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Course: AI ASSISSTED CODING
Semester: Even

Question 1: Zero-Shot Prompting (Leap Year Check)
Write a zero-shot prompt to generate a Python function that checks whether a given year is a leap year.

Prompt:

```
#write a code to check whether the given year is 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
```

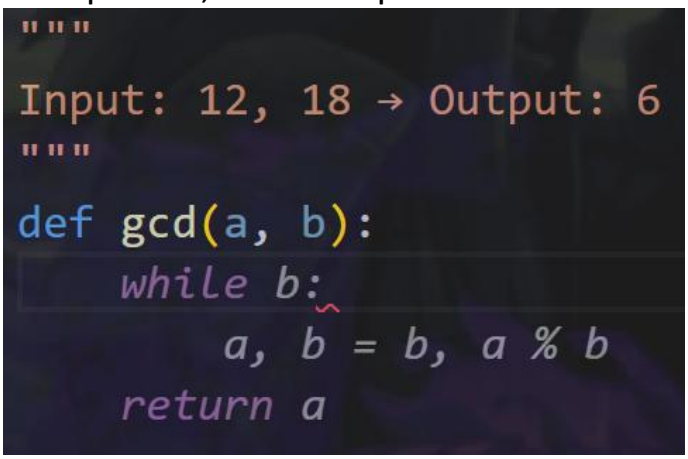
Code and Output:

```
def is_leap_year(year):
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    else:
        return False
print(is_leap_year(2020))  # True
print(is_leap_year(1900))  # False
print(is_leap_year(2000))  # True
print(is_leap_year(2021))  # False
```

