AI Assisted Coding

Lab Assignment – 2.2

TASK DESCRIPTION 1 :

Use Gemini in Colab to write a function that filters out all negative numbers from a given list….

PROMPT:

Write a python program to take a list as input from the user and filter out all the negative numbers from the list and print all non negative numbers

```
[ ] # Get input from the user as a string
    input_list_str = input("Enter a list of numbers separated by commas (e.g., 1,2,3,-4): ")

    # Split the input string by commas and convert to a list of numbers
    input_list = [float(num) for num in input_list_str.split(',')]

    # Filter out negative numbers without using a function
    filtered_list = []
    for number in input_list:
      if number >= 0:
        filtered_list.append(number)

    print("Original list:", input_list)
    print("Filtered list (non-negative numbers):", filtered_list)
```

```
Enter a list of numbers separated by commas (e.g., 1,2,3,-4): 4,6,7,-7,-2
Original list: [4.0, 6.0, 7.0, -7.0, -2.0]
Filtered list (non-negative numbers): [4.0, 6.0, 7.0]
```

The above takes a list as input from the user and checks from negative numbers in the list if any negative numbers are found it separates the negative numbers and prints only the non-negative numbers in the form of a list.

TASK DESCRIPTION 2 :

Ask Gemini to generate code that reads a text file and counts the frequency of each word. Then ask it to explain the code

PROMPT :

generate a python code that reads a text file containing a paragraph and then count and print the frequency of every word in the file.

```
[3] # Create a dummy file for testing
    file_path = 'sample.txt'
    file_content = "This is a sample text file.\nIt contains some words for testing.\nWord word word."

    with open(file_path, 'w') as file:
        file.write(file_content)

    print(f"Created a dummy file named '{file_path}' with content:\n{file_content}")
```

```
import string
from collections import Counter

def count_word_frequencies_alternative(file_path):
  """Reads a text file and counts the frequency of each word using collections.Counter."""
  try:
    with open(file_path, 'r') as file:
      text_content = file.read()

    # Process the text
    text_content_lower = text_content.lower()
    text_content_no_punct = text_content_lower.translate(str.maketrans('', '', string.punctuation))
    words = [word for word in text_content_no_punct.split() if word]

    # Count word frequencies using Counter
    word_counts = Counter(words)

    return word_counts

  except FileNotFoundError:
    print(f"Error: The file '{file_path}' was not found.")
    return None
  except Exception as e:
    print(f"An error occurred: {e}")
    return None

# Example usage: Replace 'your_text_file.txt' with the path to your file
file_path = 'sample.txt'
word_frequencies = count_word_frequencies_alternative(file_path)
```

C

```
if word_frequencies:
  print(f"Word frequencies in '{file_path}' (using Counter):")
  for word, count in word_frequencies.items():
    print(f"Word: {word}, Count: {count}")
```

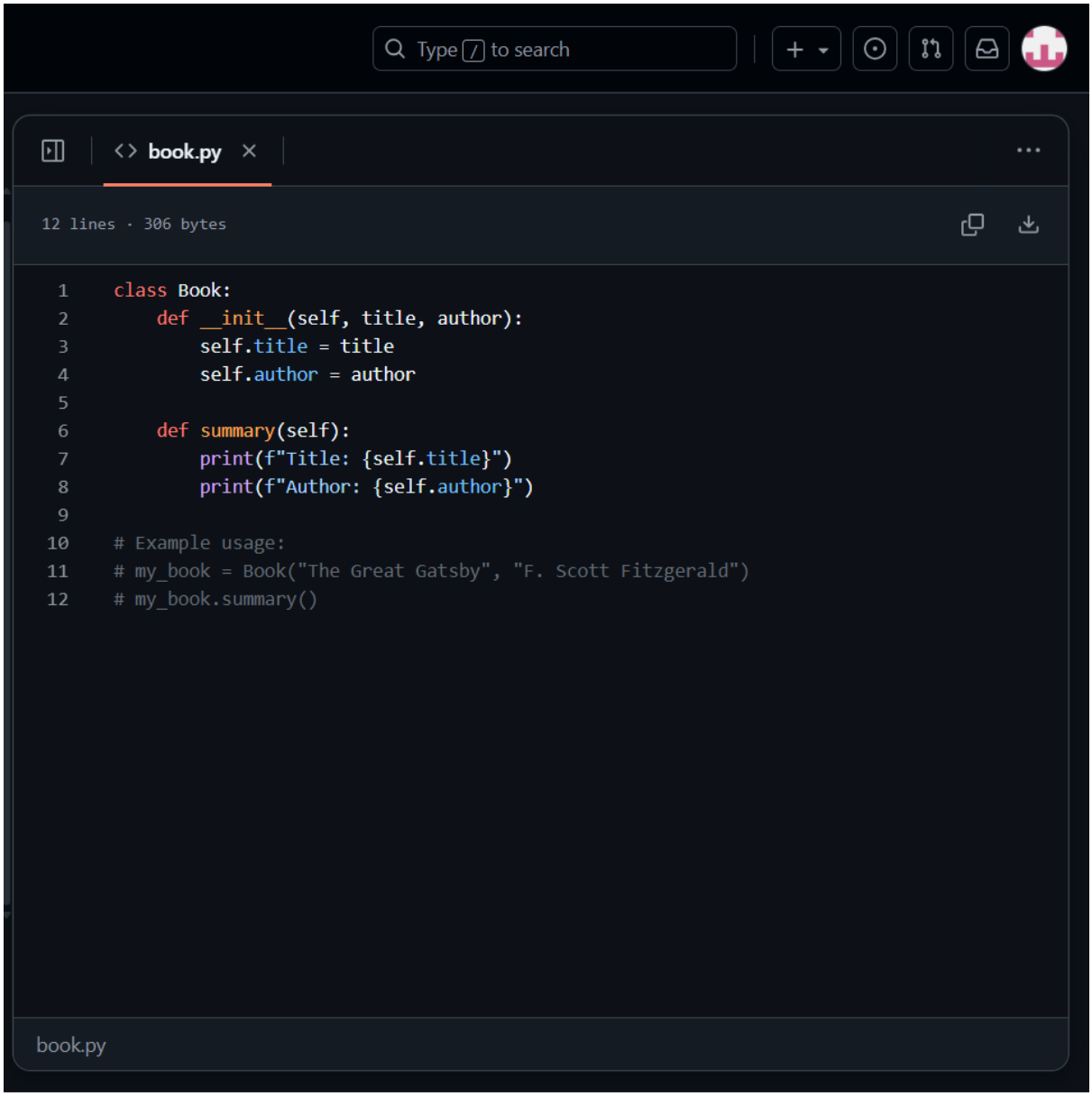
```
Word frequencies in 'sample.txt' (using Counter):
Word: this, Count: 1
Word: is, Count: 1
Word: a, Count: 1
Word: sample, Count: 1
Word: text, Count: 1
Word: file, Count: 1
Word: it, Count: 1
Word: contains, Count: 1
Word: some, Count: 1
Word: words, Count: 1
Word: for, Count: 1
Word: testing, Count: 1
Word: word, Count: 3
```

