AI ASSITED CODING

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YEAR / SEM : II / I

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COURSE TITLE: AI ASSITED CODING

Task 1:

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

PROMPT:

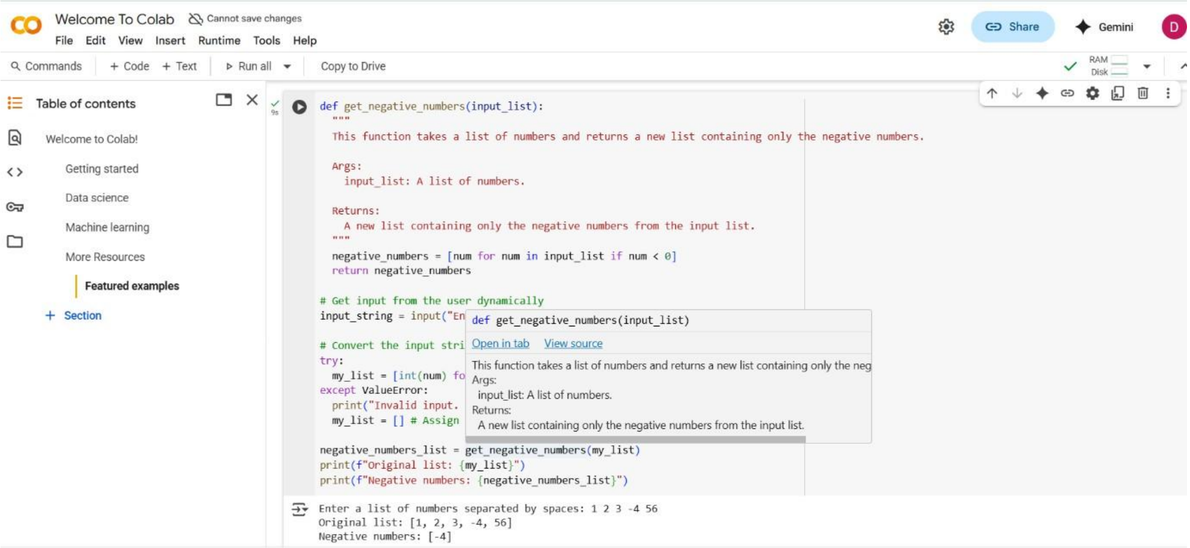
Write a python function to figure out negative numbers from a user defined list

Description:

Use Gemini in collab to write a function using python language to negative numbers from all the

user defined elements in a list must be figured out

CODE:



```
def get_negative_numbers(input_list):
  """
  This function takes a list of numbers and returns a new list containing only the negative numbers.

  Args:
    input_list: A list of numbers.

  Returns:
    A new list containing only the negative numbers from the input list.
  """
  negative_numbers = [num for num in input_list if num < 0]
  return negative_numbers

# Get input from the user dynamically
input_string = input("En

# Convert the input stri
try:
  my_list = [int(num) fo
except ValueError:
  print("Invalid input.
  my_list = [] # Assign

negative_numbers_list = get_negative_numbers(my_list)
print(f"Original list: {my_list}")
print(f"Negative numbers: {negative_numbers_list}")
```

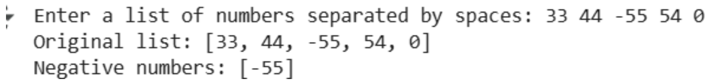
```
def get_negative_numbers(input_list)
```

This function takes a list of numbers and returns a new list containing only the neg
Args:
  input_list: A list of numbers.
Returns:
  A new list containing only the negative numbers from the input list.

```
Enter a list of numbers separated by spaces: 1 2 3 -4 56
Original list: [1, 2, 3, -4, 56]
Negative numbers: [-4]
```

OUTPUT:

Functional code with before/after input and output shown in Colab, plus a screenshot.



```
Enter a list of numbers separated by spaces: 33 44 -55 54 0
Original list: [33, 44, -55, 54, 0]
Negative numbers: [-55]
```

Observation:

I have given different input for above code .All the test cases are accurate as expected

Explanation:

In the above code,We used Gemini to get the code.We have given the prompt,it has given me the code as per the prompt.

We have created an emty list and appended the elements .We used the condition if element<0

