Lab_Assignment_3.1

H.TNO-2303A51511

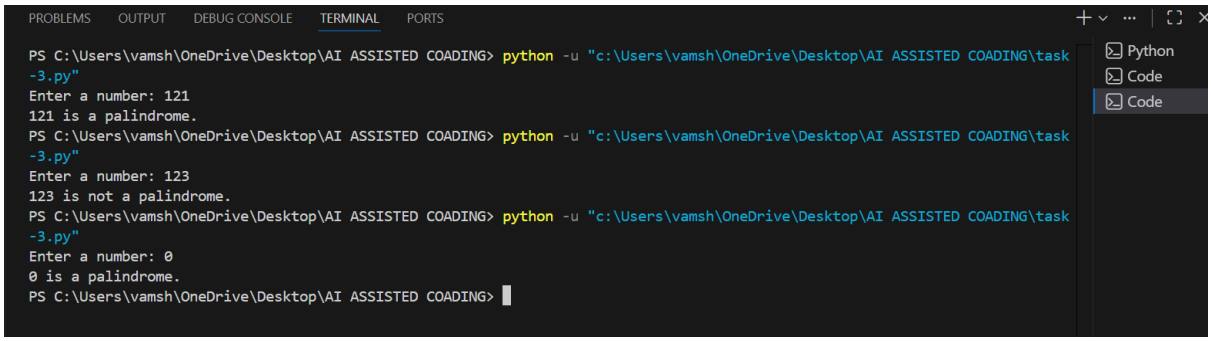
Batch-27

Question 1:

Prompt : Write a zero-shot prompt (without providing any examples) to generate a Python function that checks whether a given number is a palindrome.

Code:

```
def is_palindrome(num):
    # Convert the number to string
    str_num = str(num)

    # Check if the string is the same forwards and backwards
    return str_num == str_num[::-1]
# Test the function
number = int(input("Enter a number: "))
if is_palindrome(number):
    print(f"{number} is a palindrome.")
else:
    print(f"{number} is not a palindrome.")
```

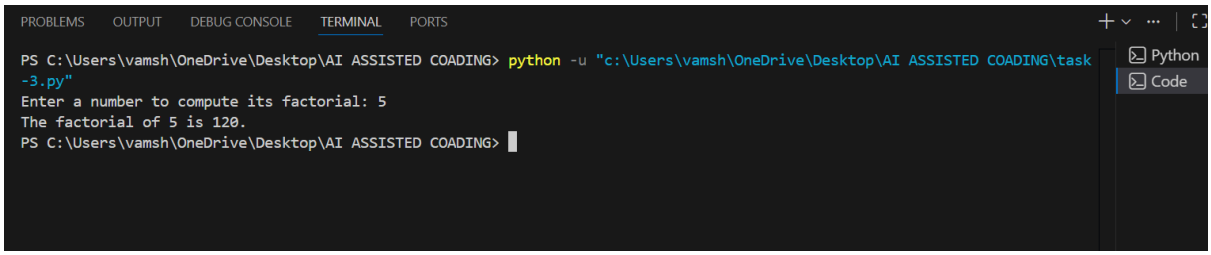


Question 2:

Prompt: Write a one-shot prompt by providing one input-output example and ask the AI to generate a Python function to compute the factorial of a given number.

Code:

```
def factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial(n - 1)
# Test the function
number = int(input("Enter a number to compute its factorial: "))
result = factorial(number)
print(f"The factorial of {number} is {result}.")
```



