SR UNIVERSITY

School of Computer Science and Artificial Intelligence

Lab Assignment # 4.2

Program	**: B. Tech (CSE)**
Specialization	**:**
Course Title	**: AI Assisted coding**
Course Code	**:**
Semester	**: II**
Academic Session	**: 2025-2026**
Name of Student	**: Rohan beri**
Enrollment No.	**: 2403A51L09**
Batch No.	**: 51**
Date	**:20-01-2026**

Submission Starts here

Task Description-1

- Zero-shot: Prompt AI with only the instruction. Write a Python function to determine
- whether a given number is prime

```
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False
    return True
n=int(input())
print(is_prime(n))
```

```
7
True
```

Step-by-step explanation:

1. **Function Definition**
   - `def is_prime(n):`
   - This function takes an integer `n` as input and checks whether it is a prime number.
2. **Check for invalid prime numbers**
   - `if n <= 1:`
   - Numbers less than or equal to 1 are **not prime**, so the function returns `False`.

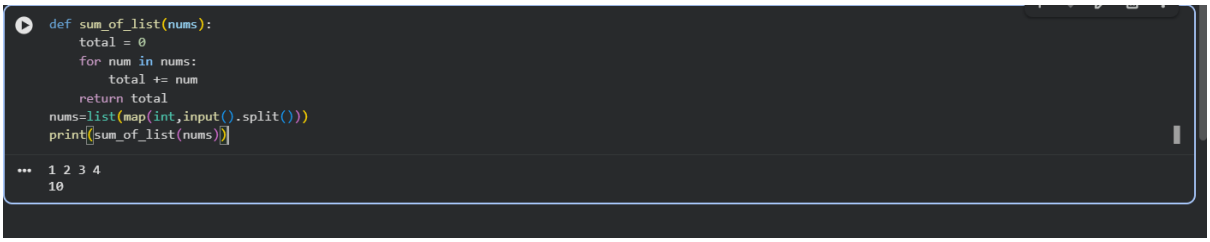
3. **Optimized loop for checking factors**
    - `for i in range(2, int(n ** 0.5) + 1):`
    - A number only needs to be checked for divisibility up to its **square root**.
    - If `n` has a factor greater than its square root, it must also have a smaller factor.
4. **Divisibility test**
    - `if n % i == 0:`
    - If `n` is divisible by any number `i` in the loop, it is **not prime**, so return `False`.
5. **Prime confirmation**
    - `return True`
    - If no divisors are found, the number is **prime**.

Example:

- `is_prime(7)` → `True` (7 has no divisors other than 1 and itself)
- `is_prime(10)` → `False` (10 is divisible by 2)

❖ **Task2:**One-shot:

❖ Provide one example: Input: [1, 2, 3, 4], Output: 10 to help AI generate a function that calculates the sum of elements in a list.



Step-by-step explanation:

1. **Function Definition**
    - `def sum_of_list(nums):`
    - This function accepts a list of numbers called `nums`.
2. **Initialize the sum**
    - `total = 0`
    - A variable `total` is created to store the running sum of the elements.
3. **Loop through the list**
    - `for num in nums:`
    - The loop goes through each element (`num`) in the list.
4. **Add each element**
    - `total += num`
    - Each number in the list is added to `total`.
5. **Return the result**
    - `return total`
    - After all elements are processed, the function returns the final sum.

Example using the one-shot input:

- Input: `[1, 2, 3, 4]`
- Calculation: `1 + 2 + 3 + 4 = 10`
- Output: `10`

- **Task3:Few-shot:**
- Give 2–3 examples to create a function that extracts digits from a alphanumeric string.

