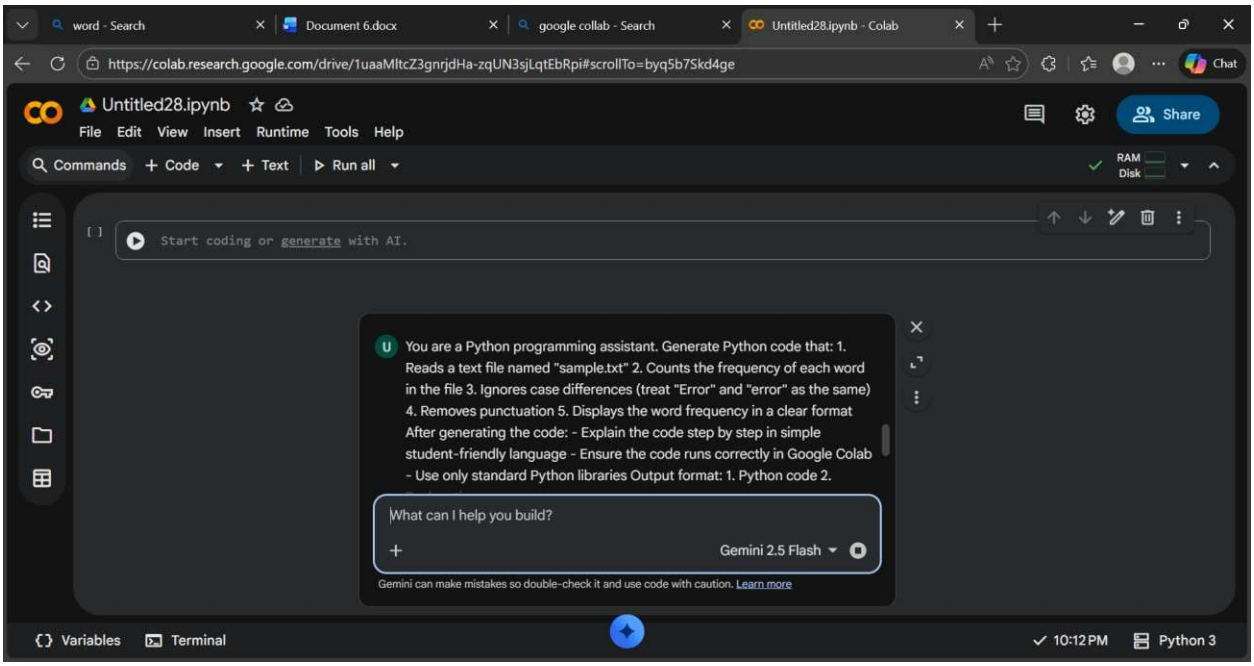
Assignment 2.3 AI ASSISTED CODING

HTNO:2303A510C1

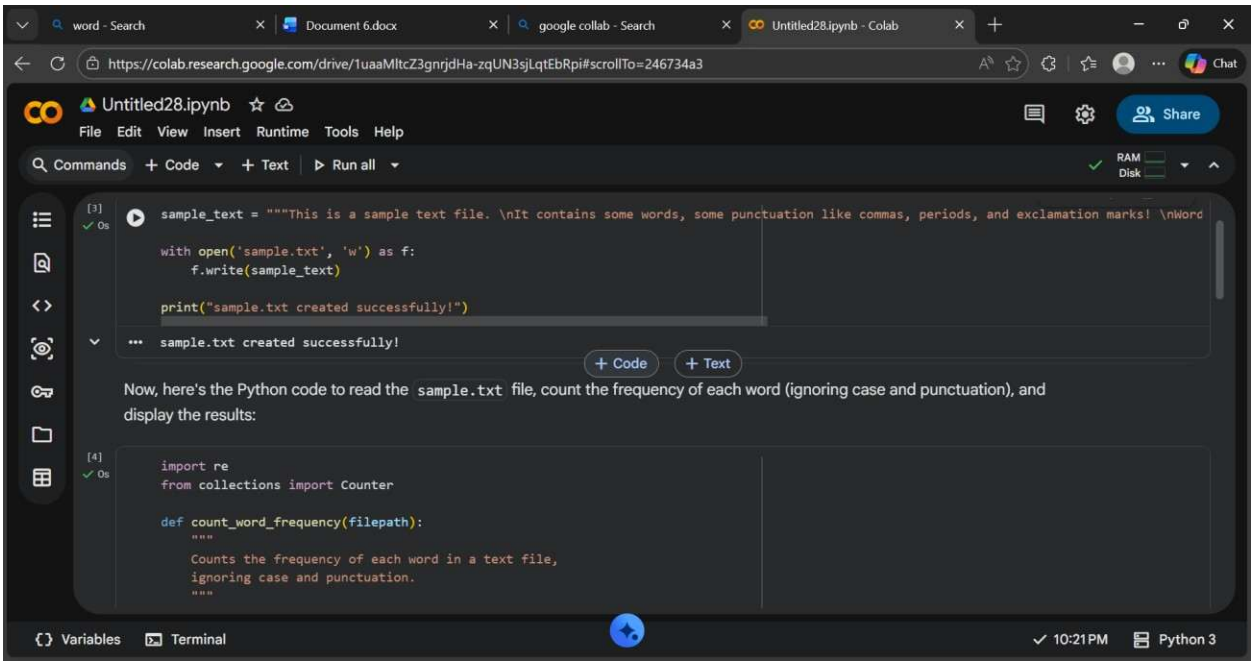
BTNO:06

TASK 1:

Prompt:



Code: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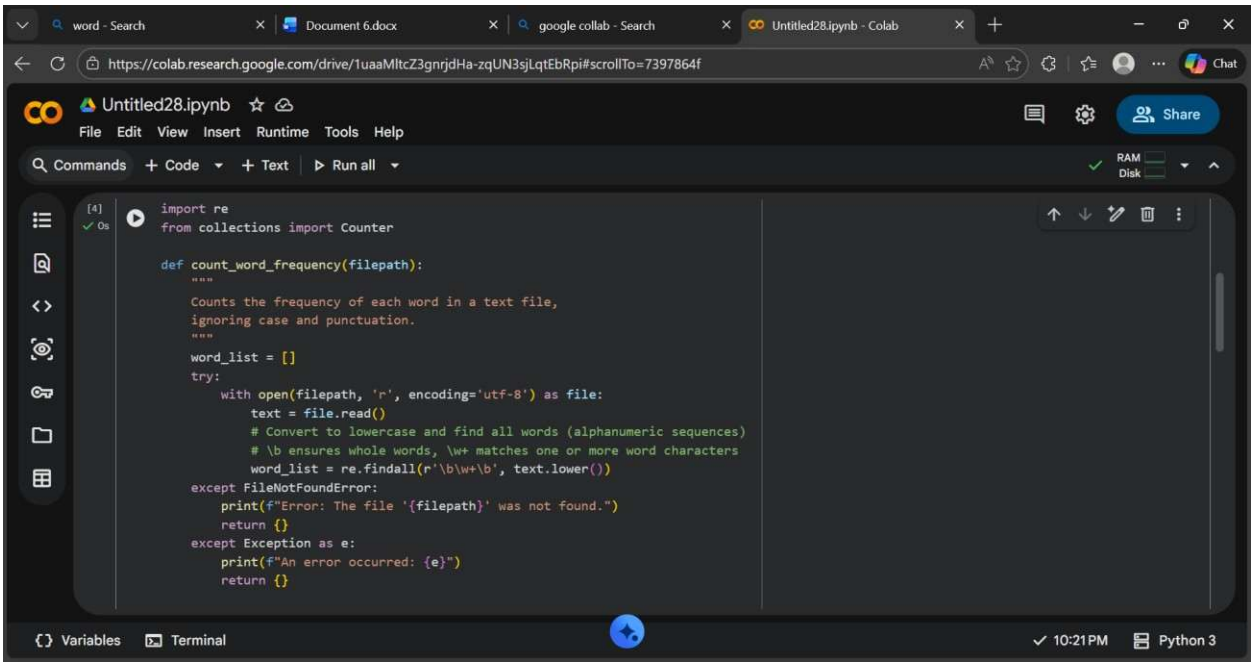
[3] 0s
sample_text = """This is a sample text file. \nIt contains some words, some punctuation like commas, periods, and exclamation marks! \nWord
with open('sample.txt', 'w') as f:
f.write(sample_text)
print("sample.txt created successfully!")
sample.txt created successfully!
+ Code + Text
Now, here's the Python code to read the sample.txt file, count the frequency of each word (ignoring case and punctuation), and display the results:
[4] 0s
import re
from collections import Counter
def count_word_frequency(filepath):
"""
Counts the frequency of each word in a text file,
ignoring case and punctuation.
"""
Variables Terminal
10:21 PM
Python 3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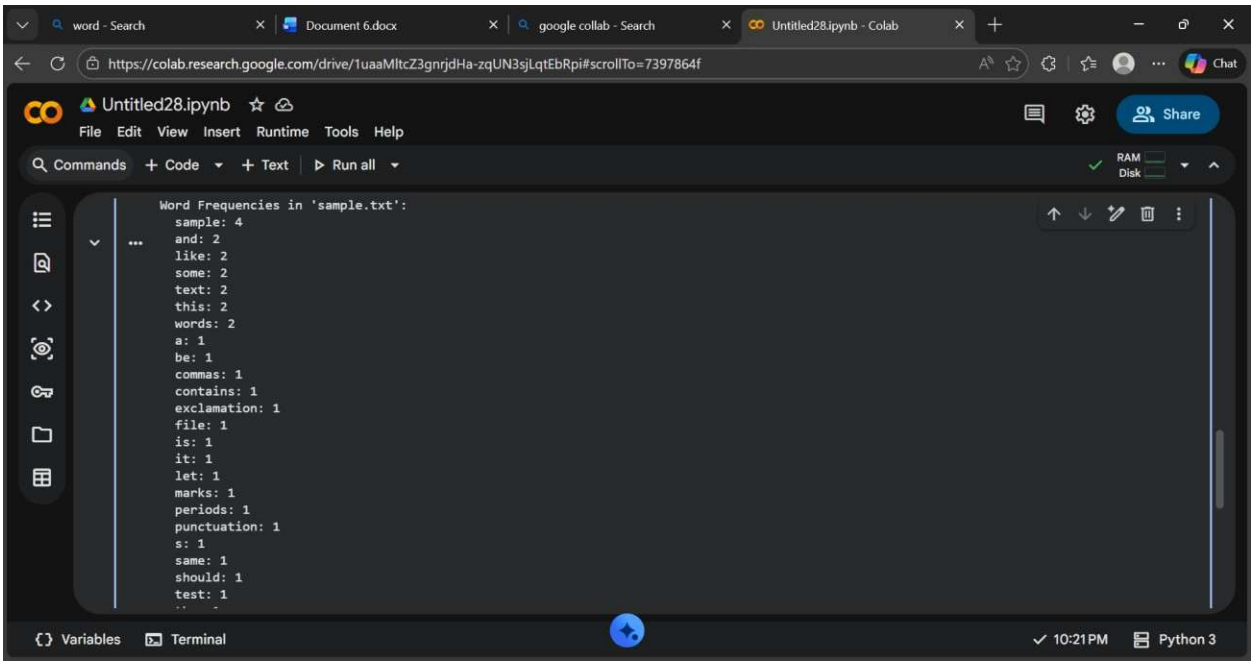
[4] 0s
import re
from collections import Counter
def count_word_frequency(filepath):
"""
Counts the frequency of each word in a text file,
ignoring case and punctuation.
"""
word_list = []
try:
with open(filepath, 'r', encoding='utf-8') as file:
text = file.read()
# Convert to lowercase and find all words (alphanumeric sequences)
# \b ensures whole words, \w+ matches one or more word characters
word_list = re.findall(r'\b\w+\b', text.lower())
except FileNotFoundError:
print(f"Error: The file '{filepath}' was not found.")
return {}
except Exception as e:
print(f"An error occurred: {e}")
return {}
Variables Terminal
10:21 PM
Python 3