By using the Condition,it is able to find out the negative numbers

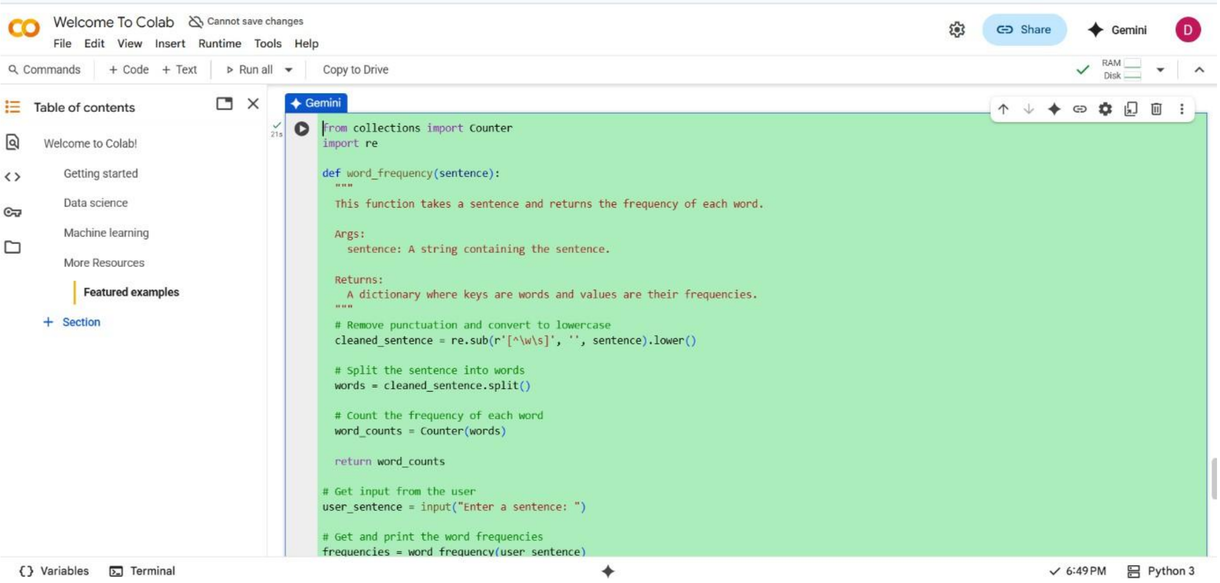
Task 2:

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:

Write a python function which takes a sentence and finds out frequency of each word in it

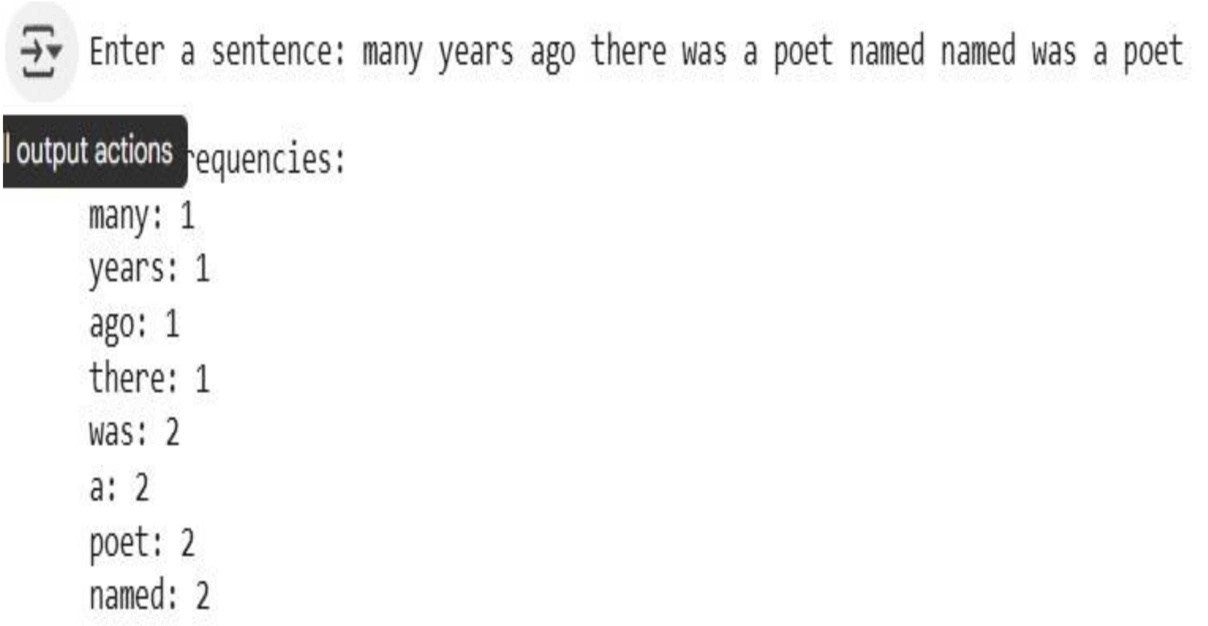
CODE:



