

AI Assisted Coding

Assignment-3.5

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Batch-02

Question:01

Zero-Shot Prompting (Leap Year Check)

```
sample1.py
1 #Assignment 3.5
2 #2303A51089
3 #date:22/1/2026
```

Prompt given for copilot

➤ A working Python program generated with Copilot assistance

```
#write a zero-short prompt to generate python function that checks whether a given year is a leap year or not
def is_leap_year(year):
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    else:
        return False
year = int(input("Enter a year to check if it is a leap year: "))
if is_leap_year(year):
    print(f"{year} is a leap year.")
else:
    print(f"{year} is not a leap year.")
```

➤ Sample input/output screenshots

```
Enter a year to check if it is a leap year: 1900
1900 is not a leap year.
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter a year to check if it is a leap year: 2000
2000 is a leap year.
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter a year to check if it is a leap year: 2024
2024 is a leap year.
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>
```

Activate Windows
Go to Settings to activate

Question-02

- One-Shot Prompting (GCD of Two Numbers)

A working Python program generated with Copilot assistance

```
sample1.py > ...
1  #2303A51089
2
3  ...
4  a=12
5  b=18
6  display the values of a and b as 6
7  ...
8
9  a=int(input("Enter first number (a): "))
10 b=int(input("Enter second number (b): "))
11 def gcd(x, y):
12     while(y):
13         x, y = y, x % y
14     return x
15 result = gcd(a, b)
16 print("The GCD of", a, "and", b, "is:", result)
17
```

- Screenshot(s) showing: Input/Output

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS + ... X
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter first number (a): 12
Enter second number (b): 18
The GCD of 12 and 18 is: 6
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter first number (a): 12
Enter second number (b): 5
The GCD of 12 and 5 is: 1
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>
```

The screenshot shows a terminal window with the following text:
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter first number (a): 12
Enter second number (b): 18
The GCD of 12 and 18 is: 6
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"
Enter first number (a): 12
Enter second number (b): 5
The GCD of 12 and 5 is: 1
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>

A sidebar on the right shows "powershell" and "Python" options.

side by side comparition

Zero-Shot:

```
⚡ sample1.py > ...
1  #2303A51089
2
3  #write a python to generate gcd of two numbers using function
4  def gcd(a, b):
5      while b:
6          a, b = b, a % b
7      return a
8  num1 = int(input("Enter first number: "))
9  num2 = int(input("Enter second number: "))
10 print(f"The GCD of {num1} and {num2} is {gcd(num1, num2)}")
11
```

One-Shot:

```
⚡ sample1.py > ...
1  #2303A51089
2
3  ...
4  a=12
5  b=18
6  display the values of a and b as 6
7  ...
8
9  a=int(input("Enter first number (a): "))
10 b=int(input("Enter second number (b): "))
11 def gcd(x, y):
12     while(y):
13         x, y = y, x % y
14     return x
15 result = gcd(a, b)
16 print("The GCD of", a, "and", b, "is:", result)
17
```

Question-03

Few-Shot Prompting (LCM Calculation)

Code given by copilot :

```
❶ sample1.py > ...
2
3     ...
4     a=4,b=5
5     display the least common multiple of a and b as 12
6     a=5,b=10
7     display the least common multiple of a and b as 10
8     a=7,b=3
9     display the least common multiple of a and b as 21
10    ...
11    def gcd(a, b):
12        while b:
13            a, b = b, a % b
14        return a
15    def lcm(a, b):
16        return a * b // gcd(a, b)
17    a = int(input("Enter first number (a): "))
18    b = int(input("Enter second number (b): "))
19
20    result = lcm(a, b)
21    print(f"The least common multiple of {a} and {b} is: {result}")
```

➤ Sample input/output screenshots

The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

File "c:\Users\Rishi\Documents\Naga Rishik\AI assisted\sample1.py", line 8, in <module>
    a=7, b=3

ValueError: invalid literal for int() with base 10: '& C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/
mple1.py"'
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/
mple1.py"
Enter first number (a): 5
Enter second number (b): 10
The least common multiple of 5 and 10 is: 10
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> []
```

The terminal shows the execution of a Python script named sample1.py. It handles a ValueError for non-integer inputs and calculates the least common multiple (LCM) of two integers provided by the user.

Question 4:

Zero-Shot Prompting (Binary to Decimal Conversion)

Prompt:

Code given by copilot :

```
def binary_to_decimal(binary_str):
    # Validation: ensure only 0s and 1s are present
    if not all(ch in '01' for ch in binary_str):
        raise ValueError("Invalid binary input. Only 0s and 1s are allowed.")

    decimal_number = 0
    binary_str = binary_str[::-1] # Reverse to process from least significant bit
    for index, digit in enumerate(binary_str):
        if digit == '1':
            decimal_number += 2 ** index
    return decimal_number

# Testing with valid inputs
print(binary_to_decimal("1010")) # 10
print(binary_to_decimal("111")) # 7
print(binary_to_decimal("0")) # 0

# Testing with invalid inputs
try:
    print(binary_to_decimal("1021")) # Invalid
except ValueError as e:
    print(e)
try:
    print(binary_to_decimal("abc")) # Invalid
except ValueError as e:
    print(e)
```

➤ Sample input/output screenshots

The screenshot shows a terminal window with the following output:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS +  
10  
7  
0  
Invalid binary number. Only 0s and 1s are allowed.  
Invalid binary number. Only 0s and 1s are allowed. & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/sample1.py"  
Activate Windows  
Go to Settings to activate
```

Question 5:

One-Shot Prompting (Decimal to Binary Conversion)

Prompt:

Code given by copilot :

```
❸ sample1.py > ...
1 #2303A51089
2
3 ...
4 a=10
5 display a as 1010 in binary format
6 ...
7 a = int(input("Enter a number: "))
8 binary_format = bin(a)[2:] #convert to binary and remove '0b' prefix
9 print(f"The binary format of {a} is: {binary_format}")
```

➤ Sample input/output screenshots

A screenshot of a terminal window in a code editor. The terminal tab is selected at the top. The command PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assis mple1.py" is run. It prompts for a number, enters 10, and outputs the binary format. It then prompts for another number, enters 12, and outputs its binary format. The status bar at the bottom shows Ln 9, Col 55, Spaces: 4, UTF-8, CRLF, {}, Python, and a file icon.

```
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assis mple1.py"
Enter a number: 10
The binary format of 10 is: 1010
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assis mple1.py"
Enter a number: 12
The binary format of 12 is: 1100
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>
```

Activate Window
Go to Settings to

Ln 9, Col 55 Spaces: 4 UTF-8 CRLF {} Python

Question 6:

Few-Shot Prompting (Harshad Number Check)

Code given by copilot :

```
* sample1.py > ...
1  #2303A51089
2
3  ...
4  a=18
5  display the value of a as harshad number
6  a=21
7  display the value of a as harshad number
8  a=19
9  display the value of a as harshad number
10 ...
11
12 a=int(input("Enter a number:"))
13 sum=0
14 temp=a
15 while temp>0:
16     digit=temp%10
17     sum+=digit
18     temp//=10
19 if a%sum==0:
20     print(f"{a} is a Harshad number")
21 else:
22     print(f"{a} is not a Harshad number")
23
```

➤ Sample input/output screenshots

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Enter a number:19

19 is not a Harshad number

PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/.../sample1.py"

Enter a number:21

21 is a Harshad number

PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>

Ln 23, Col 5 Sp