Output:



Explanation:

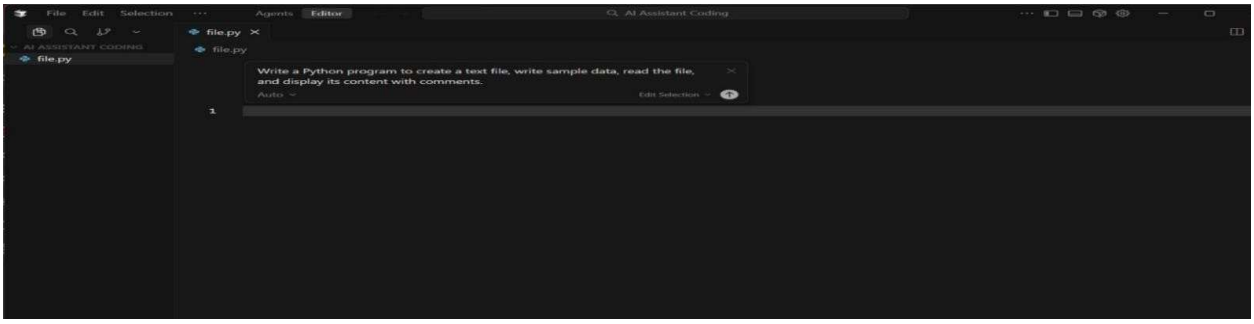
The program reads text from a file and converts all words to lowercase to avoid case differences.

It removes punctuation and splits the text into words, then counts how many times each word appears.

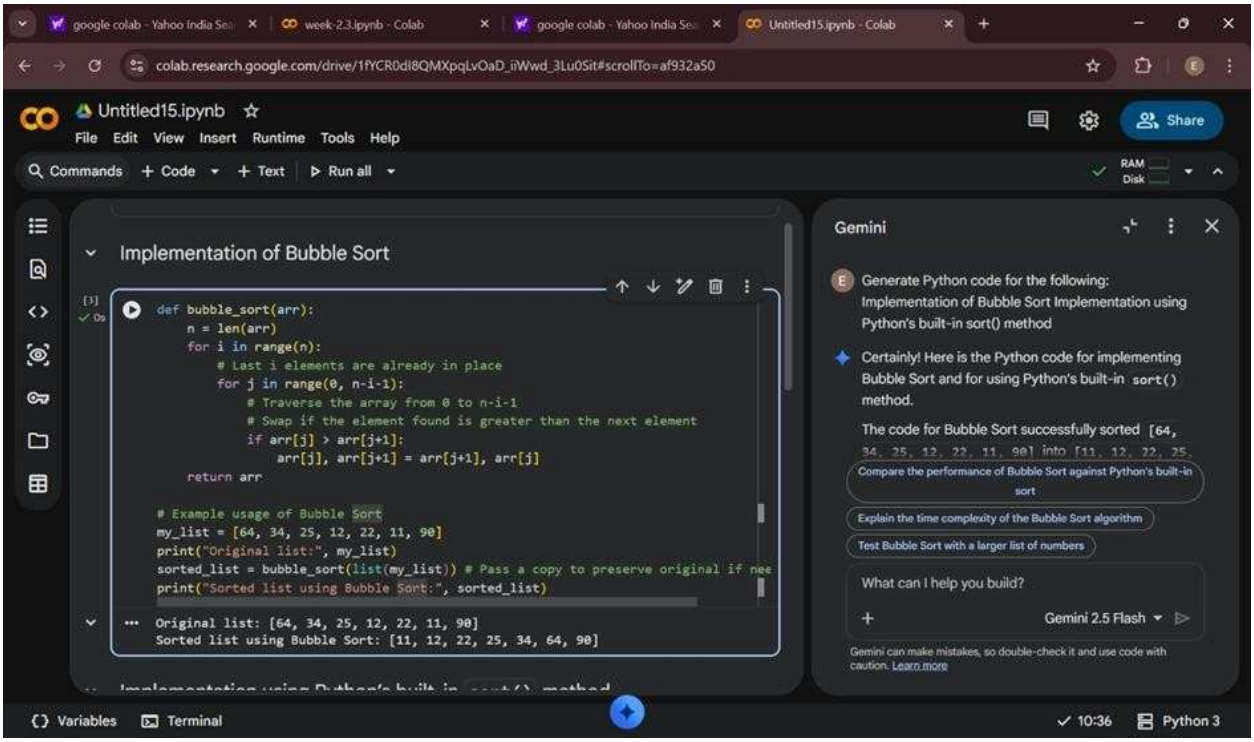
Finally, it prints each word along with its frequency in the file.