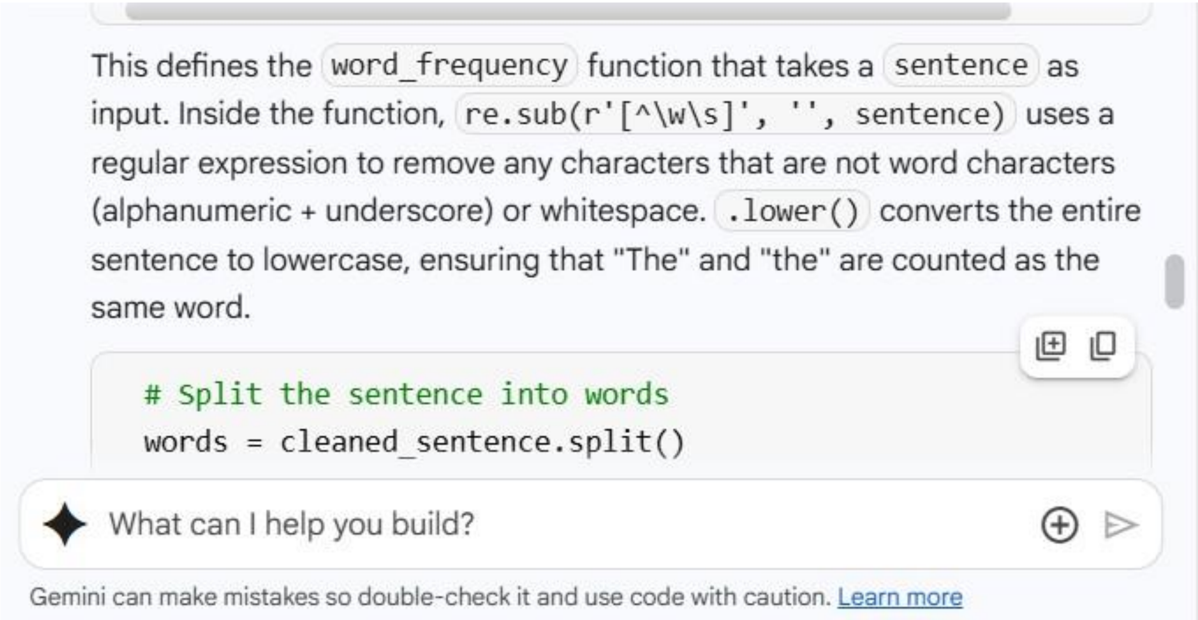
```python
from collections import Counter
import re

def word_frequency(sentence):
  """
  This function takes a sentence and returns the frequency of each word.

  Args:
    sentence: A string containing the sentence.

  Returns:
    A dictionary where keys are words and values are their frequencies.
  """
  # Remove punctuation and convert to lowercase
  cleaned_sentence = re.sub(r'[^\w\s]', '', sentence).lower()

  # Split the sentence into words
  words = cleaned_sentence.split()

  # Count the frequency of each word
  word_counts = Counter(words)

  return word_counts

# Get input from the user
user_sentence = input("Enter a sentence: ")

# Get and print the word frequencies
frequencies = word frequency(user sentence)
```

Output:

Working code and Gemini’s explanation side-by-side.



```
Enter a sentence: many years ago there was a poet named named was a poet
requencies:
many: 1
years: 1
ago: 1
there: 1
was: 2
a: 2
poet: 2
named: 2
```

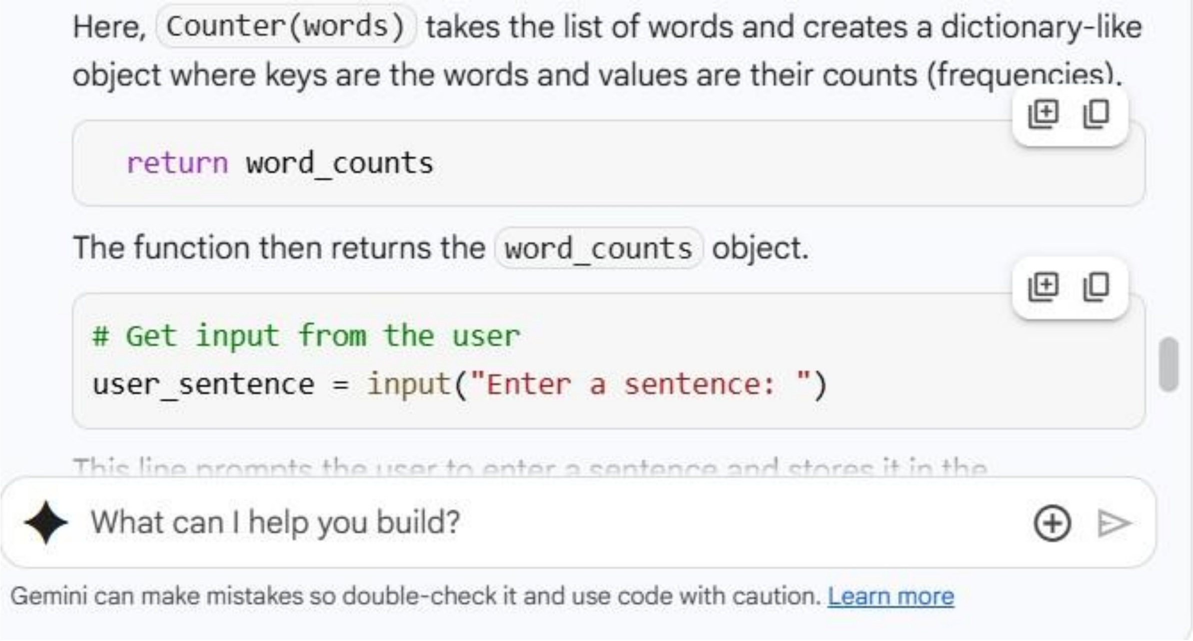


This defines the `word_frequency` function that takes a `sentence` as input. Inside the function, `re.sub(r'[^\w\s]', '', sentence)` uses a regular expression to remove any characters that are not word characters (alphanumeric + underscore) or whitespace. `.lower()` converts the entire sentence to lowercase, ensuring that "The" and "the" are counted as the same word.

```
# Split the sentence into words
words = cleaned_sentence.split()
```

Gemini can make mistakes so double-check it and use code with caution. Learn more

Code Explanation:



Here, `Counter(words)` takes the list of words and creates a dictionary-like object where keys are the words and values are their counts (frequencies).

