

AI Assisted Coding

Assignment - 3

P.Manikanta || 2303A51271 || Batch:- 8

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:**

```
lab3.1.py > ...
1 # Generate python code for palindrome verification in zero-shot prompting
2
3 def is_palindrome(s):
4     s = s.replace(" ", "").lower()    # Remove spaces and convert to lowercase
5     return s == s[::-1]              # Check if the string is equal to its reverse
6
7
8 if __name__ == "__main__":
9     user_input = input("Enter a string: ")
10
11    if is_palindrome(user_input):
12        print(f'{user_input} is a palindrome.')
13    else:
14        print(f'{user_input} is not a palindrome.')
15
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "C:/Users/porika manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"

- Enter a string: 12331
"12331" is not a palindrome.
- PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant>

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:

```
15
16     # Generate a python program for factorial calculation using one-shot prompting
17     # Example: Input: 5  Output: 120
18
19     def factorial(n):
20         if n == 0 or n == 1:
21             return 1
22         else:
23             return n * factorial(n - 1)
24
25
26     if __name__ == "__main__":
27         num = int(input("Enter a number to calculate its factorial: "))
28         result = factorial(num)
29         print(f"The factorial of {num} is {result}.")
30
31
```

The screenshot shows a code editor interface with a dark theme. The top part contains the Python code for calculating factorial. The bottom part shows a terminal window with the code being run and its output. The terminal window has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected), and PORTS. The status bar at the bottom right shows 'Python' and some icons.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

```
S C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "C:/Users/porika manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter a number to calculate its factorial: 6
The factorial of 6 is 720.
S C:\Users\porika manikanta\OneDrive\Desktop\ai assistant>
```

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:

```
31  # Write a python program to generate Armstrong numbers using few-shot prompting
32  # Example: Input: 153 Output: True
33  # Example: Input: 123 Output: False
34  # Example: Input: 370 Output: True
35
36  def is_armstrong(number):
37      num_str = str(number)                      # Convert number to string
38      num_digits = len(num_str)                  # Count number of digits
39
40      # Calculate sum of digits raised to the power of number of digits
41      sum_of_powers = sum(int(digit) ** num_digits for digit in num_str)
42
43      return sum_of_powers == number            # Check Armstrong condition
44
45
46 if __name__ == "__main__":
47     num = int(input("Enter a number to check if it's an Armstrong number: "))
48
49     if is_armstrong(num):
50         print(f"{num} is an Armstrong number.")
51     else:
52         print(f"\n{num} is not an Armstrong number.\n")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + 

```
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter a number to check if it's an Armstrong number: 153
153 is an Armstrong number.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> 
```

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:

```

54 # Generate python program to check perfect number using zero-shot prompting
55
56 def is_perfect_number(n):
57     # Calculate the sum of all proper divisors of n
58     sum_of_divisors = sum(i for i in range(1, n) if n % i == 0)
59     return sum_of_divisors == n
60
61
62 if __name__ == "__main__":
63     number = int(input("Enter a number to check if it's a perfect number: "))
64
65     if is_perfect_number(number):
66         print(f"{number} is a perfect number.")
67     else:
68         print(f"{number} is not a perfect number.")
69
70
71
72

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + ↻

```

PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "c:/manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter a number to check if it's a perfect number: 12
12 is not a perfect number.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "c:/manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter a number to check if it's a perfect number: 6
6 is a perfect number.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant>

```

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:

```
69
70 # Generate python program to check Even or Odd classification with validation
71 # using few-shot prompting
72
73 # Example: Input: 4 Output: Even
74 # Example: Input: 7 Output: Odd
75 # Example: Input: 2 Output: Even
76
77 def check_even_odd(num):
78     # Validate input type
79     if not isinstance(num, int):
80         return "Invalid input. Please enter an integer."
81
82     # Check even or odd
83     return "Even" if num % 2 == 0 else "Odd"
84
85
86 if __name__ == "__main__":
87     try:
88         user_input = int(input("Enter an integer to check if it's Even or Odd: "))
89         result = check_even_odd(user_input)
90         print(f"{user_input} is {result}.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  Python + ▾  

```
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "c:/manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter an integer to check if it's Even or Odd: 12
12 is Even.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "c:/manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter an integer to check if it's Even or Odd: 77
77 is Odd.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant> & "C:/Program Files/Python311/python.exe" "c:/manikanta/OneDrive/Desktop/ai assistant/lab3.1.py"
Enter an integer to check if it's Even or Odd: -55
-55 is Odd.
PS C:\Users\porika manikanta\OneDrive\Desktop\ai assistant>
```