Task 2:

Prompt:



Code:

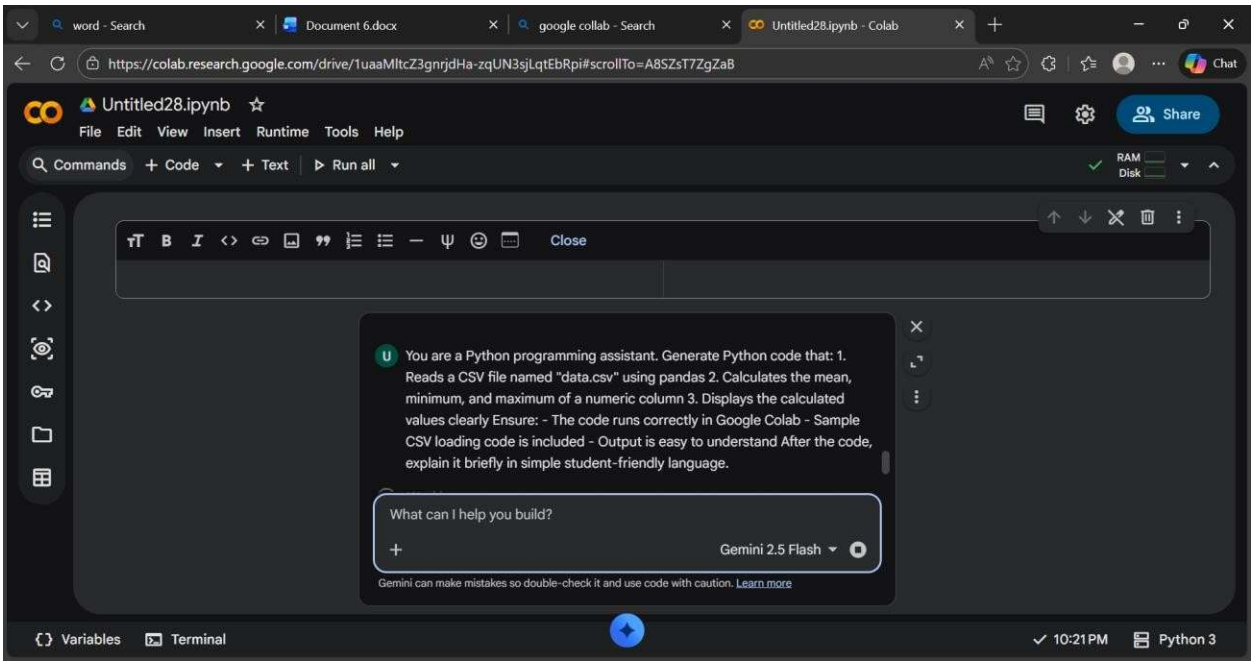


Output:

Explanation: The program creates a text file and writes sample text into it using file handling methods.

It then reads the file content and displays it on the screen.