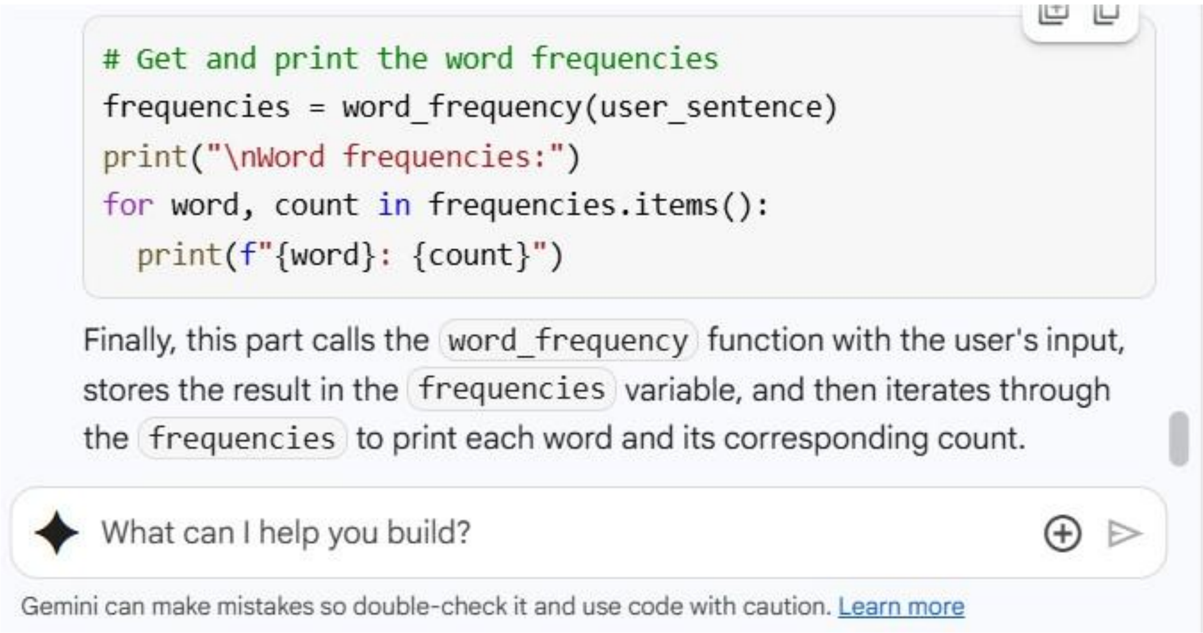
```
  return word_counts
```

The function then returns the `word_counts` object.

```
# Get input from the user
user_sentence = input("Enter a sentence: ")
```

This line prompts the user to enter a sentence and stores it in the

Gemini can make mistakes so double-check it and use code with caution. Learn more



```
# Get and print the word frequencies
frequencies = word_frequency(user_sentence)
print("\nWord frequencies:")
for word, count in frequencies.items():
  print(f"{word}: {count}")
```

Finally, this part calls the `word_frequency` function with the user's input, stores the result in the `frequencies` variable, and then iterates through the `frequencies` to print each word and its corresponding count.

Gemini can make mistakes so double-check it and use code with caution. Learn more

Observation:

The outputs are as expected

Task 3:

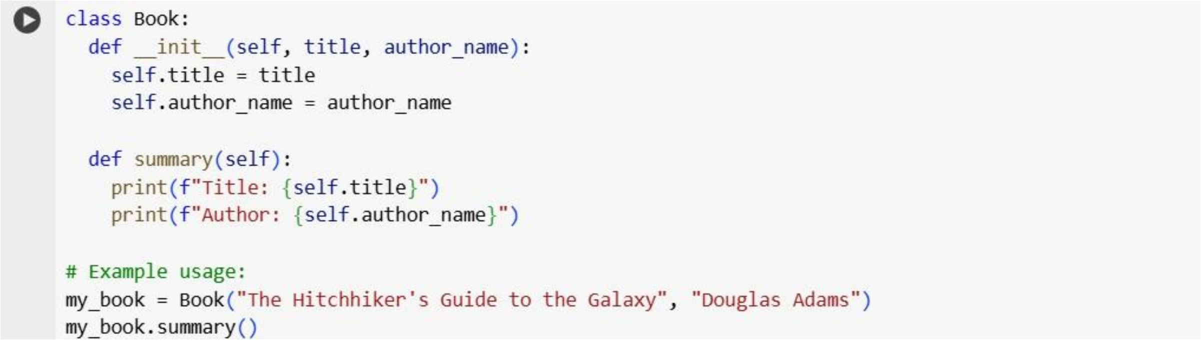
Use Cursor AI to generate a Python class called Book with attributes title, author, and a method summary() that prints the details.

