List of basic programming exercises

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

List of bitwise operators exercises

Below is a set of programming exercises that can be used by a beginner or an intermediate programmer to master their skills on bitwise operator.

1. Write a C program to check Least Significant Bit (LSB) of a number is set or not.
2. Write a C program to check Most Significant Bit (MSB) of a number is set or not.
3. Write a C program to get nth bit of a number.
4. Write a C program to set nth bit of a number.
5. Write a C program to clear nth bit of a number.
6. Write a C program to toggle nth bit of a number.
7. Write a C program to get highest set bit of a number.
8. Write a C program to get lowest set bit of a number.
9. Write a C program to count trailing zeros in a binary number.
10. Write a C program to count leading zeros in a binary number.

11. Write a C program to flip bits of a binary number using bitwise operator.
12. Write a C program to count total zeros and ones in a binary number.
13. Write a C program to rotate bits of a given number.
14. Write a C program to convert decimal to binary number system using bitwise operator.
15. Write a C program to swap two numbers using bitwise operator.
16. Write a C program to check whether a number is even or odd using bitwise operator.

List of conditional operators programming exercises

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

List of `if...else` programming exercises

1. Write a C program to find maximum between two numbers.
2. Write a C program to find maximum between three numbers.
3. Write a C program to check whether a number is negative, positive or zero.
4. Write a C program to check whether a number is divisible by 5 and 11 or not.
5. Write a C program to check whether a number is even or odd.
6. Write a C program to check whether a year is leap year or not.
7. Write a C program to check whether a character is alphabet or not.
8. Write a C program to input any alphabet and check whether it is vowel or consonant.
9. Write a C program to input any character and check whether it is alphabet, digit or special character.
10. Write a C program to check whether a character is uppercase or lowercase alphabet.
11. Write a C program to input week number and print week day.
12. Write a C program to input month number and print number of days in that month.
13. Write a C program to count total number of notes in given amount.
14. Write a C program to input angles of a triangle and check whether triangle is valid or not.
15. Write a C program to input all sides of a triangle and check whether triangle is valid or not.

16. Write a C program to check whether the triangle is equilateral, isosceles or scalene triangle.
17. Write a C program to find all roots of a quadratic equation.
18. Write a C program to calculate profit or loss.
19. Write a C 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 C 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 C 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 100 units Rs. 1.20/unit
    For unit above 250 Rs. 1.50/unit
    An additional surcharge of 20% is added to the bill

List of switch case programming exercises

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

List of loop programming exercises

1. Write a C program to print all natural numbers from 1 to n. - using while loop

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

41. Write a C program to convert Binary to Hexadecimal number system.
42. Write a C program to convert Octal to Binary number system.
43. Write a C program to convert Octal to Decimal number system.
44. Write a C program to convert Octal to Hexadecimal number system.
45. Write a C program to convert Decimal to Binary number system.
46. Write a C program to convert Decimal to Octal number system.
47. Write a C program to convert Decimal to Hexadecimal number system.
48. Write a C program to convert Hexadecimal to Binary number system.
49. Write a C program to convert Hexadecimal to Octal number system.
50. Write a C program to convert Hexadecimal to Decimal number system.
51. Write a C program to print Pascal triangle upto n rows.
52. Star pattern programs - Write a C program to print the given star patterns.
53. Number pattern programs - Write a C program to print the given number patterns.

List of star pattern programming exercises

```
*****
*****
*****
*****
*****
```

Square Star Pattern

```
*****
*   *
*   *
*   *
*****
```

Hollow Square Star Pattern

```
*****
** **
* * *
** **
*****
```

Hollow Square Star Pattern with Diagonal

```
    *****
   *****
  *****
 *****
*****
```

Rhombus Star Pattern

```
    *****
   *    *
  *    *
 *    *
*****
```

Hollow Rhombus Star Pattern

```
*****
 *****
  *****
   *****
    *****
```

Mirrored Rhombus Star Pattern

```
*****
 *    *
  *    *
   *    *
    *****
```