Task 3: CSV Data Analysis Prompt: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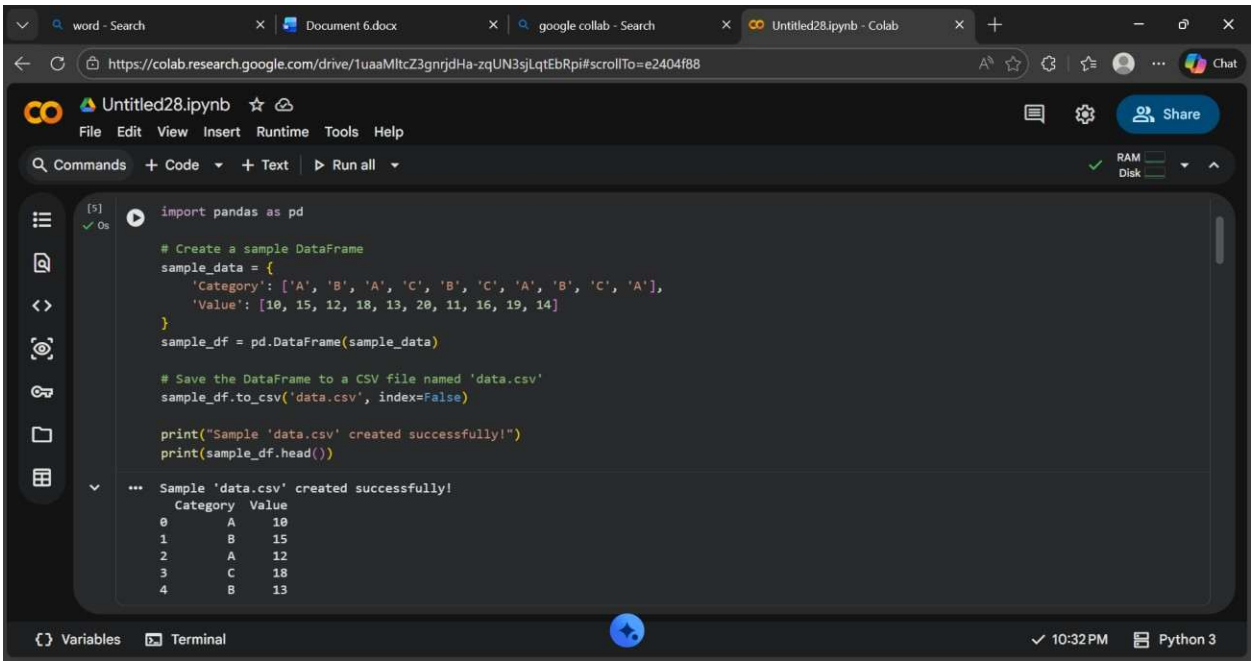
You are a Python programming assistant. Generate Python code that: 1. Reads a CSV file named "data.csv" using pandas 2. Calculates the mean, minimum, and maximum of a numeric column 3. Displays the calculated values clearly Ensure: - The code runs correctly in Google Colab - Sample CSV loading code is included - Output is easy to understand After the code, explain it briefly in simple student-friendly language.
What can I help you build?
Gemini 2.5 Flash
Gemini can make mistakes so double-check it and use code with caution. Learn more
Variables
Terminal
10:21 PM
Python 3