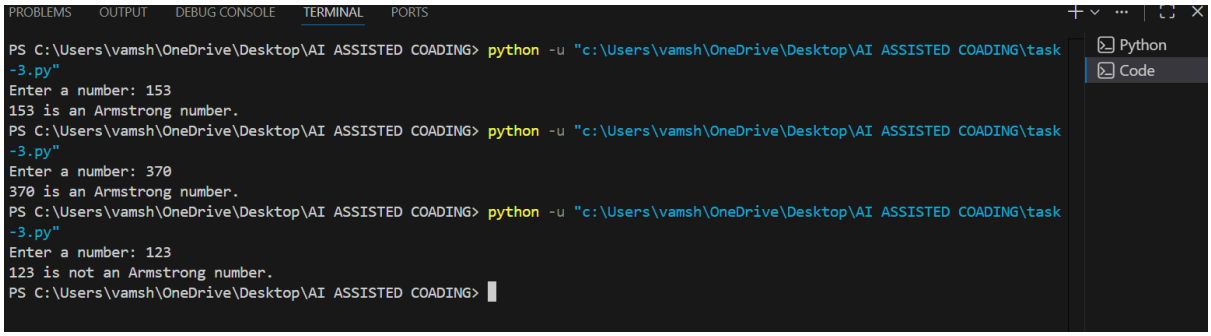
Question 3:

Prompt: Few-Shot Prompting (Armstrong Number Check)

Code:

```
def is_armstrong_number(num):
    # Convert the number to string to easily iterate over digits
    str_num = str(num)
    num_digits = len(str_num)

    # Calculate the sum of the cubes of each digit
    sum_of_cubes = sum(int(digit) ** num_digits for digit in str_num)

    # Check if the sum of cubes is equal to the original number
```

```
    return sum_of_cubes == num

# Test the function

number = int(input("Enter a number: "))

if is_armstrong_number(number):

    print(f"{number} is an Armstrong number.")

else:

    print(f"{number} is not an Armstrong number.")
```

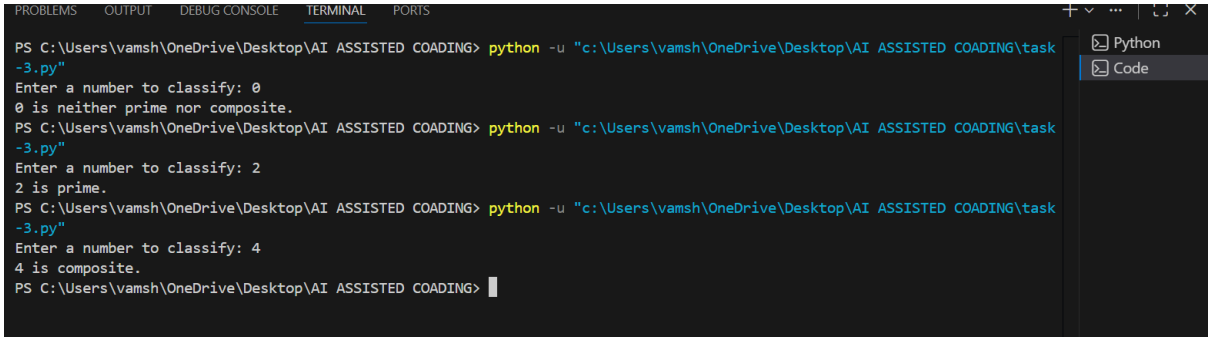


Question 4:

#**prompt**:Design a context-managed prompt with clear instructions and constraints to generate an optimized Python program that classifies a number as prime, composite, or neither.

#code:

```
def classify_number(num):

    if num <= 1:

        return "neither prime nor composite"

    for i in range(2, int(num**0.5) + 1):

        if num % i == 0:

            return "composite"

    return "prime"

# Test the function

number = int(input("Enter a number to classify: "))

classification = classify_number(number)

print(f"{number} is {classification}.")
```

