagonal elements of a matrix.
8. Write a C program to find the sum of each row and column of a matrix.
9. Write a C program to interchange diagonals of a matrix.
10. Write a C program to find the upper triangular matrix.
11. Write a C program to find a lower triangular matrix.
12. Write a C program to find the sum of the upper triangular matrix.
13. Write a C program to find the sum of the lower triangular matrix.
14. Write a C program to find the transpose of a matrix.
15. Write a C program to find the determinant of a matrix.
16. Write a C program to check the Identity matrix.
17. Write a C program to check Sparse matrices.
18. Write a C program to check Symmetric matrices.

String Programs

1. Write a C program to find the length of a string.
2. Write a C program to copy one string to another string.
3. Write a C program to concatenate two strings.
4. Write a C program to compare two strings.
5. Write a C program to convert lowercase string to uppercase.
6. Write a C program to convert uppercase string to lowercase.
7. Write a C program to toggle the case of each character of a string.
8. Write a C program to find the total number of alphabets, digits or special characters in a string.
9. Write a C program to count the total number of vowels and consonants in a string.
10. Write a C program to count the total number of words in a string.
11. Write a C program to find the reverse of a string.
12. Write a C program to check whether a string is palindrome or not.
13. Write a C program to reverse order of words in a given string.
14. Write a C program to find the first occurrence of a character in a given string.
15. Write a C program to find the last occurrence of a character in a given string.
16. Write a C program to search all occurrences of a character in a given string.
17. Write a C program to count occurrences of a character in a given string.
18. Write a C program to find the highest frequency character in a string.
19. Write a C program to find the lowest frequency character in a string.
20. Write a C program to count the frequency of each character in a string.
21. Write a C program to remove the first occurrence of a character from a string.
22. Write a C program to remove the last occurrence of a character from a string.
23. Write a C program to remove all occurrences of a character from a string.
24. Write a C program to remove all repeated characters from a given string.
25. Write a C program to replace the first occurrence of a character with another in a string.
26. Write a C program to replace the last occurrence of a character with another in a string.
27. Write a C program to replace all occurrences of a character with another in a string.

Pointers Programs

1. Write a C program to create, initialize and use pointers.
2. Write a C program to add two numbers using pointers.
3. Write a C program to swap two numbers using pointers.
4. Write a C program to input and print array elements using a pointer.
5. Write a C program to copy one array to another using pointers.
6. Write a C program to swap two arrays using pointers.
7. Write a C program to reverse an array using pointers.
8. Write a C program to search an element in an array using pointers.
9. Write a C program to access a two dimensional array using pointers.
10. Write a C program to add two matrices using pointers.
11. Write a C program to multiply two matrices using pointers.
12. Write a C program to find length of string using pointers.
13. Write a C program to copy one string to another using pointers.
14. Write a C program to concatenate two strings using pointers.
15. Write a C program to compare two strings using pointers.
16. Write a C program to find the reverse of a string using pointers.
17. Write a C program to sort arrays using pointers.
18. Write a C program to return multiple values from a function using pointers.

Class-object Programs in python

1 . Create a class Animal with a constructor that initializes the species attribute. Create an object of this class and print the species.

2.Write a class Laptop with a constructor that takes brand and price as arguments. Create an object of this class and display the brand and price.

3.Define a class Movie with a constructor that accepts title and year. Create multiple objects and print their attributes.

4.Create a class Employee with a constructor that accepts name, position, and salary. Create an object and display its details.

5.Define a class House with a constructor that initializes rooms and area. Create two different house objects with different values for these attributes.

6.Write a class Pen with a constructor that takes color and ink\_level. Create an object and print the values of the attributes.

7.Create a class Phone with a constructor that initializes brand and model. Instantiate the class with different phone models and print their details.