Code: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import pandas as pd
# Create a sample DataFrame
sample_data = {
'Category': ['A', 'B', 'A', 'C', 'B', 'C', 'A', 'B', 'C', 'A'],
'Value': [10, 15, 12, 18, 13, 20, 11, 16, 19, 14]
}
sample_df = pd.DataFrame(sample_data)
# Save the DataFrame to a CSV file named 'data.csv'
sample_df.to_csv('data.csv', index=False)
print("Sample 'data.csv' created successfully!")
print(sample_df.head())
Sample 'data.csv' created successfully!
Category Value
0 A 10
1 B 15
2 A 12
3 C 18
4 B 13
Variables
Terminal
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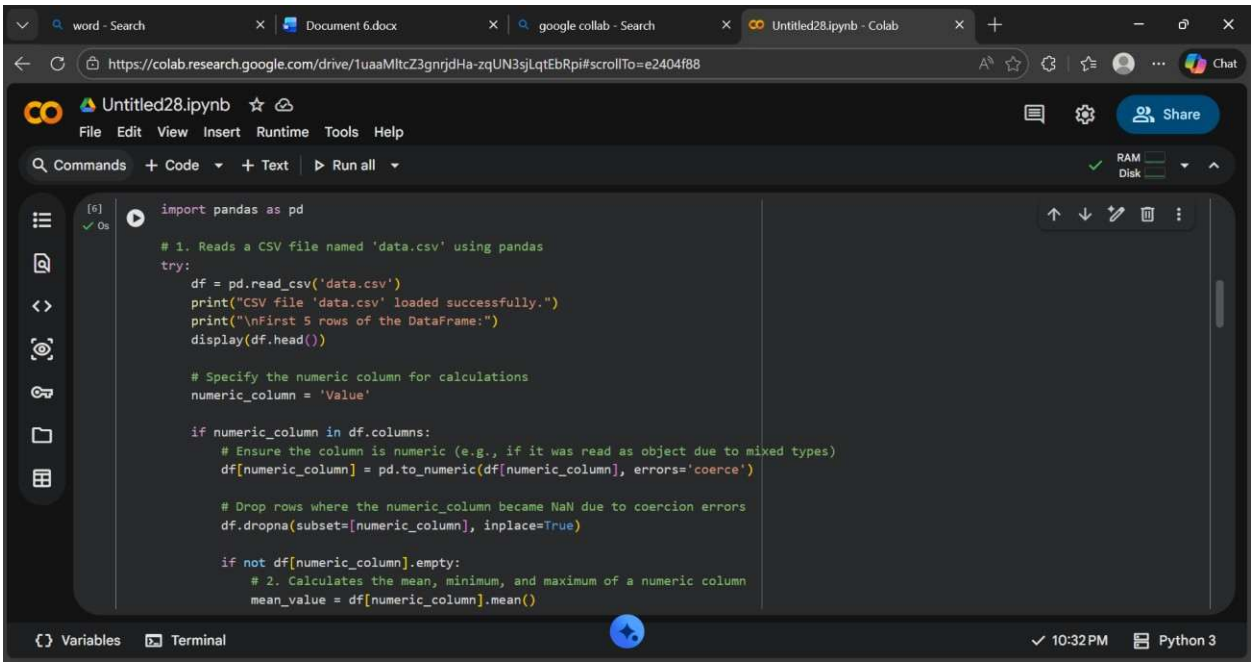
Python 3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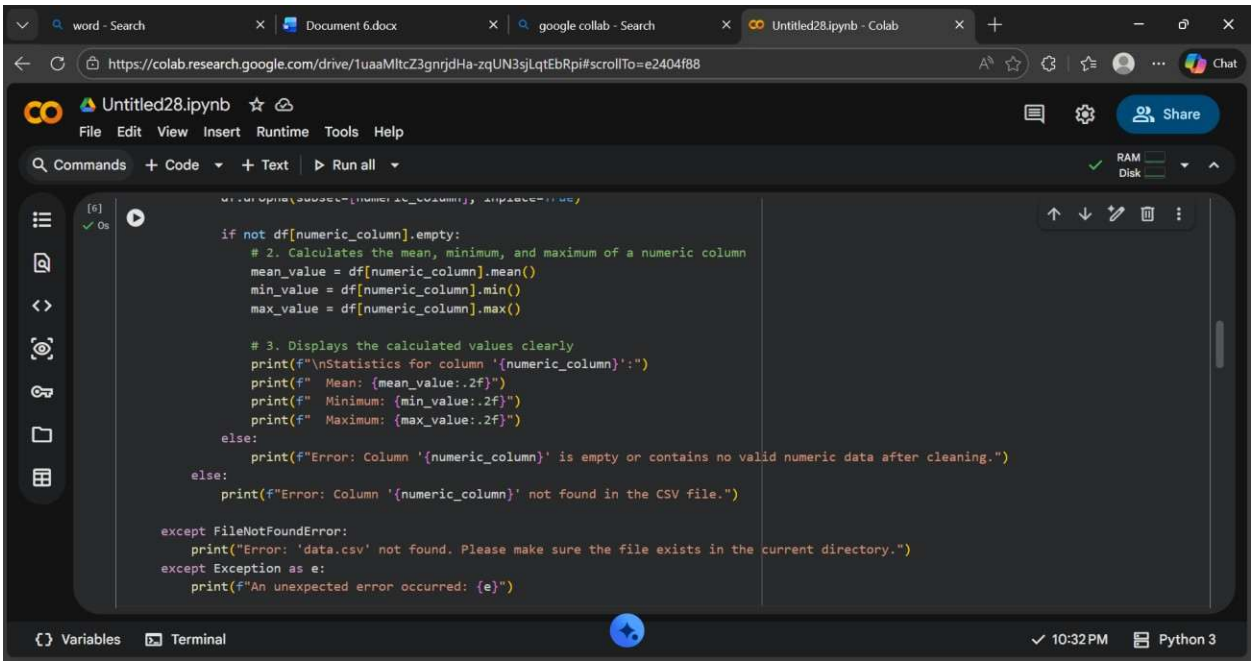
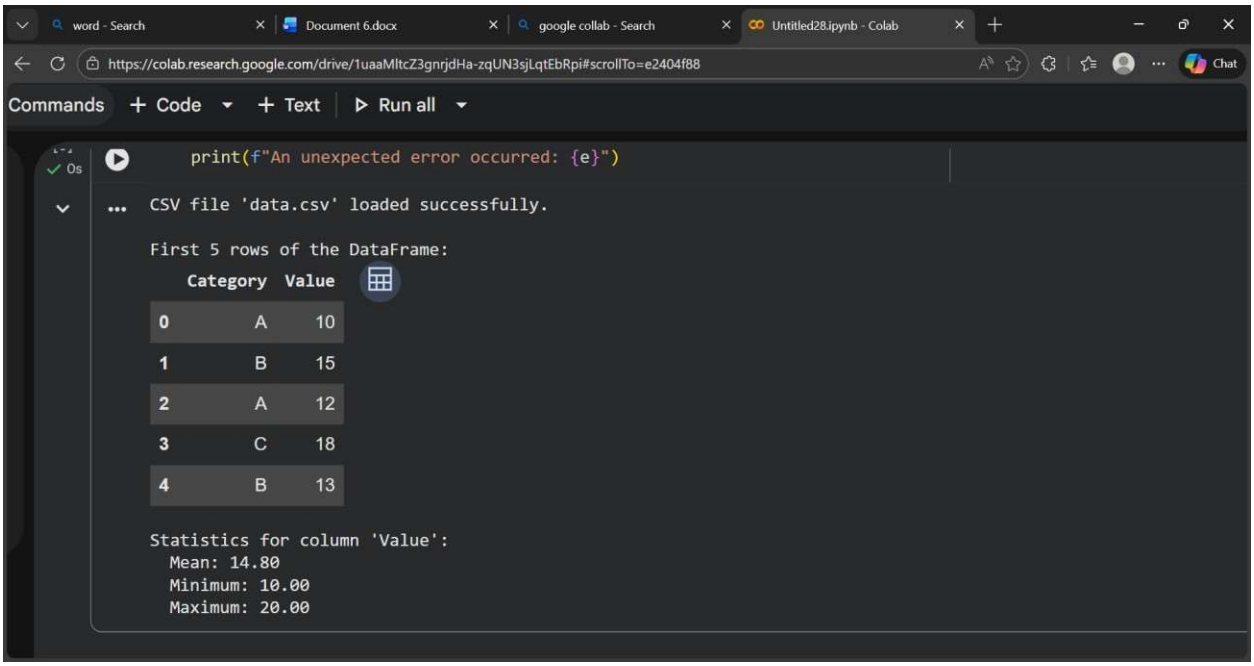
[6]
0s
import pandas as pd
# 1. Reads a CSV file named 'data.csv' using pandas
try:
df = pd.read_csv('data.csv')
print("CSV file 'data.csv' loaded successfully.")
print("\nFirst 5 rows of the DataFrame:")
display(df.head())
# Specify the numeric column for calculations
numeric_column = 'Value'
if numeric_column in df.columns:
# Ensure the column is numeric (e.g., if it was read as object due to mixed types)
df[numeric_column] = pd.to_numeric(df[numeric_column], errors='coerce')
# Drop rows where the numeric_column became NaN due to coercion errors
df.dropna(subset=[numeric_column], inplace=True)
if not df[numeric_column].empty:
# 2. Calculates the mean, minimum, and maximum of a numeric column
mean_value = df[numeric_column].mean()
Variables
Terminal
10:32 PM
Python 3



```
        if not df[numeric_column].empty:
            # 2. Calculates the mean, minimum, and maximum of a numeric column
            mean_value = df[numeric_column].mean()
            min_value = df[numeric_column].min()
            max_value = df[numeric_column].max()

            # 3. Displays the calculated values clearly
            print(f"\nStatistics for column '{numeric_column}':")
            print(f"  Mean: {mean_value:.2f}")
            print(f"  Minimum: {min_value:.2f}")
            print(f"  Maximum: {max_value:.2f}")
        else:
            print(f"Error: Column '{numeric_column}' is empty or contains no valid numeric data after cleaning.")
    else:
        print(f"Error: Column '{numeric_column}' not found in the CSV file.")

except FileNotFoundError:
    print("Error: 'data.csv' not found. Please make sure the file exists in the current directory.")
except Exception as e:
    print(f"An unexpected error occurred: {e}")
```

