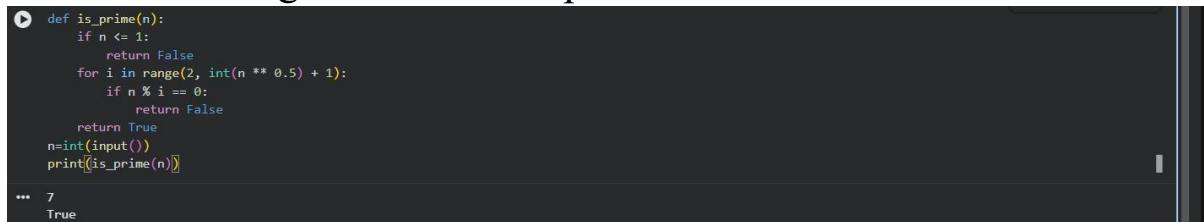


School of Computer Science and Artificial Intelligence**Lab Assignment # 4.2**

Program : B. Tech (CSE)
Specialization :
Course Title : AI Assisted coding
Course Code :
Semester : II
Academic Session : 2025-2026
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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.

```
def sum_of_list(nums):
    total = 0
    for num in nums:
        total += num
    return total
nums=list(map(int,input().split()))
print(sum_of_list(nums))
...
1 2 3 4
10
```

A screenshot of a code editor window. The code is written in Python. It defines a function named `sum_of_list` that takes a list of numbers as input. Inside the function, a variable `total` is initialized to 0, and then it iterates through each number in the list, adding it to `total`. Finally, it returns the total. Below the function definition, there is a line of code `nums=list(map(int,input().split()))` which reads a line of input from the user, splits it into individual numbers, and converts them into integers. The last line of code is `print(sum_of_list(nums))`, which calls the function and prints the result. The output of the code is shown as a terminal window below the code editor, displaying the input `1 2 3 4` and the output `10`.

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`.

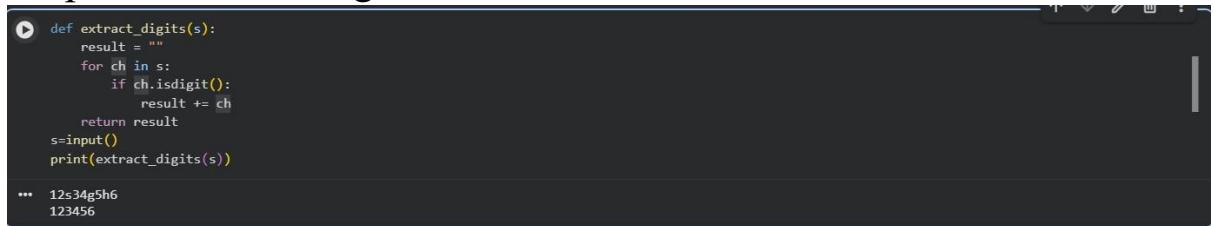
5. Return the result

- **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.



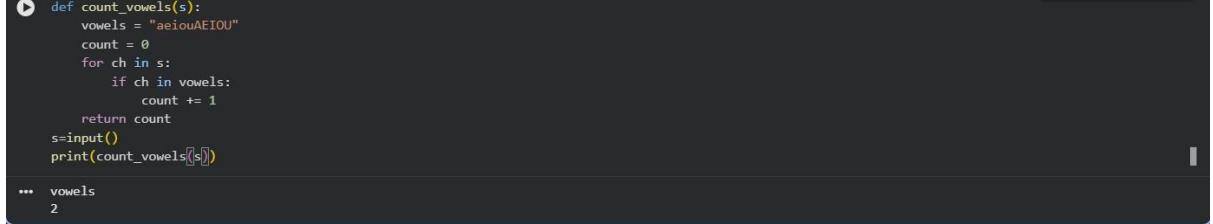
```
def extract_digits(s):
    result = ""
    for ch in s:
        if ch.isdigit():
            result += ch
    return result
s=input()
print(extract_digits(s))

...
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])

```

The screenshot shows a code editor window with a dark theme. It displays a Python script named 'count_vowels'. The script defines a function 'count_vowels' that takes a string 's' as input. Inside the function, a variable 'vowels' is set to the string 'aeiouAEIOU' (including both lowercase and uppercase vowels). A counter variable 'count' is initialized to 0. A for loop iterates over each character 'ch' in the input string 's'. If 'ch' is found in the 'vowels' string, its value is added to 'count'. Finally, the function returns the total count. Below the function definition, there is a line of code 's=input()' followed by a call to 'print(count_vowels[s])'. At the bottom left of the code editor, there is a line of text '... 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

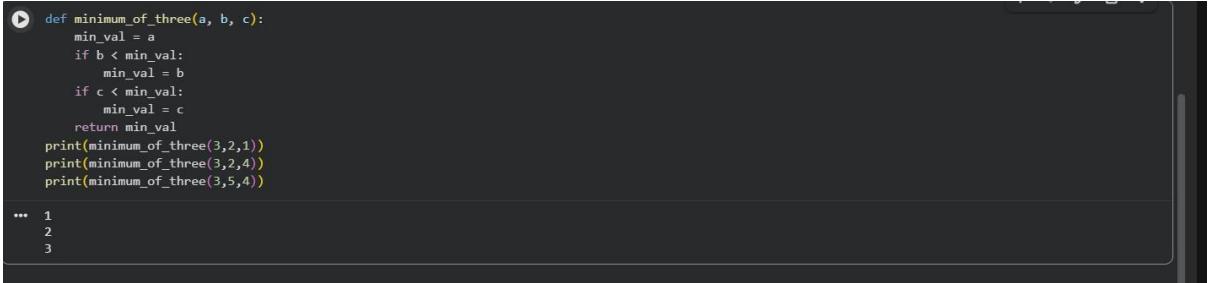
- `s = input()`

- 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.