Hollow Mirrored Rhombus Star Pattern

```
*
**
***
****
*****
```

Right Triangle Star Pattern

```
*
**
* *
*   *
*****
```

Hollow Right Triangle Star Pattern

Mirrored Right Triangle Star Pattern

Hollow Mirrored Right Triangle Star Pattern

Inverted Right Triangle Star Pattern

Hollow Inverted Right Triangle Star Pattern

Inverted Mirrored Right Triangle Star Pattern

Hollow Inverted Mirrored Right Triangle Star Pattern

```
    *
   ***
  *****
 *******
*********
```

Pyramid Star Pattern

```
    *
   * *
  *   *
 *     *
*********
```

Hollow Pyramid Star Pattern

```
*********
 *******
  *****
   ***
    *
```

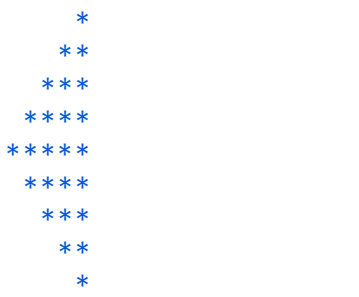
Inverted Pyramid Star Pattern

```
*********
 *     *
  *   *
   * *
    *
```

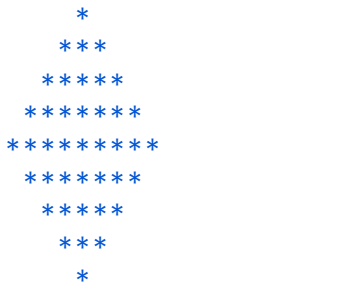
Hollow Inverted Pyramid Star Pattern

```
*
**
***
****
*****
****
***
**
*
```

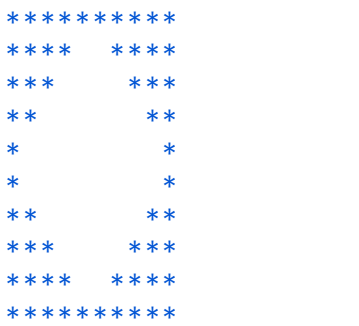
Half Diamond Star Pattern



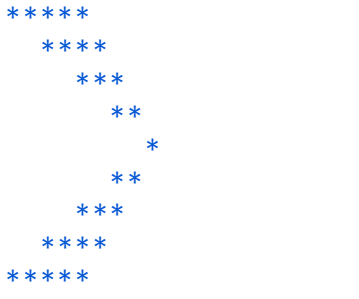
Mirrored Half Diamond Star Pattern



Diamond Star Pattern



Hollow Diamond Star Pattern



Right Arrow Star Pattern

Left Arrow Star Pattern

Plus Star Pattern

X Star Pattern

Eight Star Pattern

```
  *****     *****
 *******   *******
********* *********
*******************
 *****************
  ***************
   *************
    ***********
     *********
      *******
       *****
        ***
         *
```

Heart Star Pattern

```
  *****     *****
 *******   *******
********* *********
*****Codeforwin****
 *****************
  ***************
   *************
    ***********
     *********
      *******
       *****
        ***
         *
```