Output:



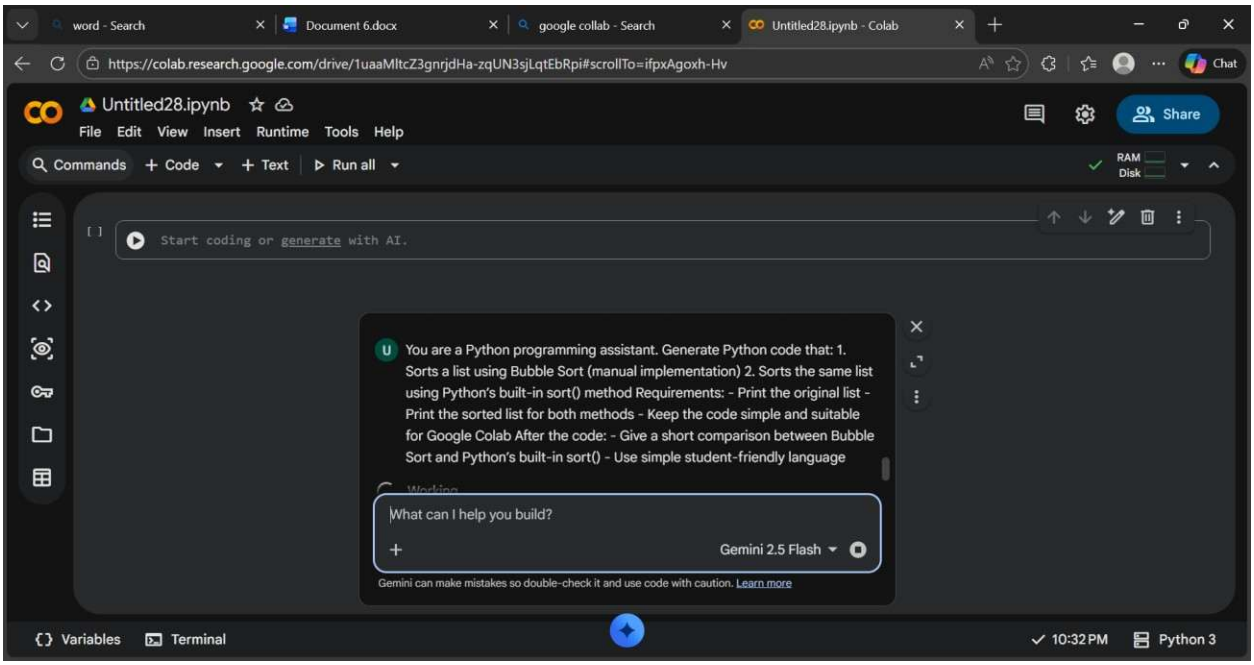
```
print(f"An unexpected error occurred: {e}")

CSV file 'data.csv' loaded successfully.

First 5 rows of the DataFrame:
```

