1. Count vowels in a string

Description: Count the number of vowels (a, e, i, o, u) in a given string.

Example:

Input:

"SkyTeams Internship"

Output:

6

---

2. Reverse a number

Description: Reverse the digits of a number.

Example:

Input:

1234

Output:

4321

---

3. Sum of digits of a number

Description: Calculate the sum of all digits in a given number.

Example:

Input:

12345

Output:

15

---

4. Display all factors of a number

Description: Print all numbers that divide the given number exactly.

Example:

Input:

12

Output:

1, 2, 3, 4, 6, 12

---

5. Write a function to find the largest element in an array

Description: Given an array of numbers, return the largest value.

Example:
Input:
[2, 8, 5, 3, 9]
Output:
9

---

6. Write a function to find the smallest element in an array
Description: Find and return the smallest number in an array.
Example:
Input:
[4, 7, 1, 9, 2]
Output:
1

---

7. Write a function to find the sum of all elements in an array
Description: Calculate the total sum of all array elements.
Example:
Input:
[1, 2, 3, 4, 5]
Output:
15

---

8. Write a function to check if an array contains a specific element
Description: Determine if a given element exists in the array.
Example:
Input:
Array = [3, 6, 9, 12], Element = 6
Output:
Found

---

9. Write a function to count occurrences of an element in an array
Description: Count how many times a given number appears in the array.
Example:
Input:

Array = [2, 3, 2, 5, 2], Element = 2

Output:

3

---

10. Check whether a number is prime

Description: Determine if a number is divisible only by 1 and itself.

Example:

Input:

17

Output:

Prime

Input:

20

Output:

Not Prime

---

11. Generate all prime numbers up to N

Description: List all prime numbers up to a given limit using a loop.

Example:

Input:

10

Output:

2, 3, 5, 7

---

12. Check for palindrome number

Description: Check if a number reads the same backward and forward.

Example:

Input:

121

Output:

Palindrome

Input:

123

Output:

Not Palindrome

---

13. Power of a number (without built-in function)
Description: Compute a^b using repeated multiplication.
Example:
Input:
2, 5
Output:
32

---

14. Find factorial of a number
Description: Compute N! using iterative approach.
Example:
Input:
5
Output:
120

---

15. Check for Armstrong number
Description: A number is Armstrong if the sum of its digits raised to the power of the number of digits equals the number itself.
Example:
Input:
153
Output:
Armstrong
Input:
123
Output:
Not Armstrong

---

16. Fibonacci sequence
Description: Print the Fibonacci sequence up to N terms.
Example:
Input:
7

Output:
0, 1, 1, 2, 3, 5, 8

---

17. Pattern Printing – Right-angled Triangle
Example:
Input:
4
Output:

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

---

18. Pattern Printing – Right-aligned Triangle
Example:
Input:
4
Output:

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

---

19. Pattern Printing – Pyramid
Example:
Input:
5
Output:

```
  *
 ***
```

*****

****

****

---

20. Body Mass Index (BMI) Calculator
Description: Given weight (kg) and height (m), calculate BMI using:
BMI = weight / (height * height)
Then categorize it into:
• Underweight: BMI < 18.5
• Normal weight: 18.5 ≤ BMI < 25
• Overweight: 25 ≤ BMI < 30
• Obese: BMI ≥ 30
Example:
Input:
70, 1.75
Output:
BMI = 22.86 (Normal weight)

---

21. Password Strength Checker
Description: A strong password must:
• Be at least 8 characters long.
• Contain at least one uppercase letter, one lowercase letter, and one number.
Example:
Input:
MyPass123
Output:
Strong
Input:
pass
Output:
Weak

---

22. Collatz Sequence (Hailstone Numbers)
Description:

Take a number n.
• If n is even, divide it by 2.
• If n is odd, multiply it by 3 and add 1.
• Repeat until n = 1.
• Count the number of steps to reach 1.
Example:
Input:
6
Output:
6 → 3 → 10 → 5 → 16 → 8 → 4 → 2 → 1 (Steps: 8)

---

23. Calculate Factorial Using Recursion
Description: Implement factorial(n), which calculates the factorial of n using recursion.
Example:
Input:
5
Output:
120

---

24. Generate Pascal's Triangle
Description: Implement pascalTriangle(rows), which prints Pascal's Triangle up to n rows.
Example:
Input:
5
Output:
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

---

25. Number Guessing Game
Description:
• The program randomly selects a number between 1 and 100.
• The user must guess the number.

• The program gives hints like “Too High” or “Too Low”.
• Continue until the user guesses correctly.

---

26. Convert Decimal to Binary

Description: Convert a decimal number to its binary representation.
Example:
Input:
10
Output:
1010

---

27. Find Unique Elements in an Array

Description: Return an array with only unique elements from the input array.
Example:
Input:
[1, 2, 2, 3, 4, 4, 5]
Output:
[1, 2, 3, 4, 5]

---

28. Remove Duplicates from an Array

Description: Remove duplicate elements efficiently from an array.
Example:
Input:
[3, 1, 3, 5, 1]
Output:
[3, 1, 5]

---

29. Check if Two Arrays Are Equal

Description: Compare two arrays and determine if they contain the same elements in the same order.
Example:
Input:

[1, 2, 3], [1, 2, 3]
Output:
Equal

---

30. Find Missing Number in Array (1 to N)

Description: Given numbers from 1 to N with one missing, find the missing number.
Example:
Input:
[1, 2, 4, 5]
Output:
3