PROMPT:

Write a python class Book with attributes title,author and a method Display which prints information about the class

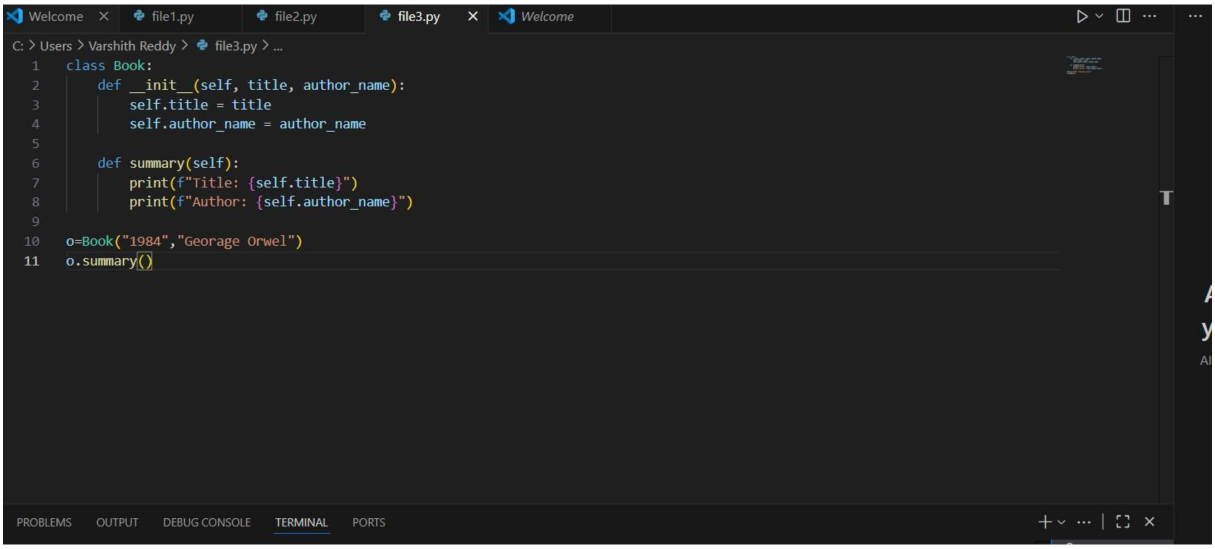
CODE:

Code from Gemini in Collab



```
class Book:
  def __init__(self, title, author_name):
    self.title = title
    self.author_name = author_name

  def summary(self):
    print(f"Title: {self.title}")
    print(f"Author: {self.author_name}")

# Example usage:
my_book = Book("The Hitchhiker's Guide to the Galaxy", "Douglas Adams")
my_book.summary()
```

Code from Copilot

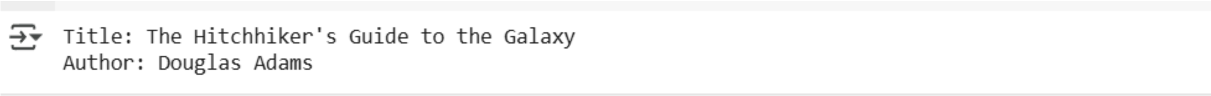


```python
class Book:
    def __init__(self, title, author_name):
        self.title = title
        self.author_name = author_name

    def summary(self):
        print(f"Title: {self.title}")
        print(f"Author: {self.author_name}")

o=Book("1984","Georage Orwel")
o.summary()
```

OUTPUT:

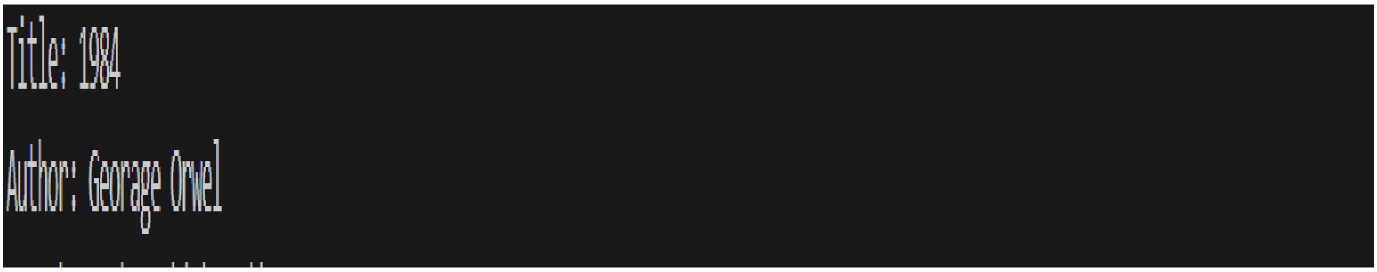
Screenshot comparisons and student commentary on code clarity and performance.

Output from Gemini in Collab



```
Title: The Hitchhiker's Guide to the Galaxy
Author: Douglas Adams
```

Output from Copilot



```
Title: 1984

Author: Georage Orwel
```

Student Commentry:

I got the code from both Copilot and Gemini in Collab

Performance wise Copilot is too good as it is taking less time to give the code and it is user friendly to use

Whereas Gemini in Collab is taking more time than Copilot and there is a delay in displaying of Output

However both of them gave the same code i.e static way of coding .No where the code is dynamic

Observation:

The outputs are as expected

Task 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.