	Category	Value
0	A	10
1	B	15
2	A	12
3	C	18
4	B	13

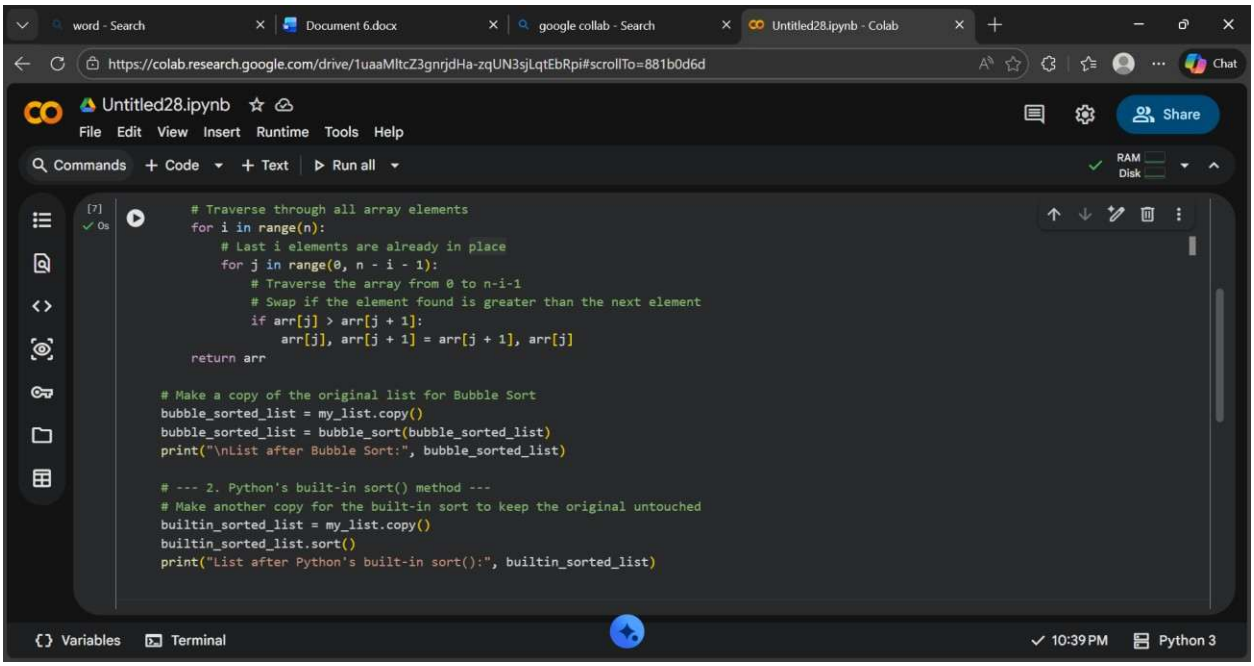
```
Statistics for column 'Value':
  Mean: 14.80
  Minimum: 10.00
  Maximum: 20.00
```

Explanation: Manual sorting uses loops and comparisons to arrange elements step by step.
Built-in sorting is faster and simpler as Python handles the sorting internally.

Task 4: Sorting Lists – Manual vs Built-in Prompt:

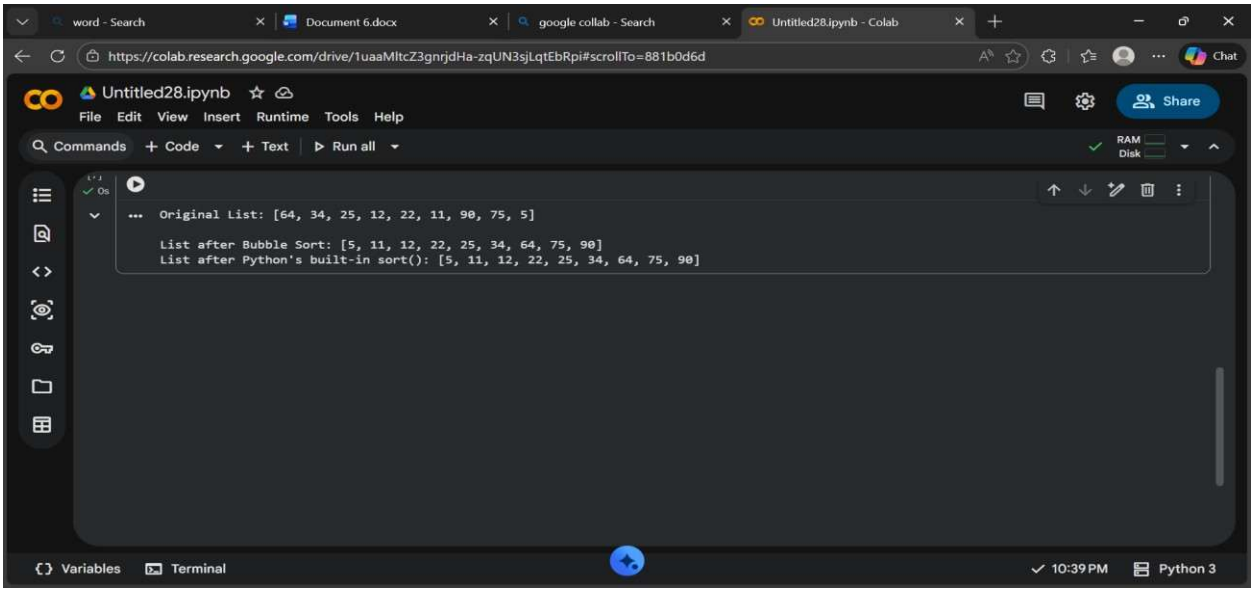


Code:



Output:

Expalantion: Bubble sort repeatedly compares and swaps elements and is slow for large lists.
Python's built-in sort() is faster and more efficient because it uses optimized algorithms.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Original List: [64, 34, 25, 12, 22, 11, 90, 75, 5]
List after Bubble Sort: [5, 11, 12, 22, 25, 34, 64, 75, 90]
List after Python's built-in sort(): [5, 11, 12, 22, 25, 34, 64, 75, 90]
Variables
Terminal
10:39 PM
Python 3