1. **Scenario:** A user is required to enter a valid number in a form, but users sometimes input invalid data.

   Write logic to repeatedly prompt the user until they enter a valid integer.

   a. Use a while loop
   b. Until the input is valid, the loop is executed
   c. When the condition is met, break the loop entirely

2. **Scenario:** A data analysis tool processes a list of numbers and needs to identify the most frequently occurring value.

   Write logic to find the most frequently occurring number in a given list.

   a. Use a dictionary to store all unique elements of the list
   b. Whenever the element is encountered, update the count in the dictionary for the appropriate key (unique element)
   c. Collect the dictionary values and find the maximum

3. **Scenario:** A text-processing application needs to compare words and check if they are anagrams (contain the same letters in a different order).

   Write logic to determine whether two given strings are anagrams.

   a. Use set() function to convert the words into sets
   b. Iterate the two sets using for loop, with comparing operator
   c. If both sets have the same letters, then they are anagrams

4. **Scenario:** A speech analysis program needs to count the number of vowel sounds in a given input.

   Write logic to count the number of vowels in a given string.

   a. Iterate throughout the string
   b. Initialize a count variable
   c. Inside the iteration, check for the vowels ‘a’, ‘e’, ‘i’, ‘o’, ‘u’, both in uppercase and lower case
   d. If there is any vowels found, then increment the count
   e. Return the total count after iteration

5. **Scenario:** A text-editing software includes a feature to reverse the order of words in a sentence for stylistic effects.

   Write logic to reverse the order of words in a sentence while keeping the words themselves intact.

   a. Use a list’s split() function, to obtain the words separately
   b. Reverse the order of the list and include spaces

6. **Scenario:** A missing number is detected in a sequence of values stored in a database.

Write logic to find the missing number in a list containing n-1 numbers from 1 to n.

a. Iterate the number sequence
b. Knowing the sequence pattern, the number can be guessed
c. The number can be in a AP or a GP
d. Use the formula, when the difference is exponential, it is a GP
e. If the difference between terms is same, then the sequence is in AP
f. Then the nth term can be found using the formula

7. **Scenario:** An ATM machine processes withdrawal requests and needs to ensure that users cannot withdraw more than their account balance.

   Write logic to allow a withdrawal only if the balance is sufficient.

   a. Declare the minimum balance
   b. Calculate Account balance - withdraw amount
   c. If the amount is lesser than the minimum balance, then don't allow withdrawal
   d. Else, withdrawal is allowed

8. **Scenario:** A system needs to verify whether a given dataset contains duplicate entries.

   Write logic to check whether a given list contains duplicate values.

   a. Convert the list into a set and find the length of the set
   b. Obtain the length of the list given
   c. If both lengths are same, then there is no duplicates
   d. Else there are duplicates

9. **Scenario:** A digital calculator includes a feature to sum the digits of a number for verification purposes.

   Write logic to calculate the sum of all digits in a given integer.

   a. Declare a sum variable
   b. Use a while loop to loop till the iterations are over
   c. Obtain the last digit using modulo operator
   d. Add the digit in the sum variable
   e. Remove the last digit
   f. Continue till the last digit is 0
   g. Return the sum variable

10. **Scenario:** A language-learning app wants to verify whether a given sentence is a pangram (contains every letter of the alphabet at least once).
    Write logic to check if a given sentence is a pangram.

    a. Convert the list of strings into a set
    b. Check the length of the set
    c. If the length is 26
    d. Then the sentence is a panagram