PROMPT:

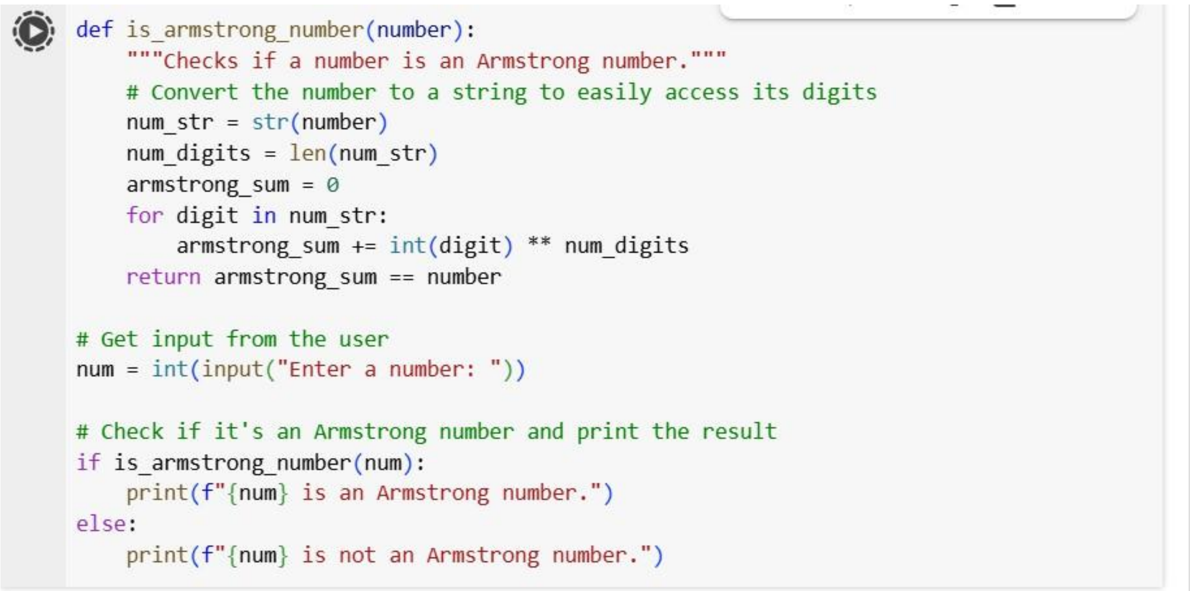
Write a python function that takes a user defined number and checks whether it is Armstrong or not

Description:

Use Python Programming language to take a user defined number and check whether it is Armstrong.Use while loop for better Understanding

Code:

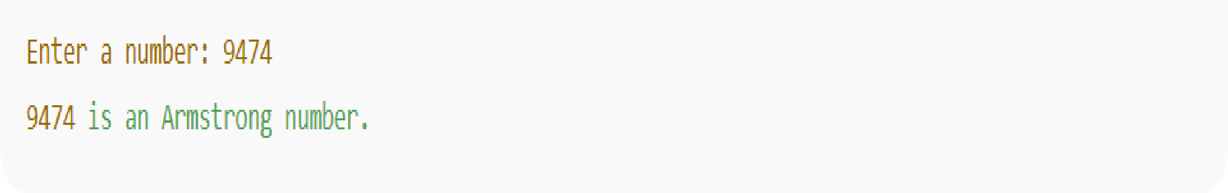
Code from Gemini in Collab



```
def is_armstrong_number(number):
    """Checks if a number is an Armstrong number."""
    # Convert the number to a string to easily access its digits
    num_str = str(number)
    num_digits = len(num_str)
    armstrong_sum = 0
    for digit in num_str:
        armstrong_sum += int(digit) ** num_digits
    return armstrong_sum == number

# Get input from the user
num = int(input("Enter a number: "))

# Check if it's an Armstrong number and print the result
if is_armstrong_number(num):
    print(f"{num} is an Armstrong number.")
else:
    print(f"{num} is not an Armstrong number.")
```

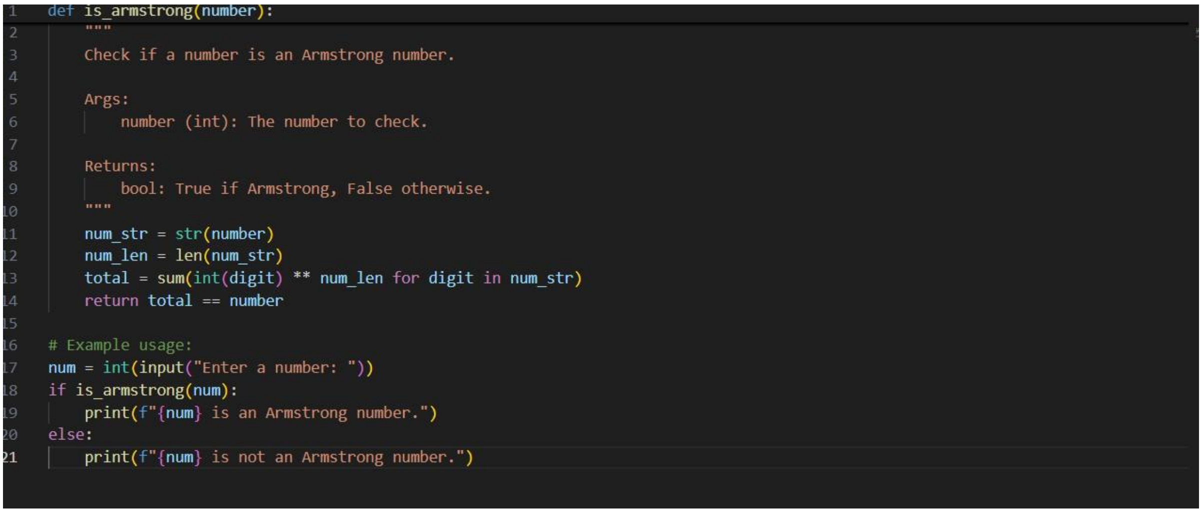
Output from Gemini in Collab:

Two versions of the code with screenshots, and a summary of what changes were made by Cursor.



