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

* User Enter the number
* If the input is not a valid integer, display an error message.
* Keep asking for input until the user enters a valid integer.
* Once a valid integer is entered, proceed with further processing.

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

**Logic:**

* Enter the list of numbers.
* Create a dictionary or map to store the frequency of each number.
* Traverse the list and update the frequency count for each number.
* Identify the number with the highest frequency.
* Return or display the most frequently occurring number.

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

* Enter the two input strings.
* Remove any spaces and convert both strings to lowercase.
* Sort the characters of both strings.
* If the sorted versions of both strings are identical, they are anagrams.
* Otherwise, they are not anagrams.

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

**Logic:**

* Enter the input string.
* Define a set of vowel characters (a, e, i, o, u in lowercase and uppercase).
* Initialize a counter to zero.
* Loop through each character in the string:
* If the character is a vowel, increase the counter.
* Return or display the total vowel count.

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

### Read the input sentence.

* Split the sentence into a list of words.
* Reverse the order of words in the list.
* Join the words back together into a sentence.
* Return or display the reversed sentence.

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

**Logic:**

* Enter the list of numbers.

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* Calculate the expected sum of numbers from 1 to n using the formula n \* (n + 1) / 2.
* Calculate the actual sum of numbers in the given list.
* Subtract the actual sum from the expected sum to find the missing number.
* Return or display the missing number.

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

* Enter the user's account balance.
* Prompt the user to enter a withdrawal amount.
* Check if the withdrawal amount is less than or equal to the balance.
* If yes, deduct the amount and display a success message.
* If no, display an error message stating insufficient funds.

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

* Enter the list of values.
* Create an empty set to store unique values.
* Loop through each value in the list:
* If the value is already in the set, a duplicate exists.
* Otherwise, add the value to the set.
* If duplicates are found, return True; otherwise, return False.

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

### Logic:

* Enter the input number.
* Convert the number into individual digits.
* Initialize a sum variable to zero.
* Loop through each digit and add it to the sum variable.
* Return or display the sum of the digits.

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

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* Enter the input sentence.
* Convert the sentence to lowercase and remove non-alphabetic characters.
* Create a set to store unique letters.
* Loop through each character in the sentence:
* If the character is a letter, add it to the set.
* If the size of the set is 26 (i.e., contains all letters from 'a' to 'z'), the sentence is a pangram.
* Otherwise, it is not a pangram.

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