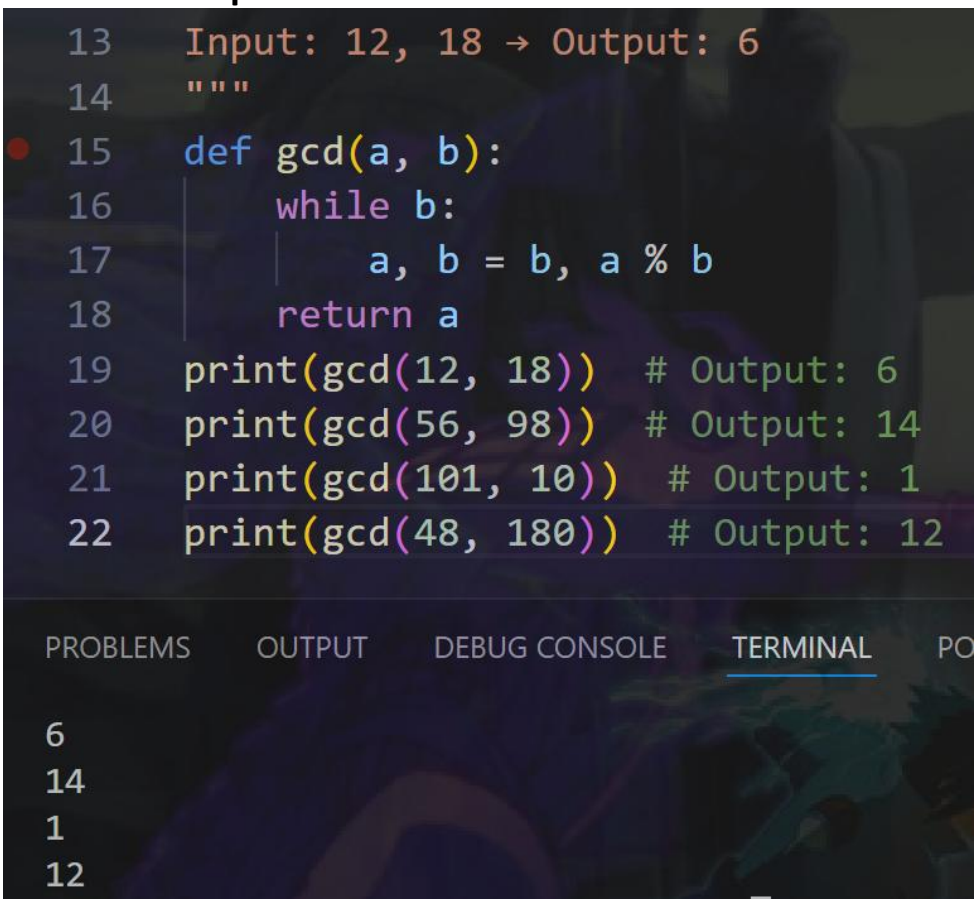
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Python\pythoncore-3.14-64\python.exe e:/AI_ASSISTED_CODING/2303A51
885_Assignment_3.5.py
True
False
True
False
```

Question 2: One-Shot Prompting (GCD of Two Numbers)
Write a one-shot prompt with one example to generate a Python function that finds the Greatest Common Divisor (GCD) of two numbers.

Prompt:
“””Input: 12, 18 → Output: 6”””

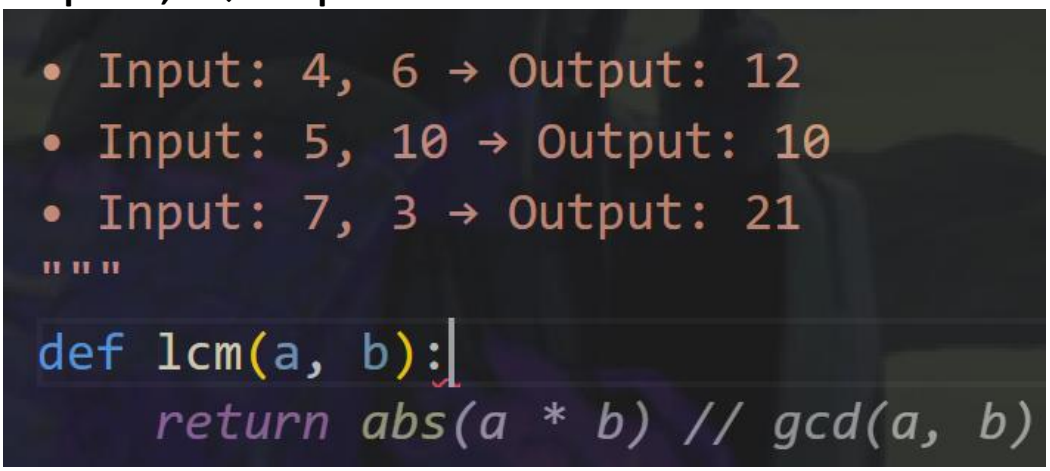


Code and Output:

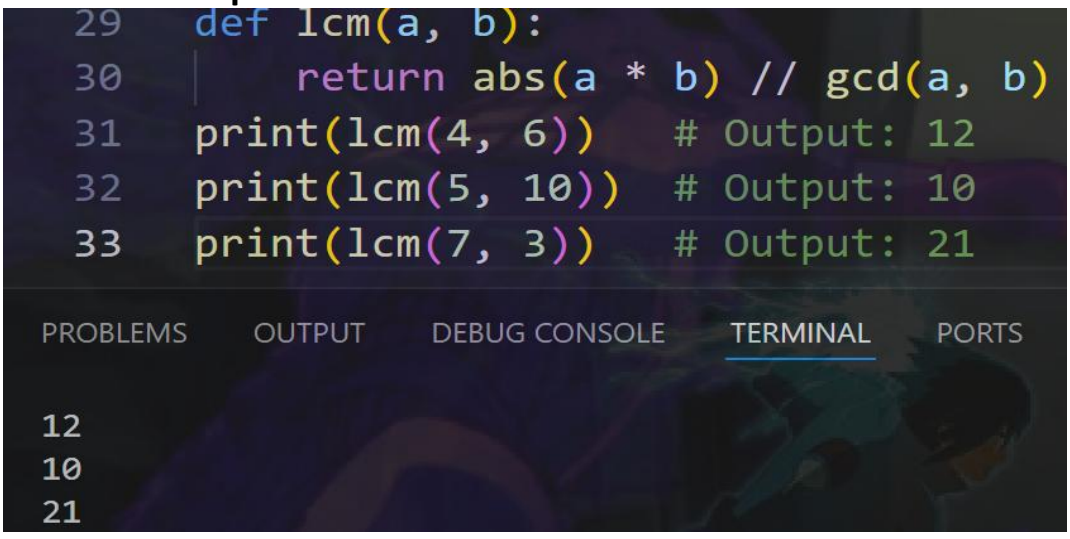


Comparing Zero Shot and One Shot Prompt:
Zero-shot prompting involves providing the model with a direct question or task without any examples. Few-shot prompting, on the other hand, includes a few examples to guide the model in understanding the task. It can improve performance on complex tasks.

Question 3: Few-Shot Prompting (LCM Calculation)
Write a few-shot prompt with multiple examples to generate a Python function that computes the Least Common Multiple (LCM).
Prompt:
"""• Input: 4, 6 → Output: 12
• Input: 5, 10 → Output: 10
• Input: 7, 3 → Output: 21 """



Code and Output:



Question 4: Zero-Shot Prompting (Binary to Decimal Conversion)
Write a zero-shot prompt to generate a Python function that converts a binary number to decimal.

Prompt:
#Write a zero-shot prompt to generate a Python function that converts a binary number to decimal.