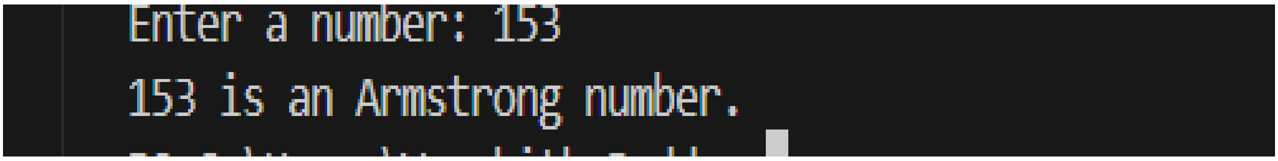
```
Enter a number: 9474
9474 is an Armstrong number.
```

Code from Copilot:



```python
def is_armstrong(number):
    """
    Check if a number is an Armstrong number.

    Args:
        number (int): The number to check.

    Returns:
        bool: True if Armstrong, False otherwise.
    """
    num_str = str(number)
    num_len = len(num_str)
    total = sum(int(digit) ** num_len for digit in num_str)
    return total == number

# Example usage:
num = int(input("Enter a number: "))
if is_armstrong(num):
    print(f"{num} is an Armstrong number.")
else:
    print(f"{num} is not an Armstrong number.")
```

Output from Copilot:



```
Enter a number: 153
153 is an Armstrong number.
```

Summary:

I got two similar codes from Copilot and Gemini in Collab among those two the code from both are good .

Coming to their fastness Copilot is a little bit fast

We can see in above slides

Explanation:

In above code they are asking us to enter a number to check whether it is an Armstrong or not.As per the conditions the code is checking .

Observation:

The outputs are as expected

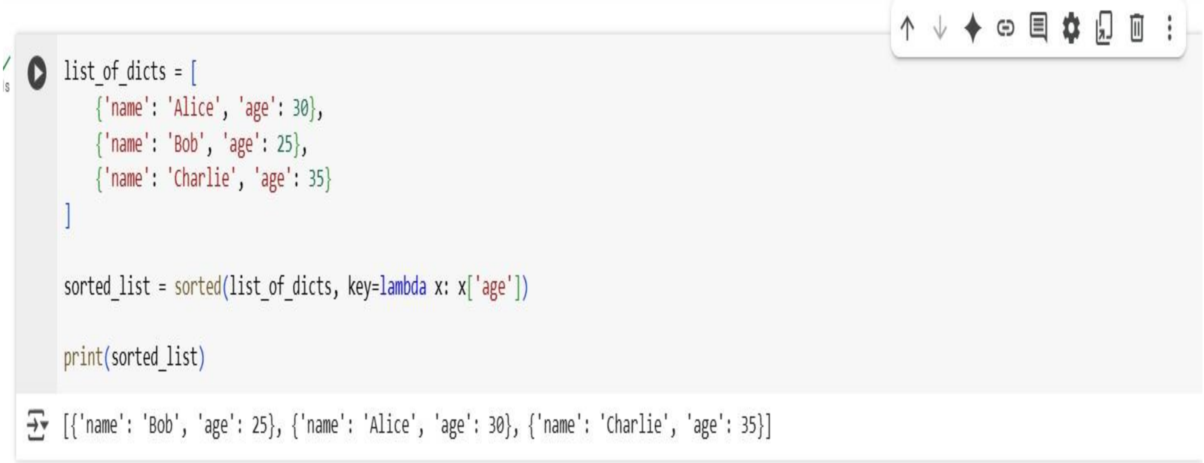
Task 5:

Description:

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

CODE:

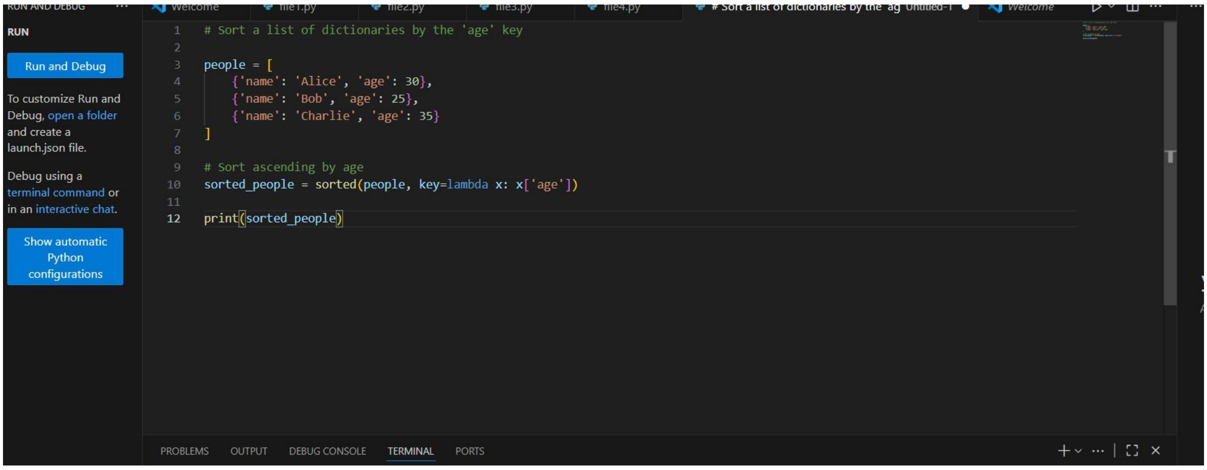
Code from Gemini in Collab



```
list_of_dicts = [
    {'name': 'Alice', 'age': 30},
    {'name': 'Bob', 'age': 25},
    {'name': 'Charlie', 'age': 35}
]

sorted_list = sorted(list_of_dicts, key=lambda x: x['age'])

print(sorted_list)
```

```
[{'name': 'Bob', 'age': 25}, {'name': 'Alice', 'age': 30}, {'name': 'Charlie', 'age': 35}]
```

