

# AI Assisted Coding

## Assignment - 03

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Question 1: Zero-Shot Prompting (Palindrome Number Program) Write a zero-shot prompt (without providing any examples) to generate a Python function that checks whether a given number is a palindrome

**Code:**

The screenshot shows a code editor interface with a terminal window below it. The code in the editor is as follows:

```
lab2.py > ...
1 # Generate python code for palindrome verification in zero shot prompting
2 def is_palindrome(s):
3     s = s.replace(" ", "").lower() # Remove spaces and convert to lowercase
4     return s == s[::-1] # Check if the string is equal to its reverse
5 if __name__ == "__main__":
6     user_input = input("Enter a string: ")
7     if is_palindrome(user_input):
8         print(f"'{user_input}' is a palindrome.")
9     else:
10        print(f"'{user_input}' is not a palindrome.)
```

The terminal window shows the output of running the script:

```
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python /Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a string: 12321
"12321" is a palindrome.
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> []
```

Question 2: One-Shot Prompting (Factorial Calculation)

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:

```
CLICK to add a breakpoint
2     # generate a python program for factorial calculation using one shot prompting
3     #Example: Input: 5 Output: 120
4     def factorial(n):
5         if n == 0 or n == 1:
6             return 1
7         else:
8             return n * factorial(n - 1)
9     if __name__ == "__main__":
10        num = int(input("Enter a number to calculate its factorial: "))
11        result = factorial(num)
12        print(f"The factorial of {num} is {result}.")
13

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.
/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to calculate its factorial: 6
The factorial of 6 is 720.
○ PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab>
```

Question 3: Few -Shot Prompting (Armstrong Number Check) Write a few-shot prompt by providing multiple input-output examples to guide the AI in generating a Python function to check whether a given number is an Armstrong number.

## Code:

```
Click to add a breakpoint
1 # write a python program to generate Armstrong numbers using few shot prompting
2
3 #Example: Input: 153 Output: True
4 #Example: Input: 123 Output: False
5 #Example: Input: 370 Output: True
6
7 def is_armstrong(number):
8     num_str = str(number)
9     num_digits = len(num_str)
10    sum_of_powers = sum(int(digit) ** num_digits for digit in num_str)
11    return sum_of_powers == number
12
13 if __name__ == "__main__":
14     num = int(input("Enter a number to check if it's an Armstrong number: "))
15     if is_armstrong(num):

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to check if it's an Armstrong number: 153
153 is an Armstrong number.
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab>
● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to check if it's an Armstrong number: 123
123 is not an Armstrong number.
● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to check if it's an Armstrong number: 370
370 is an Armstrong number.
○ PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab>
```

Question 4: Zero-Shot Prompting (Perfect Number Check) 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:

```
1 # Generate python Program to check perfect number using zero shot prompting
2 def is_perfect_number(n):
3     sum_of_divisors = sum(i for i in range(1, n) if n % i == 0)
4     return sum_of_divisors == n
5 if __name__ == "__main__":
6     number = int(input("Enter a number to check if it's a perfect number: "))
7     if is_perfect_number(number):
8         print(f"{number} is a perfect number.")
9     else:
10        print(f"{number} is not a perfect number.")

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python39/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to check if it's a perfect number: 12
12 is not a perfect number.
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python39/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter a number to check if it's a perfect number: 6
6 is a perfect number.
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab>
```

Question 5: Few-Shot Prompting (Even or Odd Classification with

Validation)

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:

```
1 # Generate python program to check Even or Odd classification with Validation using few shot prompting
2 #Example: Input: 4 Output: Even
3 #Example: Input: 7 Output: Odd
4 #Example: Input: -2 Output: Even
5 def check_even_odd(num):
6     if not isinstance(num, int):
7         return "Invalid input. Please enter an integer."
8     return "Even" if num % 2 == 0 else "Odd"
9 if __name__ == "__main__":
10     try:
11         user_input = int(input("Enter an integer to check if it's Even or Odd: "))
12         result = check_even_odd(user_input)
13         print(f"{user_input} is {result}.")
14     except ValueError:
15         print("Invalid input. Please enter a valid integer.")
16
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
● Enter an integer to check if it's Even or Odd: 12
12 is Even.
● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter an integer to check if it's Even or Odd: 77
77 is Odd.
● PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab> & C:/Users/Sathwik/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Sathwik/OneDrive/Desktop/AI-Lab/lab2.py
Enter an integer to check if it's Even or Odd: -55
-55 is Odd.
○ PS C:\Users\Sathwik\OneDrive\Desktop\AI-Lab>
```