

2303A51739

Batch-25

Assignment-4.4

1. Sentiment Classification for Customer Reviews

Scenario:

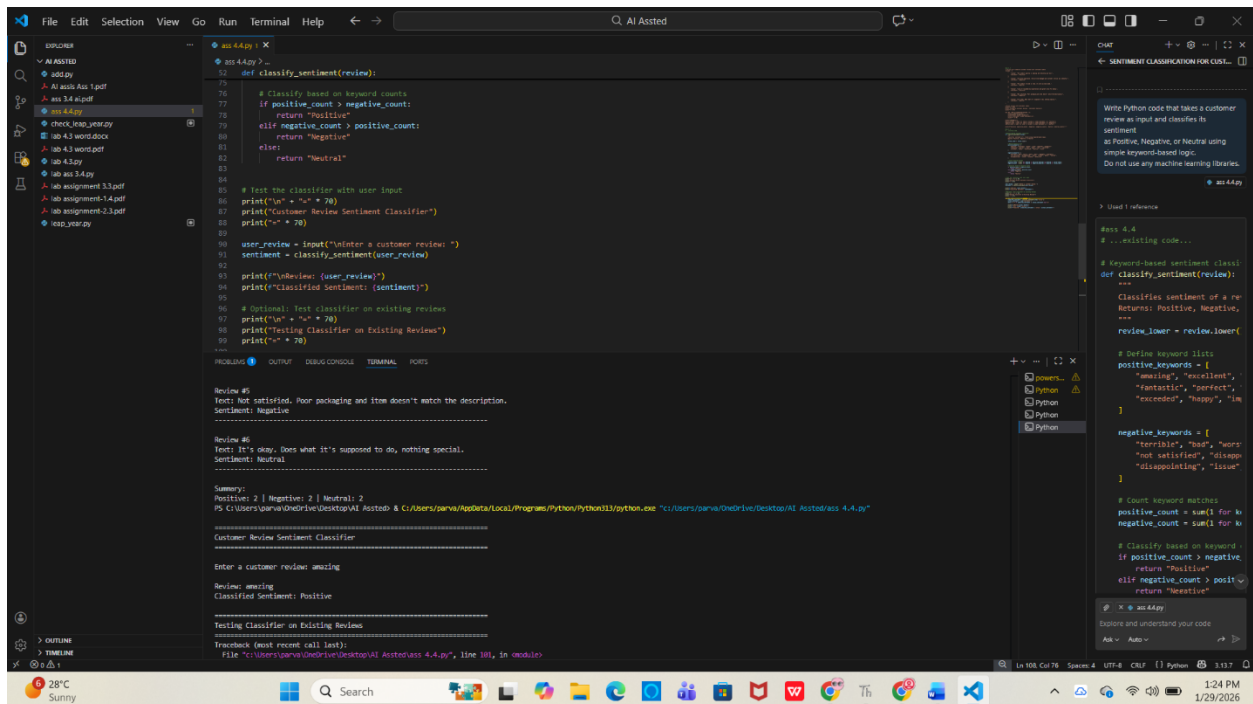
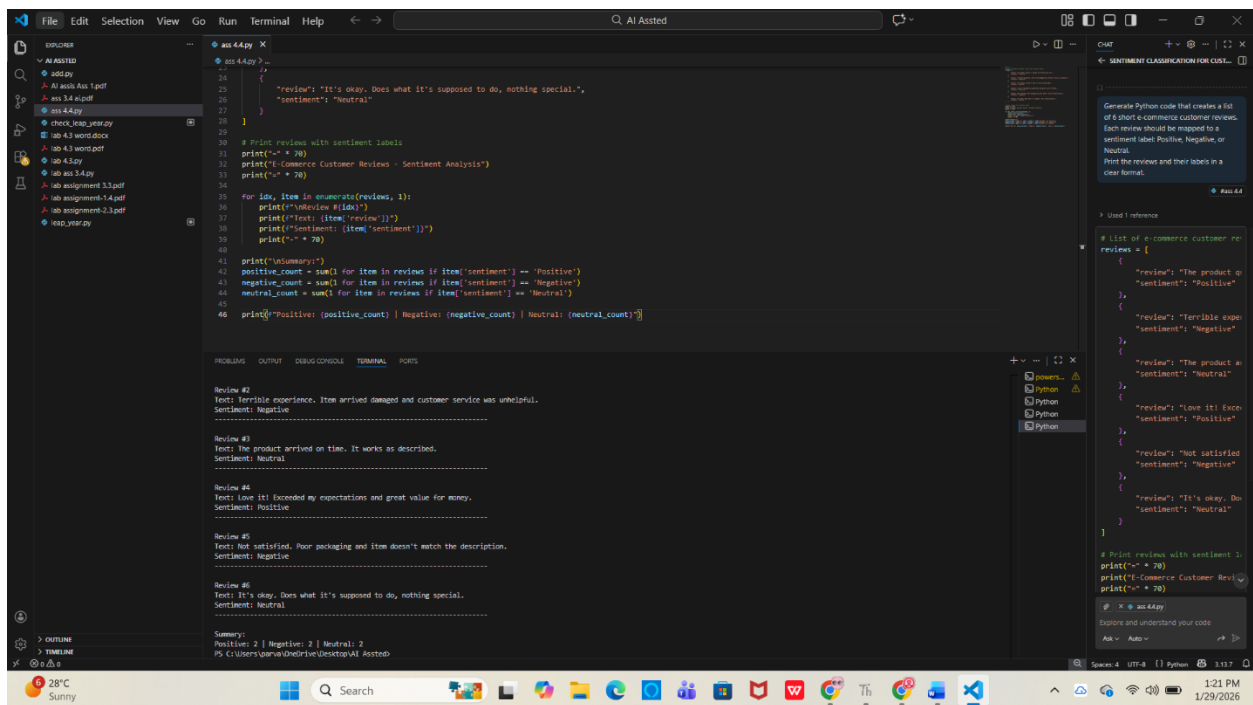
An e-commerce platform wants to analyze customer reviews and classify