```
#Write a zero-shot prompt to generate a Python function that converts
def binary_to_decimal(binary_str):
    decimal_value = 0
    binary_str = binary_str[::-1]  # Reverse the string for easier cal
    for index, digit in enumerate(binary_str):
        if digit == '1':
```

Code and Output:

```
36  def binary_to_decimal(binary_str):
37      decimal_value = 0
38      binary_str = binary_str[::-1]  # Reverse the string for easie
39      for index, digit in enumerate(binary_str):
40          if digit == '1':
41              decimal_value += 2 ** index
42      return decimal_value
43  print(binary_to_decimal('1010'))  # Output: 10
44  print(binary_to_decimal('1111'))  # Output: 15
45  print(binary_to_decimal('1001'))  # Output: 9
46  print(binary_to_decimal('0001'))  # Output: 1
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

10
15
9
1
```

Question 5: One-Shot Prompting (Decimal to Binary Conversion)
Write a one-shot prompt with an example to generate a Python function that converts a decimal number to binary.

Prompt:
"""Input: 10 → Output: 1010"""

```
"""
Input: 10 → Output: 1010
"""
def decimal_to_binary(n):
    if n == 0:
        return '0'
    binary_str = ''
    while n > 0:
        binary_str = str(n % 2) + binary_str
        n = n // 2
```

Code and Output:

```
51  def decimal_to_binary(n):
52      if n == 0:
53          return '0'
54      binary_str = ''
55      while n > 0:
56          binary_str = str(n % 2) + binary_str
57          n = n // 2
58      return binary_str
59  print(decimal_to_binary(10))  # Output: 1010
60  print(decimal_to_binary(15))  # Output: 1111
61  print(decimal_to_binary(9))   # Output: 1001
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

1010
1111
1001
```

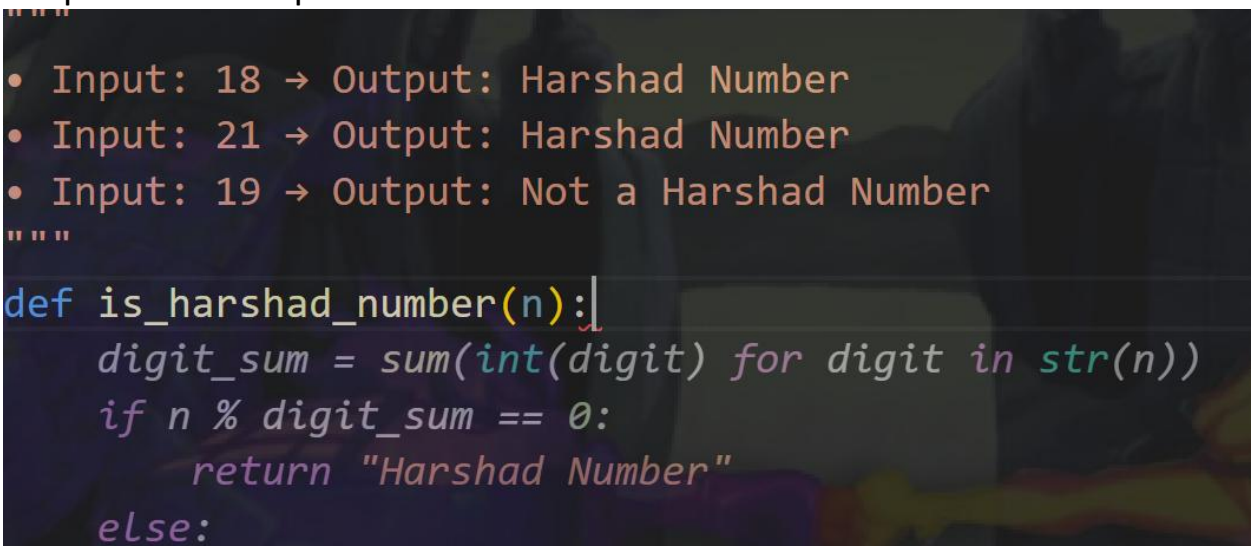
Question 6: Few-Shot Prompting (Harshad Number Check)
Write a few-shot prompt to generate a Python function that checks whether a number is a Harshad (Niven) number.

Prompt:

“””• Input: 18 → Output: Harshad Number

• Input: 21 → Output: Harshad Number

• Input: 19 → Output: Not a Harshad Number”””



Code and Output: