### **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.

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**Logic:**

1. Start a ‘while’ loop to repeatedly ask the user for a valid input.
2. Get the user number.
3. Use ‘if’ condition to check if the input number is valid (like num > 0).
4. If valid, exit the loop and continue the program.
5. If invalid, print ’Invalid number’ and continue with the loop.

### **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.

**Logic:**

1. Convert the list to a dataframe.
2. Find the frequency of the unique values using ‘value\_counts’ function.
3. The most frequently used number and its count are displayed on the screen.

### **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.

**Logic**:

1. Get the 2 strings.
2. Use ‘for’ loop to move through each character in the first string.
3. Use ‘if’ condition and check if that character is present in second string.
4. If all the characters are present in the second string, then print ‘The given words are anagrams’.
5. Else print ‘The given words are not anagrams’.

### **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.

**Logic:**

1. Get the word from the user.
2. Define the vowels in a list.
3. Create an empty list to store the vowels.
4. Use ‘for’ loop and ‘if’ condition to check whether the character in the user defined word is present in the vowels list.
5. If yes, append that vowel to the empty list.
6. Finally, print the length of the empty list.

### **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.

**Logic:**

1. Get the input sentence.
2. Using split() function, separate the words in the sentence into a list of words.
3. Use the string slicing method to reverse the order of words.
4. Use the join() method to combine the reversed words and printit.

### **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.

**Logic:**

1. Find the sum of n numbers.
2. Find the sum of n-1 numbers.
3. Subtracting the sum of n-1 numbers from the sum of n numbers gives the missing number.

### **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.

**Logic:**

1. Get the withdrawal amount from the customer.
2. Use ‘if’ condition and check whether the withdrawal amount is <= balance amount.
3. If yes, allow withdrawal of money.
4. Otherwise, print ‘Insufficient balance’.

### **Scenario:** A system needs to verify whether a given dataset contains duplicate entries. Write logic to check whether a given list contains duplicate values.

**Logic:**

1. Input the list of numbers.
2. Convert the list to set.
3. Check whether the lengths of list and set are equal.
4. If yes, print ‘There is no duplicate value’.
5. Else print ‘There is duplicate value’.

### **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.

**Logic:**

1. Get the integer using ‘input’ function.
2. Assign 0 to variable like, add=0.
3. Using ‘for’ loop, add the digits in the integer.
4. Print the final added number.

### **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.

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**Logic:**

1. Convert the alphabet list to lowercase.
2. Get the user input sentence and convert it to lowercase.
3. Check whether the sentence is a subset of alphabet list.
4. If yes, print ‘The given sentence is a pangram’.
5. Else print ‘The given sentence is not a pangram’.