Code from Copilot:



To customize Run and Debug, open a folder and create a launch.json file.

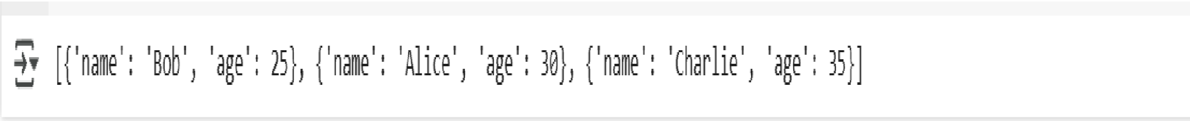
Debug using a terminal command or in an interactive chat.

```
# Sort a list of dictionaries by the 'age' key

people = [
    {'name': 'Alice', 'age': 30},
    {'name': 'Bob', 'age': 25},
    {'name': 'Charlie', 'age': 35}
]

# Sort ascending by age
sorted_people = sorted(people, key=lambda x: x['age'])

print(sorted_people)
```

OUTPUT:

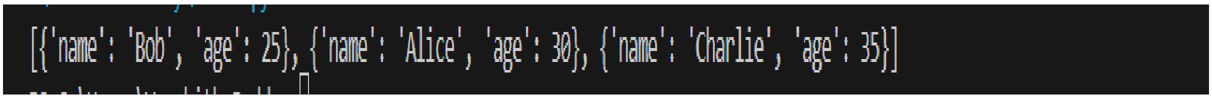
Screenshot comparisons and student commentary on code clarity and performance.

Output from Gemini in Collab



```
[{'name': 'Bob', 'age': 25}, {'name': 'Alice', 'age': 30}, {'name': 'Charlie', 'age': 35}]
```

Output from Copilot:



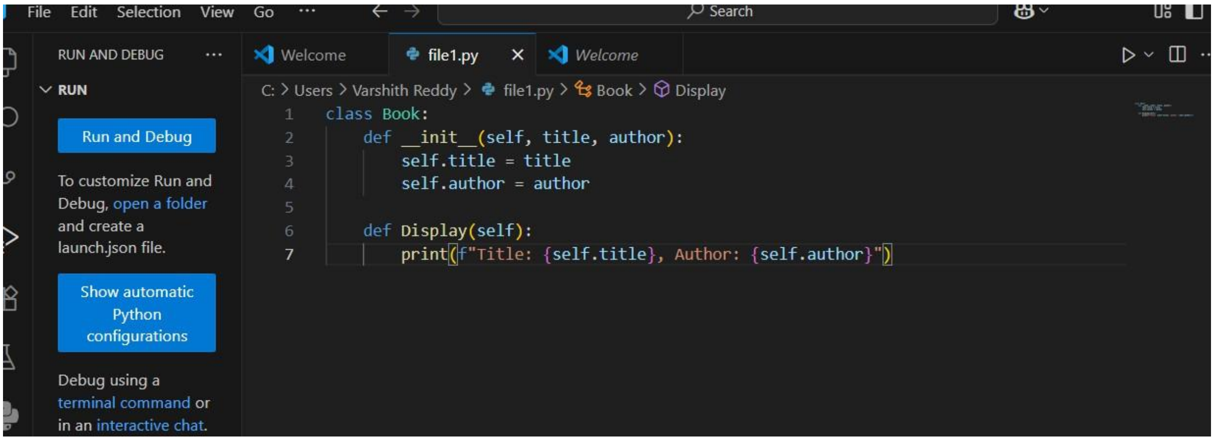
```
[{'name': 'Bob', 'age': 25}, {'name': 'Alice', 'age': 30}, {'name': 'Charlie', 'age': 35}]
```

Student Commentry:

In above two Codes both are giving almost same codes .There is no difference between them.Both of them given static way of code as per the prompt that I have given

Explanation:

In the above code they have taken a static list of dictionaries and based on the key output is getting displayed based on the Sorting order


File
Edit
Selection
View
Go
Search
RUN AND DEBUG
RUN
Run and Debug
Show automatic Python configurations
Welcome
file1.py
Welcome
C: > Users > Varshith Reddy > file1.py > Book > Display

To customize Run and Debug, open a folder and create a launch.json file.

Debug using a terminal command or in an interactive chat.

```
class Book:
    def __init__(self, title, author):
        self.title = title
        self.author = author

    def Display(self):
        print(f"Title: {self.title}, Author: {self.author}")
```

Observation:

The outputs are as expected