TASK DESCRIPTION 3 :

Use Cursor AI to generate a Python class called Book with attributes title, author, and a method summary() that prints the details.

USED PROMPT :

generate a python class .name it as book with attributes title , author and a method summary() that prints the details



- The code defines a **Book** class. A class is like a blueprint for creating objects that represent books.
- When you create a new book, you give it a **title** and an **author**. These are saved inside the object.

TASK DESCRIPTION 4 :

Ask Gemini to write a program that checks whether a number is an Armstrong number, and then modify it using Cursor AI to improve performance or structure.

USED PROMPT :

Generate a python code to take one number as an input from the user and check if the given number is an Armstrong number or not.

CODE EXPLANATION :

- The code asks the user to enter a number.
- It calculates how many digits are in the number.
- Then, for each digit, it raises it to the power of the number of digits and sums up these values.
- If this sum equals the original number, it prints that the number is an Armstrong number; otherwise, it says it is not.
  Armstrong numbers are numbers that are equal to the sum of their own digits raised to the power of the number of digits. (For example: $153 = 1^3 + 5^3 + 3^3$)

```python
# Get input from the user
num_str = input("Enter a number: ")

# Convert the input to an integer (assuming valid integer input as exception handling is removed)
num = int(num_str)

# Calculate the number of digits
num_digits = len(num_str)

# Initialize sum of powers
sum_of_powers = 0

# Calculate the sum of the powers of its digits using a for loop
for digit_char in num_str:
  digit = int(digit_char)
  sum_of_powers += digit ** num_digits

# Check if it's an Armstrong number
if num == sum_of_powers:
  print(num, "is an Armstrong number.")
else:
  print(num, "is not an Armstrong number.")
```

```
Enter a number: 11
11 is not an Armstrong number.
```

TASK DESCRIPTION 5 :

Use both Gemini and Cursor AI to generate code for sorting a list of dictionaries by a specific key (e.g., age).

USED PROMPT :

generate a python code to sort a set of dictionaries by a specific key.

CODE EXPLANATION :

- We have a list called data that contains several dictionaries, each with a 'name' and 'age'.
- The sorted() function is used to sort the list of dictionaries by the value of the 'age' key.
- The key=lambda x: x['age'] part tells Python to use the 'age' value in each dictionary for sorting.
- Finally, the sorted list is printed

armstrong_check.py | sort_dicts.py

14 lines · 333 bytes

```python
# This program sorts a list of dictionaries by a specific key

# Sample list of dictionaries
data = [
    {'name': 'Alice', 'age': 25},
    {'name': 'Bob', 'age': 20},
    {'name': 'Charlie', 'age': 30}
]

# Sort the list by the 'age' key
sorted_data = sorted(data, key=lambda x: x['age'])

# Print the sorted list
print(sorted_data)
```

sort_dicts.py

+ Code + Text

```python
# Example list of dictionaries
list_of_dictionaries = [
    {'name': 'Alice', 'age': 30},
    {'name': 'Bob', 'age': 25},
    {'name': 'Charlie', 'age': 35},
    {'name': 'David', 'age': 25}
]

# Specify the key to sort by
sort_key = 'age'

# Sort the list of dictionaries by the specified key
sorted_list = sorted(list_of_dictionaries, key=lambda x: x[sort_key])

# Print the sorted list
print(f"Original list: {list_of_dictionaries}")
print(f"Sorted list by '{sort_key}': {sorted_list}")

# You can also sort in reverse order
sorted_list_reverse = sorted(list_of_dictionaries, key=lambda x: x[sort_key], reverse=True)
print(f"Sorted list by '{sort_key}' in reverse: {sorted_list_reverse}")
```

```
Original list: [{'name': 'Alice', 'age': 30}, {'name': 'Bob', 'age': 25}, {'name': 'Charlie', 'age': 35}, {'name': 'David', 'age': 25}]
Sorted list by 'age': [{'name': 'Bob', 'age': 25}, {'name': 'David', 'age': 25}, {'name': 'Alice', 'age': 30}, {'name': 'Charlie', 'age': 35}]
Sorted list by 'age' in reverse: [{'name': 'Charlie', 'age': 35}, {'name': 'Alice', 'age': 30}, {'name': 'Bob', 'age': 25}, {'name': 'David', 'age': 25}]
```