

ASSIGNMENT - 3.5

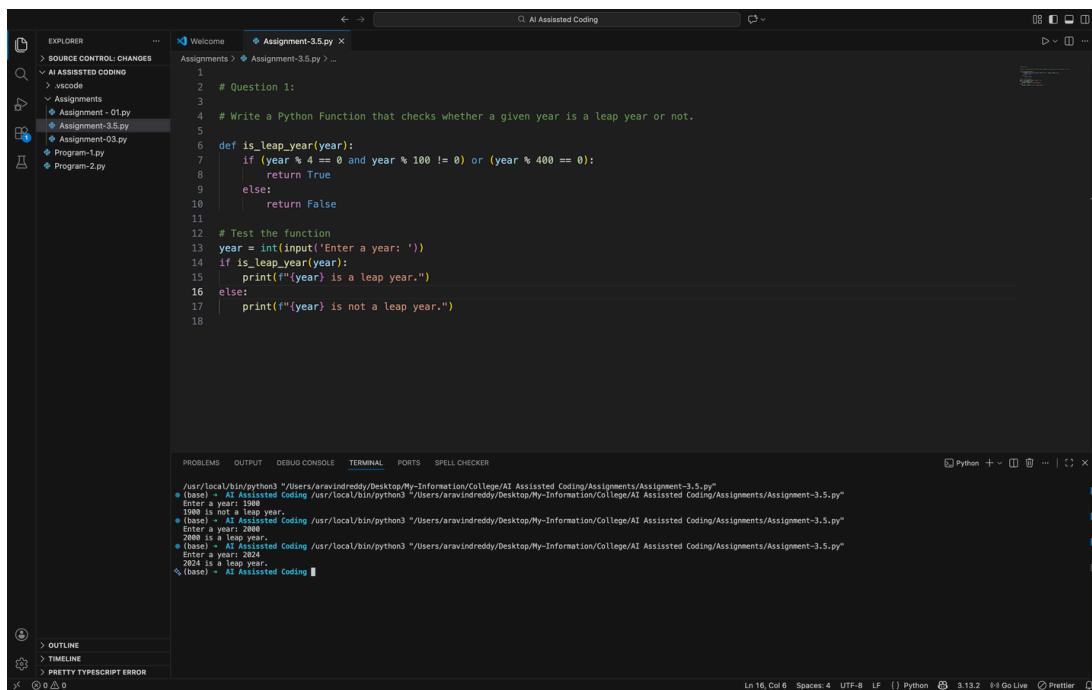
Name : Aravind Reddy

Hall Ticket No : 2303a51027

Batch No : 01

Course Title : AI Assisted Coding

Question 1: Zero-Shot Prompting (Leap Year Check)



A screenshot of the Visual Studio Code (VS Code) interface. The central area shows a Python file named 'Assignment-3.5.py' with the following code:

```
1 # Question 1:
2
3 # Write a Python Function that checks whether a given year is a leap year or not.
4
5 def is_leap_year(year):
6     if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
7         return True
8     else:
9         return False
10
11 # Test the function
12 year = int(input('Enter a year: '))
13 if is_leap_year(year):
14     print(f'{year} is a leap year.')
15 else:
16     print(f'{year} is not a leap year.')
17
```

The 'TERMINAL' tab at the bottom shows the output of running the script with two different years:

```
/usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
(base) [1]: 1900
1900 is not a leap year.
(base) [2]: 2000
2000 is a leap year.
(base) [3]: 2024
2024 is a leap year.
(base) [4]:
```

Question 2: One-Shot Prompting (GCD of Two Numbers)

The screenshot shows the VS Code interface with the following details:

- Explorer:** Shows files in the workspace, including `Assignment-3.5.py`.
- Editor:** Displays the code for `Assignment-3.5.py`. The code defines a `gcd` function and tests it with user input for two numbers.
- Terminal:** Shows the output of running the script. It prompts for two numbers (7 and 9), calculates their GCD (6), and prints the result.
- Status Bar:** Shows the file path as `/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py`, Python version 3.13.2, and other status indicators.

Question 3: Few-Shot Prompting (LCM Calculation)

The screenshot shows the VS Code interface with the following details:

- Explorer:** Shows files in the workspace, including `Assignment-3.5.py`.
- Editor:** Displays the code for `Assignment-3.5.py`. The code defines an `lcm` function using the previously defined `gcd` function and tests it with user input for two numbers.
- Terminal:** Shows the output of running the script. It prompts for two numbers (4 and 5), calculates their LCM (20), and prints the result.
- Status Bar:** Shows the file path as `/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py`, Python version 3.13.2, and other status indicators.