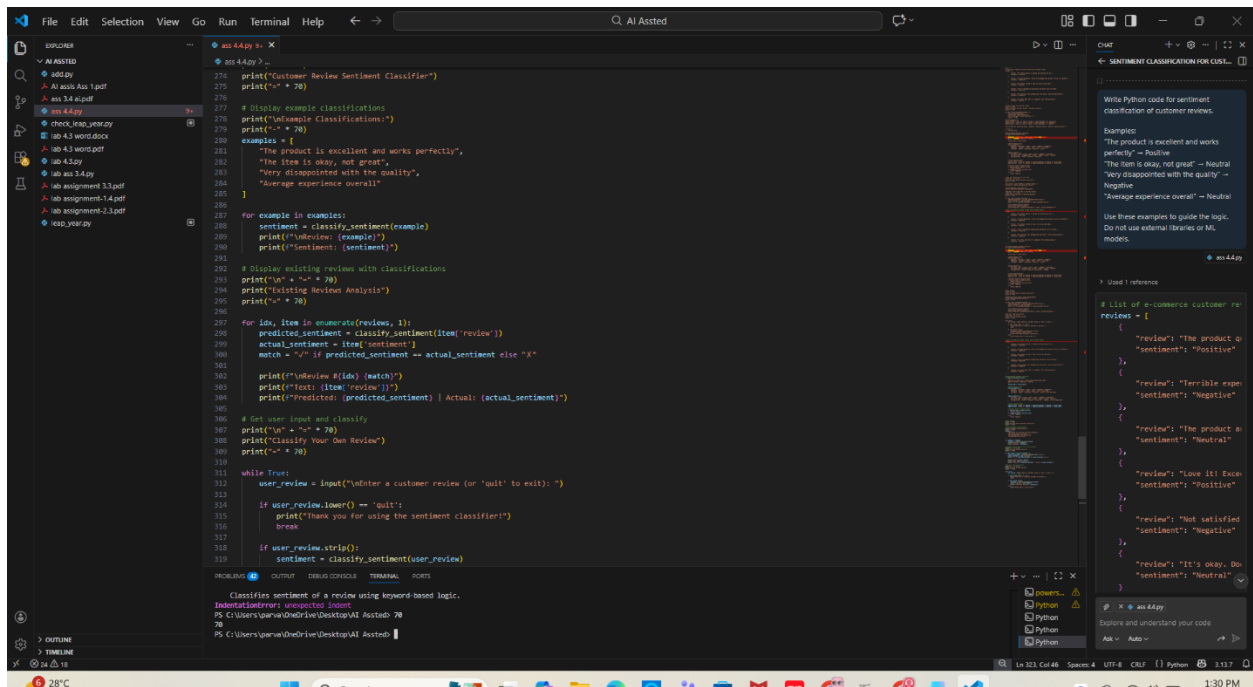
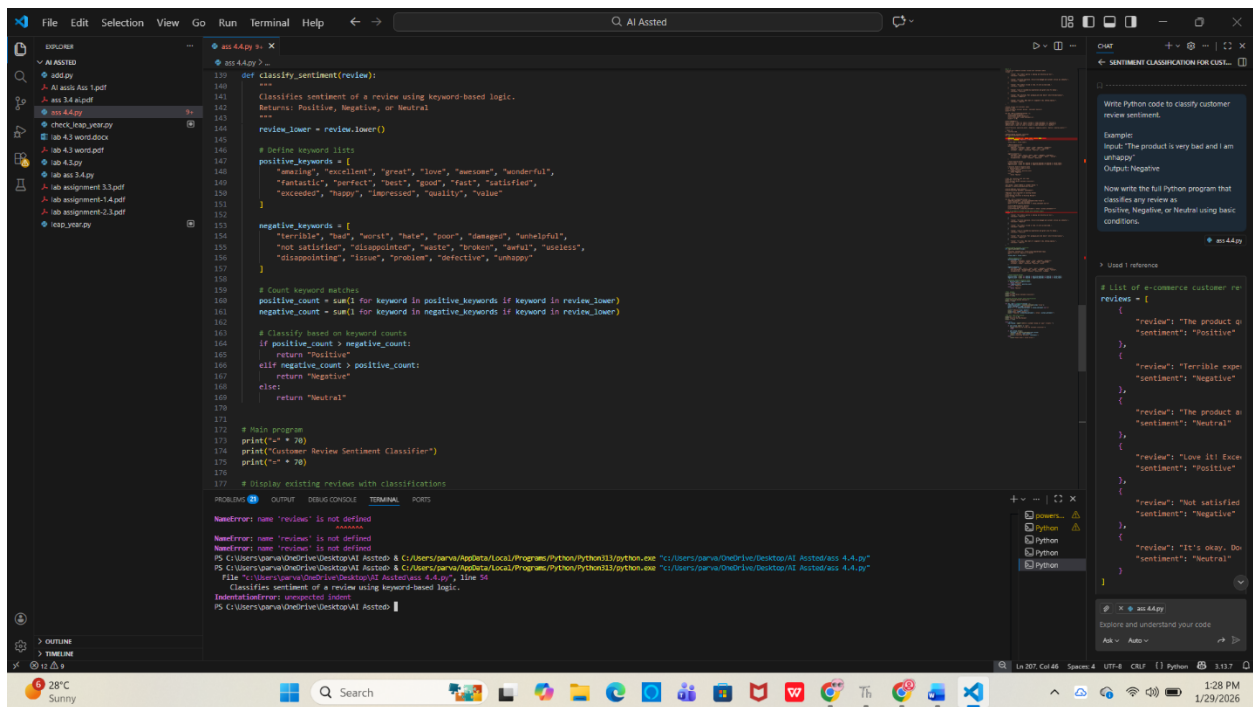
Week2