Heart Star Pattern with Name

List of Number pattern programming exercises

Square number patterns

```
11111
11111
11111
11111
11111
```

Number pattern 1

```
11111
```

```
00000
11111
00000
11111
```

Number pattern 2

```
01010
01010
01010
01010
01010
```

Number pattern 3

```
11111
10001
10001
10001
11111
```

Number pattern 4

```
11111
11111
11011
11111
11111
```

Number pattern 5

```
10101
01010
10101
01010
10101
```

Number pattern 6

```
11011
11011
00000
11011
11011
```

Number pattern 7

```
10001
01010
00100
01010
10001
```

Number pattern 8

```
01110
10001
10001
10001
01110
```

Number pattern 9

```
11111
22222
33333
44444
55555
```

Number pattern 10

```
12345
12345
12345
12345
12345
```

Number pattern 11

```
12345
23456
34567
45678
56789
```

Number pattern 12

```
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
```

Number pattern 13

```
55555
54444
54333
54322
54321
```

Number pattern 14

```
12345
23455
34555
45555
55555
```

Number pattern 15

```
12345
23451
34521
45321
54321
```

Number pattern 16

```
12345
21234
32123
43212
54321
```

Number pattern 17

```
5 5 5 5 5 5 5 5 5
5 4 4 4 4 4 4 4 5
5 4 3 3 3 3 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 2 1 2 3 4 5
5 4 3 2 2 2 3 4 5
5 4 3 3 3 3 3 4 5
5 4 4 4 4 4 4 4 5
5 5 5 5 5 5 5 5 5
```

Number pattern 18

```
1     2     3     4     5
16    17    18    19    6
15    24    25    20    7
14    23    22    21    8
13    12    11    10    9
```

Number pattern 19

Triangle Easy Number Patterns

```
1
22
333
4444
55555
```

Number pattern 20

```
55555
4444
333
22
1
```

Number pattern 21

```
11111
2222
333
44
5
```

Number pattern 22

```
5
44
333
2222
11111
```

Number pattern 23

```
1
12
123
1234
12345
```

Number pattern 24

```
12345
1234
123
12
1
```

Number pattern 25

```
1
21
321
4321
54321
```

Number pattern 26

```
54321
4321
321
21
1
```

Number pattern 27

```
5
54
543
5432
54321
```

Number pattern 28

```
54321
5432
543
54
5
```

Number pattern 29

```
5
45
345
2345
12345
```

Number pattern 30

```
12345
2345
345
45
5
```

Number pattern 31

```
1
23
345
4567
56789
```

Number pattern 32

```
56789
4567
345
23
1
```

Number pattern 33

```
13579
3579
579
79
9
```

Number pattern 34

Triangle 0,1 Easy Number Patterns

```
1
10
101
1010
10101
```

Number pattern 35

```
1
00
111
0000
11111
```

Number pattern 36

```
1
01
010
1010
10101
```

Number pattern 37

```
1
11
101
1001
11111
```

Number pattern 38

Triangle Hard Number Patterns

```
1
123
12345
1234567
123456789
```

Number pattern 39

```
1
24
135
2468
13579
```

Number pattern 40

```
1
131
13531
1357531
135797531
```

Number pattern 41

```
2
242
24642
2468642
2468108642
```

Number pattern 42

```
1
121
12321
1234321
123454321
```

Number pattern 43

```
1
32
4543
567654
67898765
```

Number pattern 44

```
1
2  3
4  5  6
7  8  9  10
11 12 13 14 15
```

Number pattern 45

```
1
21
123
4321
12345
```

Number pattern 46

```
1
23
4567
89123456
7891234567891234
```

Number pattern 47

```
1         1
12       21
123     321
1234   4321
1234554321
```

Number pattern 48

```
1
2  6
3  7  10
4  8  11 13
5  9  12 14 15
```

Number pattern 49

```
1
2  4
7  11 16
22 29 37 46
56 67 79 92 106
```

Number pattern 50

```
1
3  2
4  5  6
10 9  8  7
```

```
11 12 13 14 15
```

Number pattern 51

```
1
22
333
2222
11111
```

Number pattern 52

```
N = 12345

12345
1234
123
12
1
```

Number pattern 53

```
N = 12345

12345
2345
345
45
5
```

Number pattern 54

Diamond Number Patterns

```
1
12
123
1234
12345
1234
123
12
1
```

Number pattern 55

```
1
123
12345
1234567
123456789
1234567
12345
123
1
```

Number pattern 56

```
1
121
12321
1234321
123454321
1234321
12321
121
1
```

Number pattern 57

```
*
*1*
*121*
*12321*
*1234321*
*123454321*
*1234321*
*12321*
*121*
*1*
*
```

Number pattern 58

Tricky Number Patterns

```
1       1
 2     2
  3   3
   4 4
    5
   4 4
  3   3
 2     2
```

1 1