

ASSIGNMENT-3.1  
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**Task 1: Zero-Shot Prompting (Palindrome Number Program)**

**Prompt:** write a python function to check given number is palindrome or not return output in True or False. Provide code in user input.

**Code with output:**

```
zeroshot(palindrome).py > ...
1 #write a python function to check given number is palindrome or not return output in True or False.provide code in user input
2 def is_palindrome(number):
3     # Convert the number to string
4     str_num = str(number)
5     # Check if the string is equal to its reverse
6     return str_num == str_num[::-1]
7 # Get user input
8 user_input = int(input("Enter a number: "))
9 # Check if the number is palindrome and print the result
10 result = is_palindrome(user_input)
11 print(result)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 5
120
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 9
362880
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 4
24
```

**Justification:**

- Correct for positive numbers
- Negative numbers not handled clearly
- No input validation for non-integers

**Task 2: One-Shot Prompting (Factorial Calculation)**

**Prompt:** write a python function to calculate factorial of given number. Example: input=5 ; output=120

**Code with output:**

```
oneshot(factorial).py > ...
1  #write a python function to calculate factorial of given number. Example: input=5 ; output=120
2  def factorial(n):
3      # Initialize result
4      result = 1
5      # Calculate factorial
6      for i in range(1, n + 1):
7          result *= i
8      return result
9  # Get user input
10 user_input = int(input("Enter a number: "))
11 # Calculate factorial and print the result
12 result = factorial(user_input)
13 print(result)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 5
120
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 9
362880
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Docum
ents/AI(vs)/oneshot(factorial).py"
Enter a number: 4
24
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> 
```

### Justification:

- One-shot gives clearer logic
- More readable and reliable

### Task 3: Few-Shot Prompting (Armstrong Number Check)

Code with output:

```
fewshot(armstrong).py > ...  
1 #write a python function to check given number is an armstrong number.  
2 # Example: input=153 ; output-Armstrong Number , input=123 ; output-Not an Armstrong Number  
3  
4 def is_armstrong_number(number):  
5     # Convert the number to string  
6     str_num = str(number)  
7     # Calculate the number of digits  
8     num_digits = len(str_num)  
9     # Calculate the sum of each digit raised to the power of the number of digits  
10    sum_of_powers = sum(int(digit) ** num_digits for digit in str_num)  
11    # Check if the sum equals the original number  
12    return sum_of_powers == number  
13  
14 # Get user input  
15 user_input = int(input("Enter a number: "))  
16  
17 # Check if the number is an Armstrong number and print the result  
18 result = is_armstrong_number(user_input)  
19 if result:  
20     print("Armstrong Number")  
21 else:  
22     print("Not an Armstrong Number")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Python + - [ ] [X] [Y]

```
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Documents/AI(vs)/fewshot(armstrong).py"  
Enter a number: 123  
Not an Armstrong Number  
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Documents/AI(vs)/fewshot(armstrong).py"  
Enter a number: 153  
Armstrong Number  
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/OneDrive/Documents/AI(vs)/fewshot(armstrong).py"  
Enter a number: 370  
Armstrong Number
```

**Justification:**

- Few-shot improves accuracy
- Code structure matches examples
- Still lacks input validation for negatives

#### Task 4: Context-Managed Prompting (Optimized Number

**Classification)**

**Prompt: generate an optimized python program that classifies a number is prime, composite or neither Code with output:**



## Task 6: Few-Shot Prompting (Even or Odd Classification with Validation)

### Code with output:

```
fewshot(even or odd).py > ...
1  #generate a Python program that checks if a number is even or odd.
2  #example: input=4 ; output=Even
3  #example: input=7 ; output=Odd
4  #input=24 ; output=Even
5  def check_even_odd(number):
6      if number % 2 == 0:
7          return "Even"
8      else:
9          return "Odd"
10 # Get user input
11 user_input = int(input("Enter a number: "))
12 # Check if the number is even or odd and print the result
13 result = check_even_odd(user_input)
14 print(result)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/ot(even or odd).py"
Enter a number: 22
Even
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/ot(even or odd).py"
Enter a number: 447
Odd
PS C:\Users\akhil\OneDrive\Documents\AI(vs)> & C:/Users/akhil/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/akhil/ot(even or odd).py"
Enter a number: -55
Odd
```