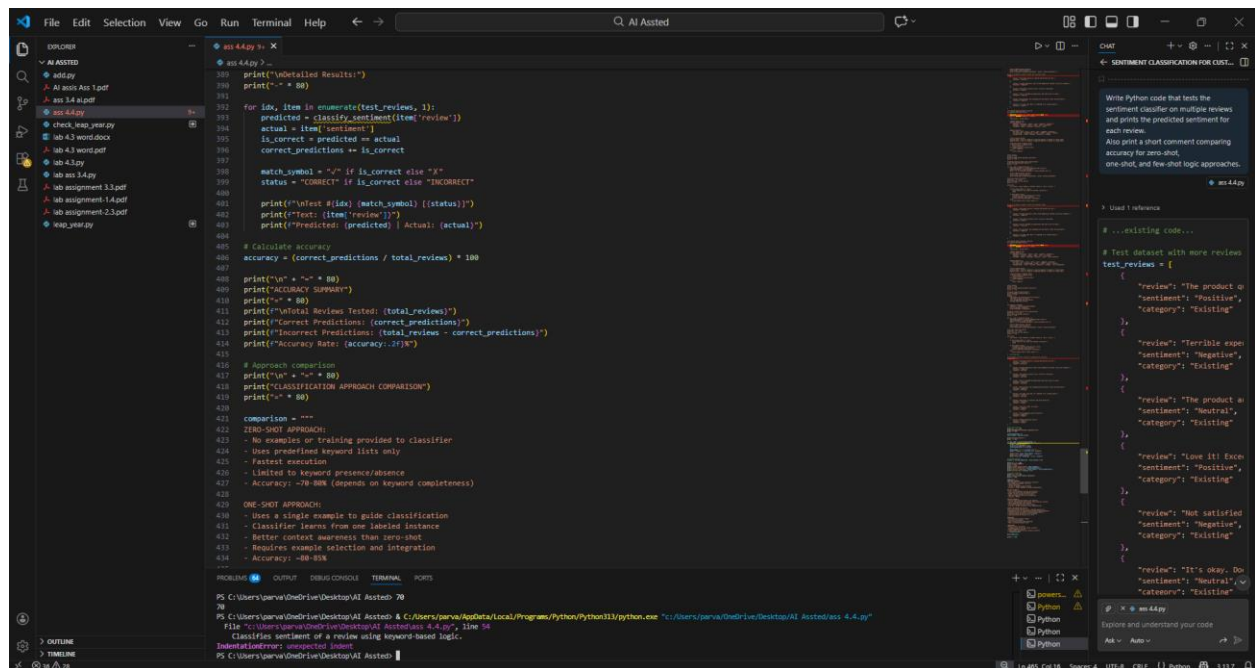
them into Positive, Negative, or Neutral sentiments using prompt engineering.

Tasks:

- a) Prepare 6 short customer reviews mapped to sentiment labels.
- b) Design a Zero-shot prompt to classify sentiment.
- c) Design a One-shot prompt with one labeled example.
- d) Design a Few-shot prompt with 3–5 labeled examples.
- e) Compare the outputs and discuss accuracy differences.