Question 4: Zero-Shot Prompting (Binary to Decimal Conversion)

```
61 # Question 4:
62 # Generate a Python Function that converts a Binary Number to Decimal Number.
63
64 def binary_to_decimal(binary_str):
65     decimal_number = 0
66     binary_str = binary_str[::-1] # Reverse the string for easier calculation
67     for index, digit in enumerate(binary_str):
68         if digit == '1':
69             decimal_number += 2 ** index
70
71     return decimal_number
72
73 # Test the function
74 binary_input = input("Enter a binary number: ")
75 decimal_output = binary_to_decimal(binary_input)
76 print(f"The decimal equivalent of binary {binary_input} is {decimal_output}.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SPELL CHECKER

```
/usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a binary number: 10
The decimal equivalent of binary 10 is 2
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a binary number: 101010
The decimal equivalent of binary 101010 is 4.
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a binary number:
The decimal equivalent of binary 345 is 0.
(base) + At Assisted Coding
```

Ln 77, Col 1 Spaces: 4 UTF-8 LF [] Python 3.13.2 ⓘ Go Live ⚙ Prettier

Question 5: One-Shot Prompting (Decimal to Binary Conversion)

```
78 # Question 5:
79 # Generate a Python Function that converts a Decimal Number to Binary Number.
80 # Example: Decimal 10 to Binary is 1010.
81
82 def decimal_to_binary(decimal_number):
83     if decimal_number == 0:
84         return '0'
85     binary_str = ''
86     while decimal_number > 0:
87         binary_str = str(decimal_number % 2) + binary_str
88         decimal_number //= 2
89
90     return binary_str
91
92 # Test the function
93 decimal_input = int(input('Enter a decimal number: '))
94 binary_output = decimal_to_binary(decimal_input)
95 print(f"The binary equivalent of decimal {decimal_input} is {binary_output}.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SPELL CHECKER

```
/usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a decimal number: 10
The binary equivalent of decimal 10 is 1010.
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a decimal number: 24
The binary equivalent of decimal 24 is 11000.
(base) + At Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/Collage/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a decimal number: 65
The binary equivalent of decimal 65 is 1000001.
(base) + At Assisted Coding
```

Ln 95, Col 79 Spaces: 4 UTF-8 LF [] Python 3.13.2 ⓘ Go Live ⚙ Prettier

Question 6: Few-Shot Prompting (Harshad Number Check)

The screenshot shows the Visual Studio Code (VS Code) interface with the "AI Assisted Coding" extension active. The left sidebar displays a file tree with files like "Assignment - 01.py", "Assignment-03.py", "Assignment-3.5.py", "Program-1.py", and "Program-2.py". The main editor area contains Python code for checking if a number is a Harshad number (Niven number). The code defines a function `is_harshad_number` that sums the digits of a number and checks if the number is divisible by that sum. It includes examples for inputs 18, 21, and 19.

```
99 # Question 6:
100 # Generate a Python function that checks
101 # whether a number is a Harshad (Niven) number.
102 # Examples:
103 # * Input: 18 - Output: Harshad Number
104 # * Input: 21 - Output: Harshad Number
105 # * Input: 19 - Output: Not a Harshad Number
106 # Task:
107 # * Test boundary conditions.
108 # * Evaluate robustness.
109
110 def is_harshad_number(number):
111     digit_sum = sum(int(digit) for digit in str(number))
112     return number % digit_sum == 0
113
114 # Test the function
115 num = int(input('Enter a number: '))
116 if is_harshad_number(num):
117     print(f'{num} is a Harshad Number.')
118 else:
119     print(f'{num} is Not a Harshad Number.')
120
121
122
```

The "PROBLEMS" tab shows no errors. The "OUTPUT" tab shows the terminal logs for running the script:

```
/usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
(base) [1]: AI Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a number: 18
18 is a Harshad Number.
(base) [2]: AI Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a number: 21
21 is a Harshad Number.
(base) [3]: AI Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a number: 19
19 is Not a Harshad Number.
(base) [4]: AI Assisted Coding /usr/local/bin/python3 "/Users/aravindreddy/Desktop/My-Information/College/AI Assisted Coding/Assignments/Assignment-3.5.py"
Enter a number: 43
43 is Not a Harshad Number.
(base) [5]: AI Assisted Coding
```

The "CHAT" panel provides AI-generated explanations and examples related to Harshad numbers. The "SESSIONS" panel shows recent activity, including a completed Harshad number validation function and changes to Copilot configuration settings.