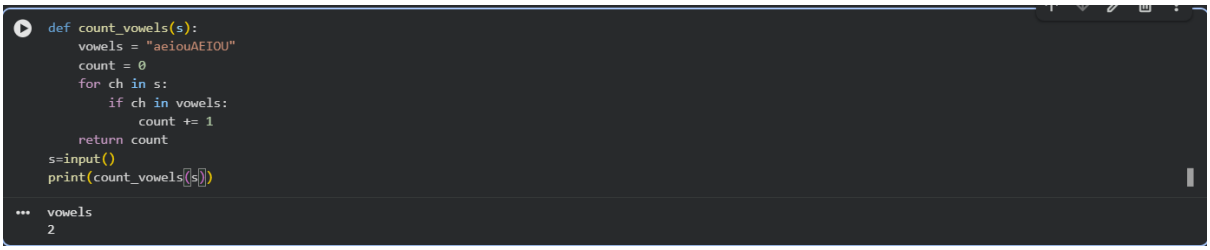
```
def extract_digits(s):
    result = ""
    for ch in s:
        if ch.isdigit():
            result += ch
    return result
s=input()
print(extract_digits(s))
```

```
12s34g5h6
123456
```

Explanation:

1. The function takes a string `s` as input.
2. An empty string `result` is initialized to store digits.
3. The function loops through each character in the string.
4. `isdigit()` checks whether the character is a digit (`0–9`).
5. If it is a digit, it is added to `result`.
6. Finally, the function returns all extracted digits as a string.

- **Task4:**Compare zero-shot vs few-shot prompting for generating a function that counts the number of vowels in a string.



```
def count_vowels(s):
    vowels = "aeiouAEIOU"
    count = 0
    for ch in s:
        if ch in vowels:
            count += 1
    return count
s=input()
print(count_vowels(s))
```

```
vowels
2
```

Step-by-step explanation:

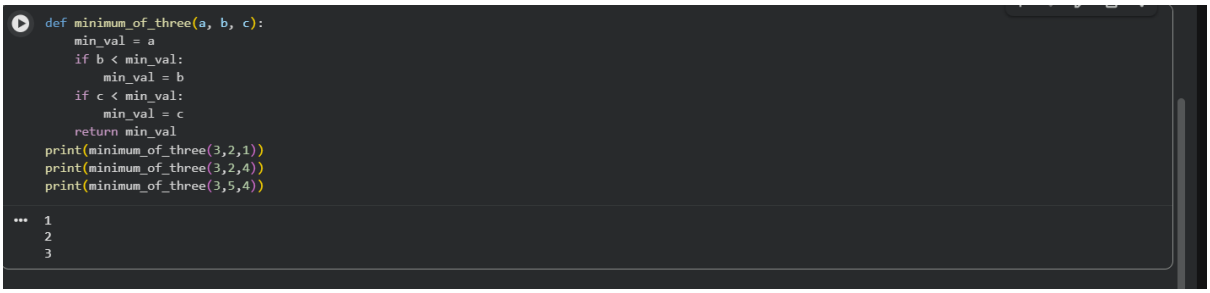
1. **Function definition**
   - `def count_vowels(s):`
   - Defines a function named `count_vowels` that takes a string `s` as input.

2. **Vowel list**
    - `vowels = "aeiouAEIOU"`
    - Stores all lowercase and uppercase vowels.
    - This ensures the function counts vowels regardless of case.
3. **Initialize counter**
    - `count = 0`
    - A variable to keep track of how many vowels are found.
4. **Loop through the string**
    - `for ch in s:`
    - Iterates over each character (`ch`) in the input string.
5. **Check for vowels**
    - `if ch in vowels:`
    - Checks whether the current character is a vowel.
6. **Increase count**
    - `count += 1`
    - Increments the counter whenever a vowel is found.
7. **Return result**
    - `return count`
    - Sends back the total number of vowels in the string.
8. **User input**
    - `s = input()`
    - Takes a string input from the user.

9. **Print output**

- `print(count_vowels(s))`
- Calls the function and prints the number of vowels

❖ **Task5:** Use few-shot prompting with 3 sample inputs to generate a function that determines the minimum of three numbers without using the built-in min() function.



```
def minimum_of_three(a, b, c):
    min_val = a
    if b < min_val:
        min_val = b
    if c < min_val:
        min_val = c
    return min_val
print(minimum_of_three(3,2,1))
print(minimum_of_three(3,2,4))
print(minimum_of_three(3,5,4))
```

```
1
2
3
```

Explanation:

- The function starts by assuming `a` is the smallest.
- It compares `b` with the current minimum and updates if needed.
- It then compares `c` with the updated minimum.
- Finally, it returns the smallest of the three numbers.