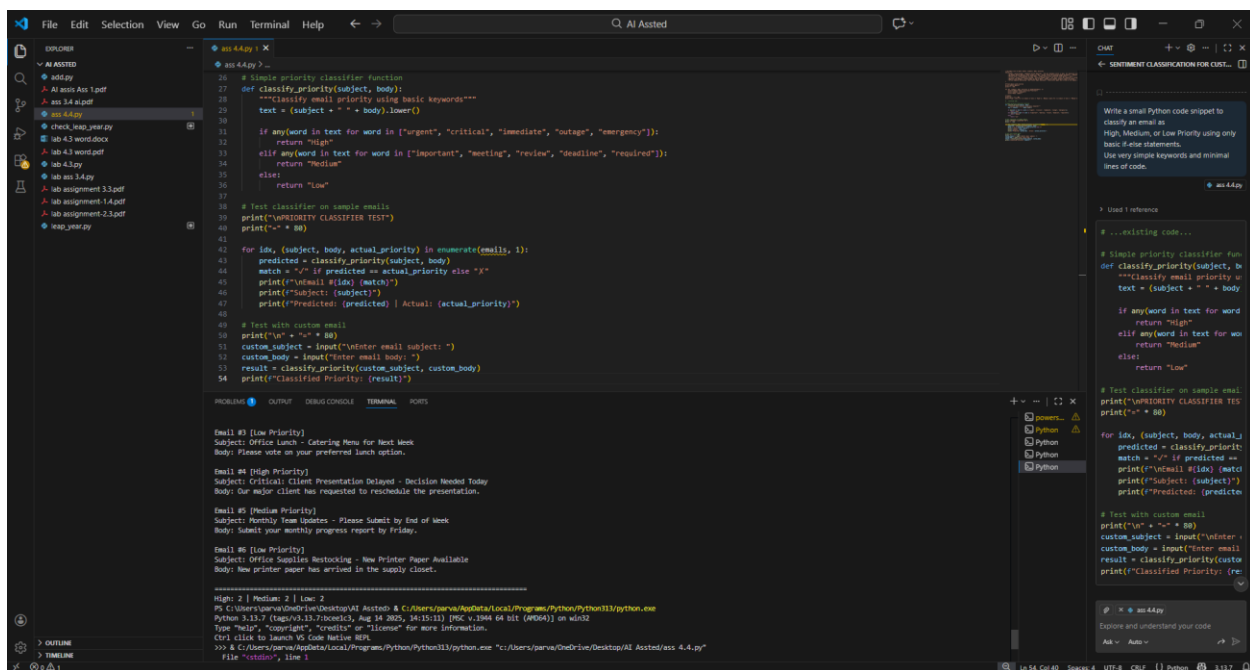
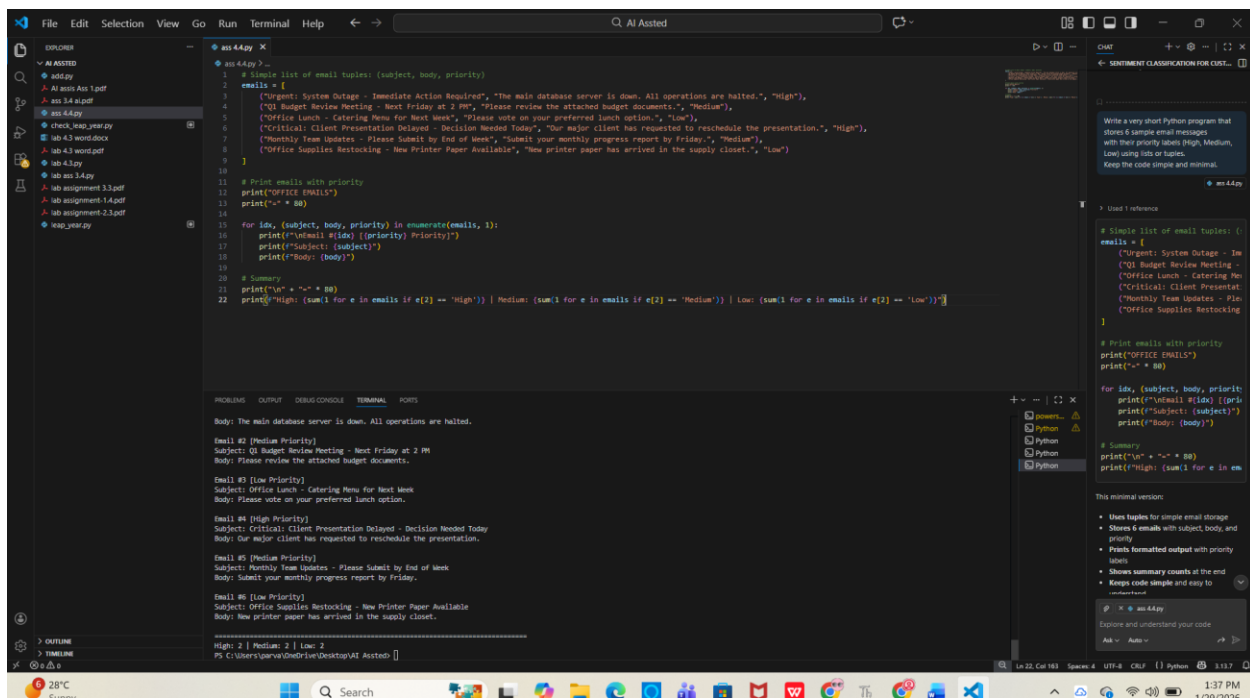
2. Email Priority Classification

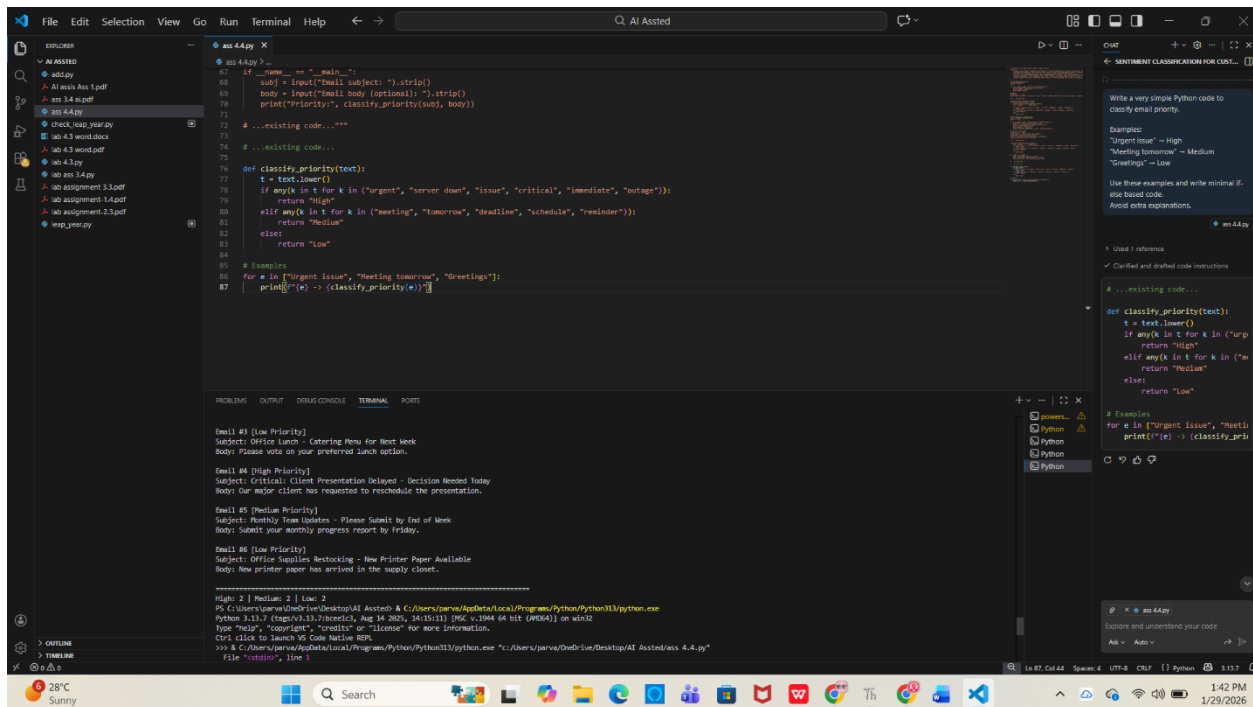
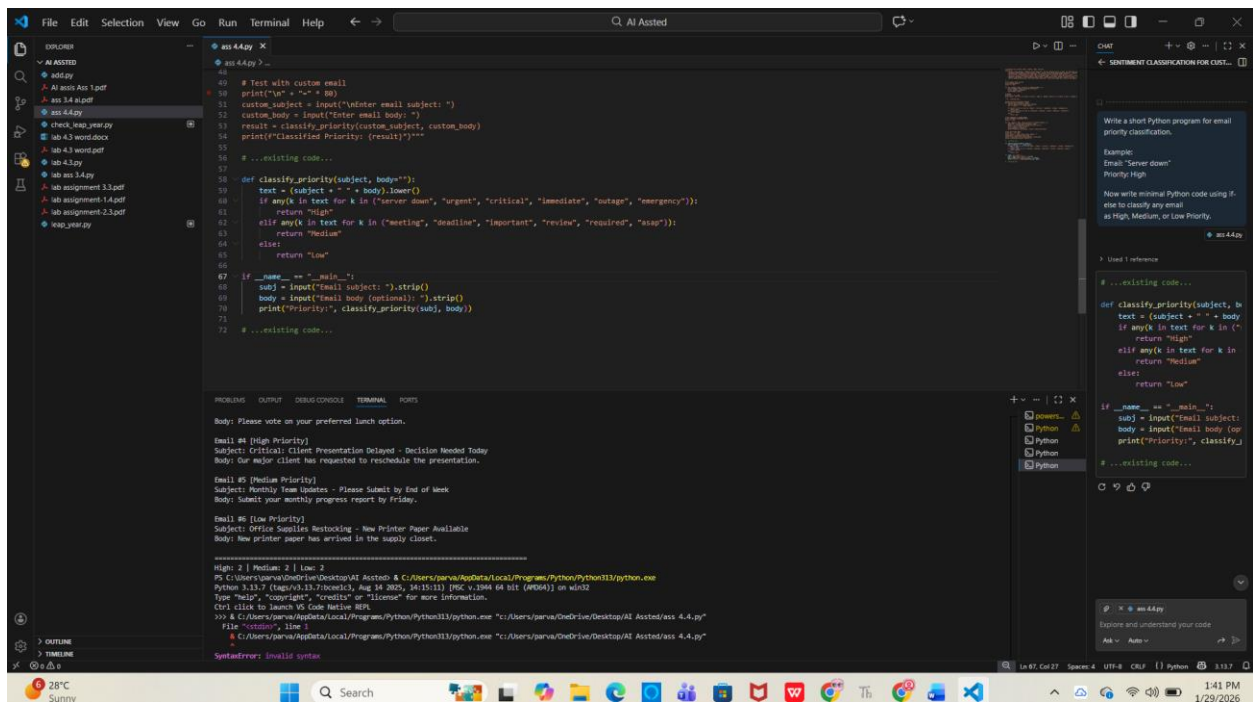
Scenario:

A company wants to automatically prioritize incoming emails into High Priority, Medium Priority, or Low Priority.

Tasks:

1. Create 6 sample email messages with priority labels.
2. Perform intent classification using Zero-shot prompting.
3. Perform classification using One-shot prompting.
4. Perform classification using Few-shot prompting.
5. Evaluate which technique produces the most reliable results and why.





3. Student Query Routing System

Scenario:

A university chatbot must route student queries to Admissions, Exams, Academics, or Placements.

Tasks:

1. Create 6 sample student queries mapped to departments.
2. Implement Zero-shot intent classification using an LLM.
3. Improve results using One-shot prompting.
4. Further refine results using Few-shot prompting.
5. Analyze how contextual examples affect classification accuracy.

The screenshot shows a VS Code editor with a Python script named `ass 4.4.py` in the main editor. The script defines a list of student queries mapped to departments and attempts to iterate over them. The terminal at the bottom displays several `SyntaxError: invalid syntax` messages, indicating errors in the code. The chat window on the right shows a conversation with an AI assistant, where the user asks for a Python program to store student queries and their departments, and the assistant provides a sample list of queries.

```
1 # Sample list of student queries (query, department)
2 queries = [
3     ("How do I apply for admission?", "Admissions"),
4     ("When are the exams scheduled?", "Exams"),
5     ("How can I change my course?", "Academics"),
6     ("What are the placement criteria?", "Placements"),
7     ("How do I request a transcript?", "Academics"),
8     ("What is the application deadline?", "Admissions"),
9 ]
10
11 for q, dept in queries:
12     print(f"{dept}: {q}")
13
14
15
```

Terminal Output:

```
>>> & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
File "C:\Users\parva\Desktop\AI Assted\ass 4.4.py", line 1
    & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
    ^
SyntaxError: invalid syntax

>>> & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
File "C:\Users\parva\Desktop\AI Assted\ass 4.4.py", line 1
    & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
    ^
SyntaxError: invalid syntax

>>> & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
File "C:\Users\parva\Desktop\AI Assted\ass 4.4.py", line 1
    & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
    ^
SyntaxError: invalid syntax

>>> exit()
PS C:\Users\parva\Desktop\AI Assted> & C:\Users\parva\AppData\Local\Programs\Python\Python311\python.exe "c:/Users/parva/Desktop/AI Assted/ass 4.4.py"
Admissions: How do I apply for admission?
Exams: When are the exams scheduled?
Academics: How can I change my course?
Placements: What are the placement criteria?
Academics: How do I request a transcript?
Admissions: What is the application deadline?
PS C:\Users\parva\Desktop\AI Assted>
```

Chat Window:

Write a very small Python program that stores 6 student queries and their departments (Admissions, Exams, Academics, Placements). Use single lists or tuples. Keep the code short.

