 Level 1 – Basic Loop Logic

1. Sum of 10 numbers
2. Find factorial of a given number (n!)
3. Print sum series 1 + 4 + 9 + 16 + … + n
4. Print digits of a number in reverse order
5. Print sum of digits of a given number
6. Perform multiplication without using * operator
7. Calculate x^y without using power operator

 Level 2 – Loops with Conditional Logic (if inside loop)

8. Print numbers divisible by 2 between two numbers
9. Find factors of a given number
10. Find the sum of all divisors of a number
11. Find the GCD (Greatest Common Divisor) of two numbers
12. Find the LCM (Least Common Multiple) of two numbers

13. Check whether a number is a Perfect Number.

(A perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself. A divisor of an integer x is an integer that can divide x evenly.)

14. Check whether a number is a Harshad Number.

(An integer num which is divisible by the sum of its digits is said to be a Harshad number.)

15. Check whether a number is Prime or Not

16. Print the Fibonacci Series

17. Find the sum of series 1 – 2 + 3 – 4 + 5 – 6 + … ± n.

Check if given number is a Happy Number or not

Check if given number is a Ugly Number or not.

(a n ugly number is a positive integer which does not have a prime factor other than 2, 3, and 5.)

1. Find the sum of 1+(1+2)+(1+2+3)+...(1+2+3+...+n)
2. Power without using multiplication and power operator
3. implement a pattern

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

4. implement a pattern

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

5. implement a pattern

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

6. Find a Largest Element in array
7. Find a Smallest Element in array
8. Search for an element in Array
9. Reverse an Array Elements

27.

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

28.

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

29.

```
A
B B
C C C
D D D D
E E E E E
```

30.

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

31.

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

32.

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

33.

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

34.

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

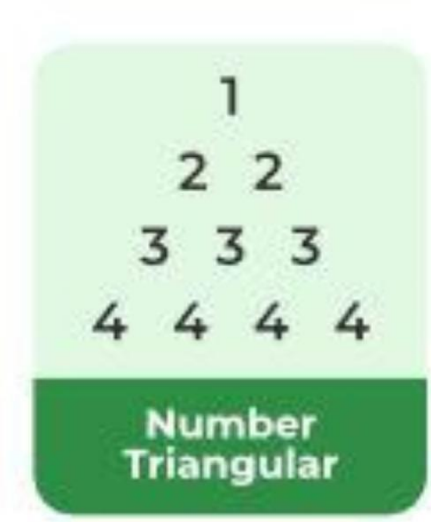
35.

```
          1
        1   1
      1   2   1
    1   3   3    1
  1  4    6   4   1
 1  5   10   10  5   1
```

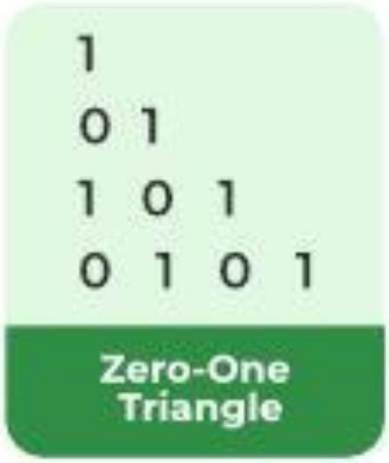
36.

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

37.


1
2 2
3 3 3
4 4 4 4
Number Triangular

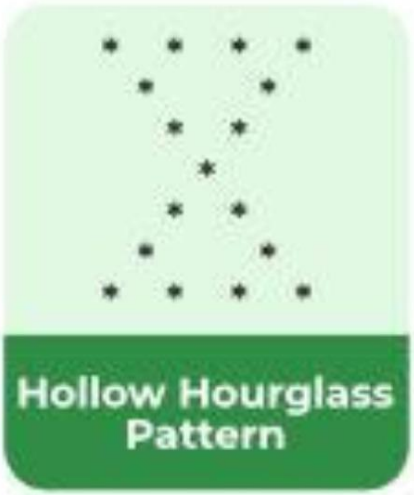
38.


1
0 1
1 0 1
0 1 0 1
Zero-One Triangle

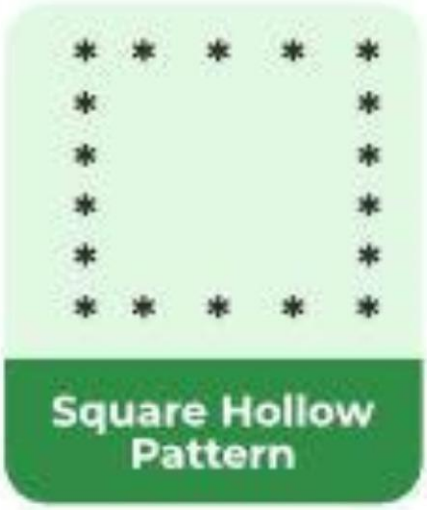
39.


Diamond Pattern

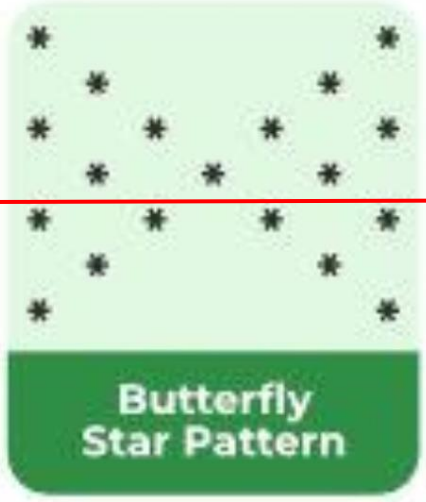
40.



41.



42.


Butterfly
Star Pattern

43.


1
2 1 2
3 2 1 2 3
4 3 2 1 2 3 4
Palindrome
Triangular

Level 4

44. Write a program to input and display elements of an array.

45. Write a program to find the sum and average of elements in an array.

46. Write a program to find the maximum and minimum elements in an array.

47. Write a program to count total even and odd numbers in an array.

48. Write a program to reverse the elements of an array.

49. Write a program to copy all elements from one array to another.

50. Write a program to search a given element in an array (Linear Search).

51. Write a program to sort array elements in ascending order.

52. Write a program to find the second largest and second smallest elements in an array.

53. Write a program to insert an element at a specific position in an array.

54. Write a program to delete an element from a specific position in an array.

55. Write a program to merge two arrays into a single array.

56. Write a program to find the frequency of each element in an array.

57. Write a program to remove duplicate elements from an array.

58. Write a program to display unique elements of an array.

59. Write a program to count the total number of duplicate elements in an array.

60. Write a program to find the sum of diagonal elements of a 2D matrix.

61. Write a program to find the transpose of a matrix.

62. Write a program to multiply two matrices.

63. Write a program to find the intersection of two arrays.

64. Write a program to find the union of two arrays.

65. Write a program to rotate array elements to the left or right.

66. Write a program to sort array elements using the selection sort technique.

	1	2	3	4	5	6	7
i\j	7	6	5	4	3	2	1
7	**27**						
6	**16**	**27**					
5	**15**	17	**26**				
4	**7**	14	18	**25**			
3	**6**	8	13	19	**24**		
2	**2**	5	9	12	20	**23**	
1	**1**	3	4	10	11	21	**22**