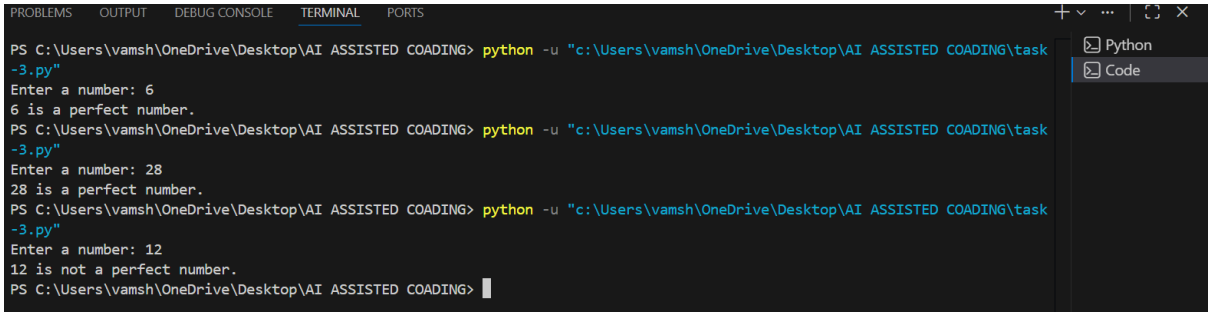


Question 5:

Prompt: Write a zero-shot prompt (without providing any examples) to generate a Python function that checks whether a given number is a perfect number

Code:

```
def is_perfect_number(num):
    if num < 1:
        return False

    # Calculate the sum of divisors
    sum_of_divisors = sum(i for i in range(1, num) if num % i == 0)

    # Check if the sum of divisors is equal to the original number
    return sum_of_divisors == num
# Test the function
number = int(input("Enter a number: "))
if is_perfect_number(number):
    print(f"{number} is a perfect number.")
else:
    print(f"{number} is not a perfect number.")
```

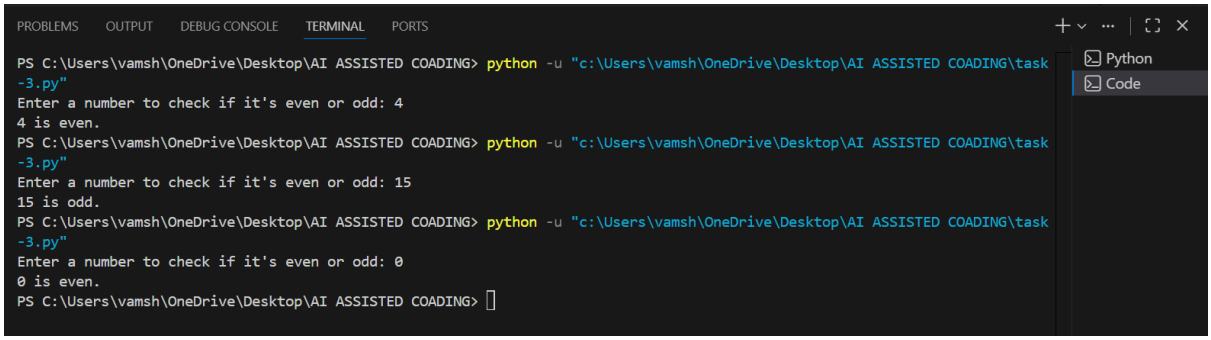


Question 6:

#prompt:Write a few-shot prompt by providing multiple input-output examples to guide the AI in generating a Python program that determines whether a given number is even or odd, including proper input validation

Code:

```
def is_even_or_odd(num):
    if not isinstance(num, int):
        return "Invalid input. Please enter an integer."

    if num % 2 == 0:
        return f"{num} is even."
    else:
        return f"{num} is odd."
# Test the function
try:
    number = int(input("Enter a number to check if it's even or odd: "))
    result = is_even_or_odd(number)
    print(result)
except ValueError:
    print("Invalid input. Please enter a valid integer.")
```


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Python
Code
PS C:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING> python -u "c:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING\task-3.py"
Enter a number to check if it's even or odd: 4
4 is even.
PS C:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING> python -u "c:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING\task-3.py"
Enter a number to check if it's even or odd: 15
15 is odd.
PS C:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING> python -u "c:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING\task-3.py"
Enter a number to check if it's even or odd: 0
0 is even.
PS C:\Users\vamsh\OneDrive\Desktop\AI ASSISTED COADING>