Use 1 reference

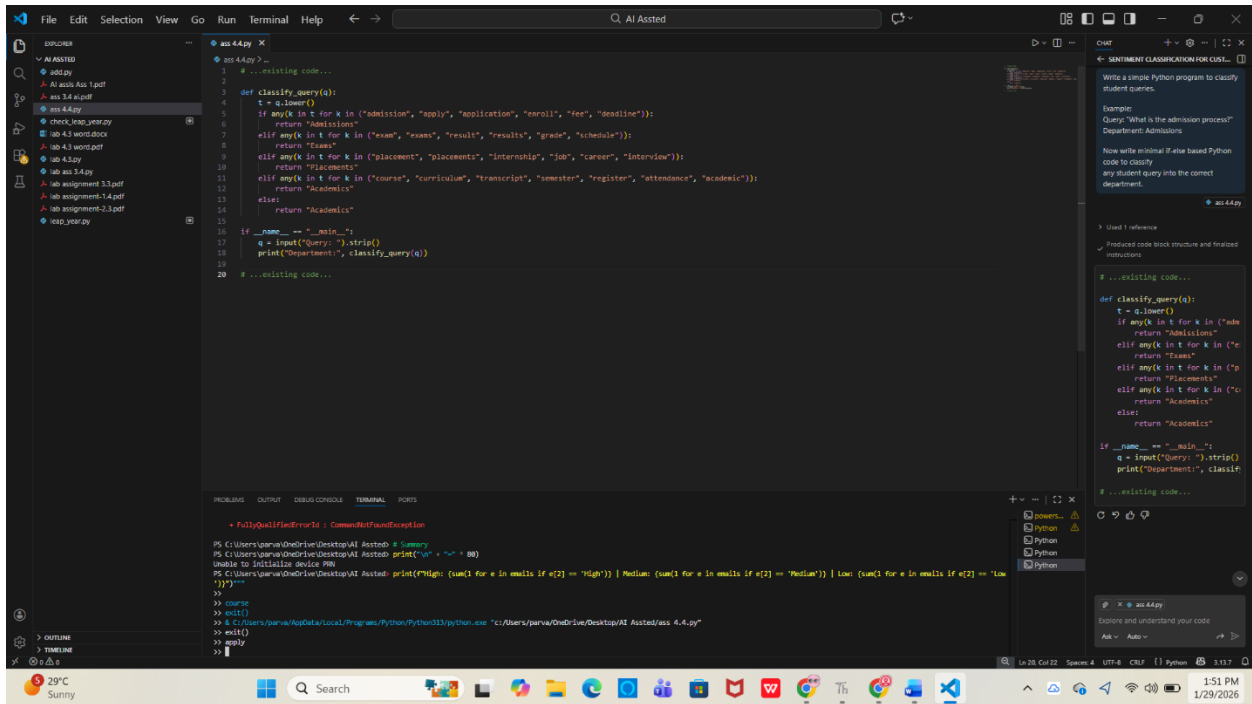
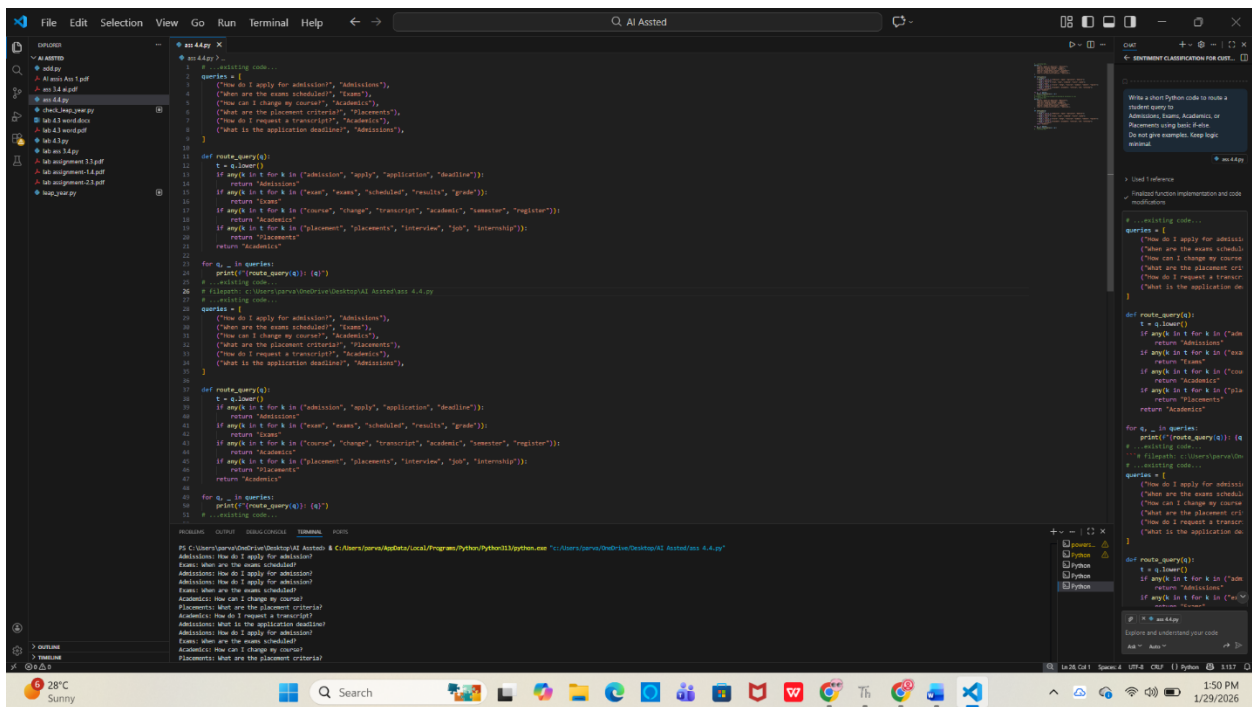
Processed queries and printed department responses

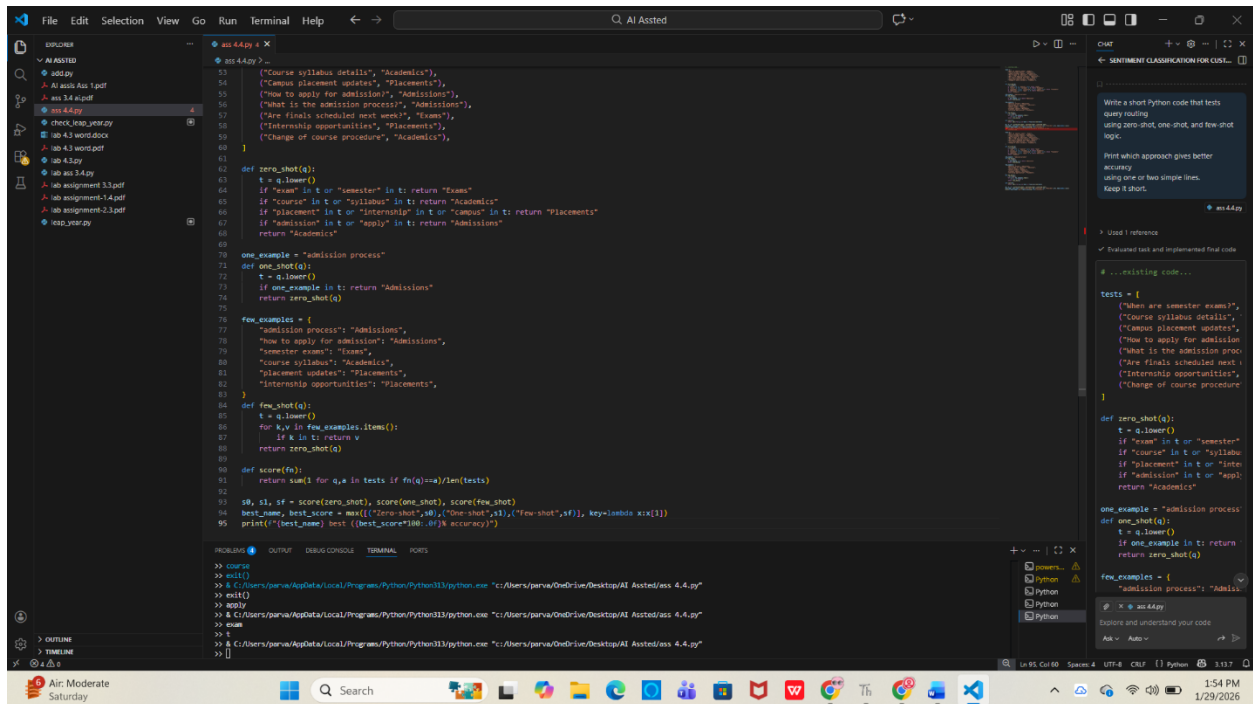
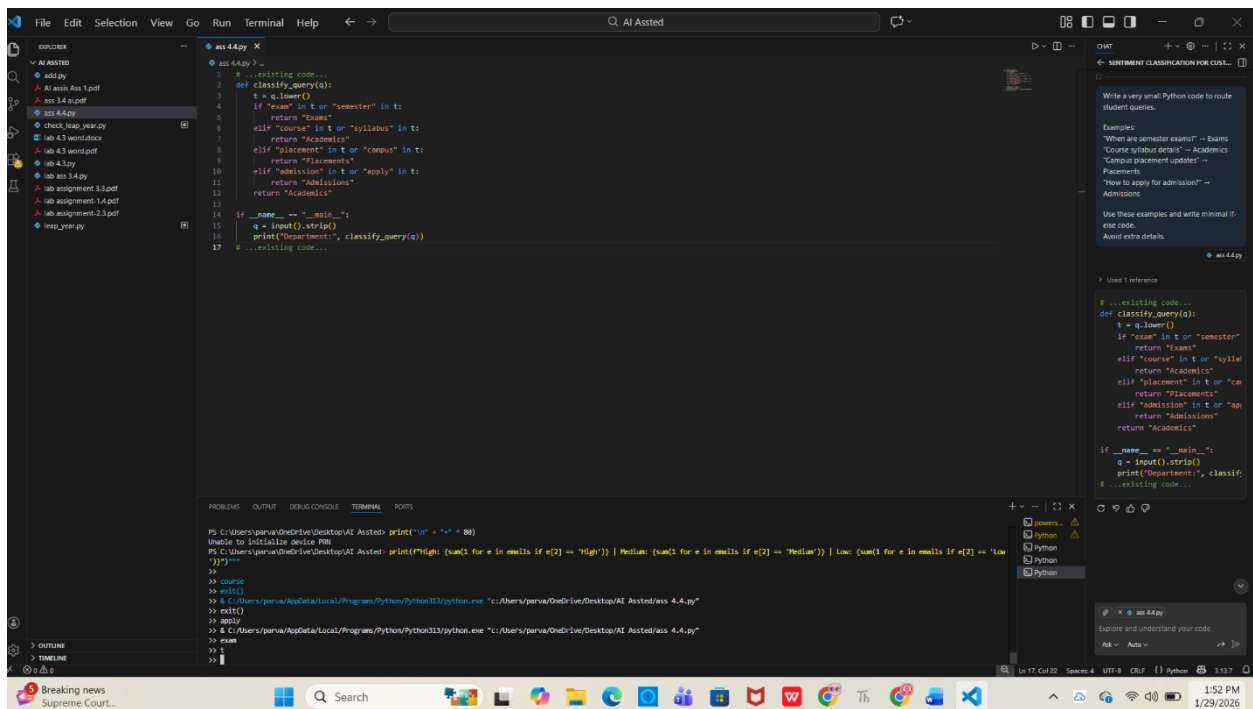
...existing code...

Sample list of student queries

```
queries = [
    ("How do I apply for admission?", "Admissions"),
    ("When are the exams scheduled?", "Exams"),
    ("How can I change my course?", "Academics"),
    ("What are the placement criteria?", "Placements"),
    ("How do I request a transcript?", "Academics"),
    ("What is the application deadline?", "Admissions"),
]
```

for q, dept in queries:
 print(f"{dept}: {q}")
...existing code...





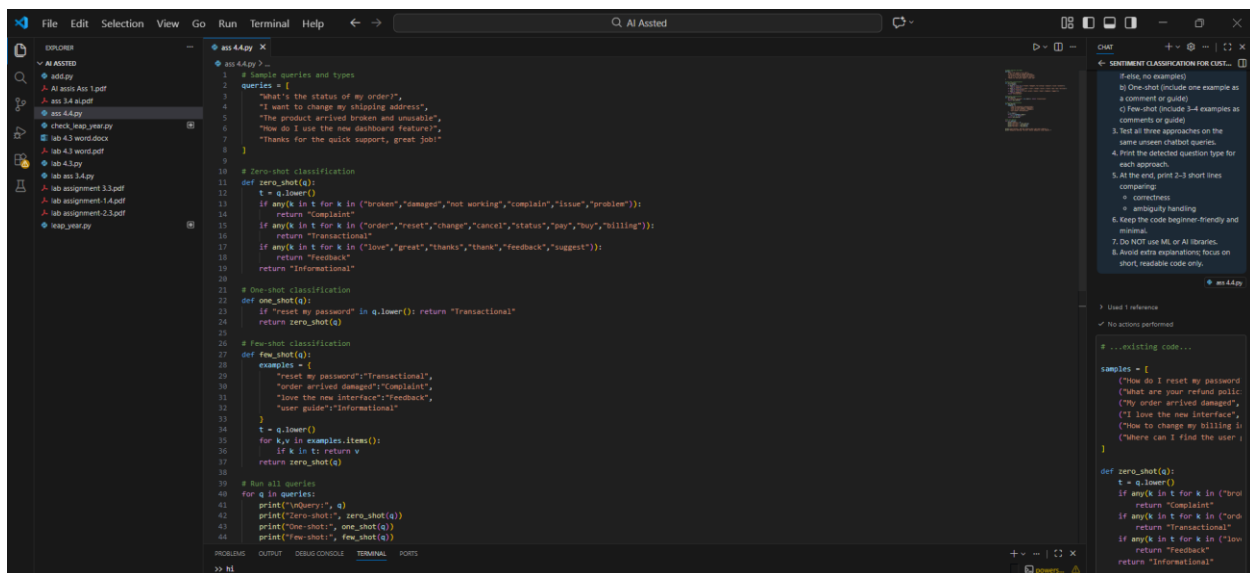
4. Chatbot Question Type Detection

Scenario:

A chatbot must identify whether a user query is Informational, Transactional, Complaint, or Feedback.

Tasks:

1. Prepare 6 chatbot queries mapped to question types.
2. Design prompts for Zero-shot, One-shot, and Few-shot learning.
3. Test all prompts on the same unseen queries.
4. Compare response correctness and ambiguity handling.
5. Document observations.



The screenshot shows a VS Code editor with a Python script for sentiment classification. The script defines a list of queries, a function for zero-shot classification, a function for one-shot classification, and a function for few-shot classification. It also includes a main function to run all queries and print the results. On the right side, there is a chat window titled 'SENTIMENT CLASSIFICATION FOR CUSTOMER SERVICE' with a list of queries and their corresponding sentiment labels. The chat window also shows a 'Useful reference' section with a list of queries and their corresponding sentiment labels.

```
1 # Define queries and types
2 queries = [
3     "What's the status of my order?",
4     "I want to change my shipping address",
5     "The product arrived broken and unusable",
6     "How do I use the new dashboard feature?",
7     "Thanks for the quick support, great job!"
8 ]
9
10 # Zero-shot classification
11 def zero_shot(a):
12     t = q_lower()
13     if any(k in t for k in ("broken", "damaged", "not working", "complaint", "issue", "problem")):
14         return "Complaint"
15     if any(k in t for k in ("order", "reset", "change", "cancel", "status", "pay", "buy", "billing")):
16         return "Transactional"
17     if any(k in t for k in ("love", "great", "thanks", "thank", "feedback", "suggest")):
18         return "Feedback"
19     return "Informational"
20
21 # One-shot classification
22 def one_shot(a):
23     if "reset my password" in q_lower(): return "Transactional"
24     return zero_shot(a)
25
26 # Few-shot classification
27 def few_shot(a):
28     examples = [
29         "reset my password": "Transactional",
30         "order arrived damaged": "Complaint",
31         "love the new interface": "Feedback",
32         "user guide": "Informational"
33     ]
34     t = q_lower()
35     for k, v in examples.items():
36         if k in t: return v
37     return zero_shot(a)
38
39 # Run all queries
40 for q in queries:
41     print(f"Query: {q}")
42     print(f"Zero-shot: {zero_shot(q)}")
43     print(f"One-shot: {one_shot(q)}")
44     print(f>Few-shot: {few_shot(q)}")
```

5. Emotion Detection in Text

Scenario:

A mental-health chatbot needs to detect emotions: Happy, Sad, Angry, Anxious, Neutral.

Tasks:

1. Create labeled emotion samples.
2. Use Zero-shot prompting to identify emotions.
3. Use One-shot prompting with an example.
4. Use Few-shot prompting with multiple emotions.
5. Discuss ambiguity handling across techniques.

FileEditSelectionViewGoRunTerminalHelp

AI Coding

lab assignment 44.py

lab assignment 44.py > {} pd

Generate code

Add Context...

```
1 import pandas as pd
2
3 # Create a DataFrame from the provided data
4 data = {
5     "Text": [
6         "I am very happy today",
7         "I feel lonely and depressed",
8         "This is so frustrating",
9         "I am worried about my future",
10        "Today is just normal",
11        "Feeling excited about results"
12    ],
13    "Emotion": [
14        "Happy",
15        "Sad",
16        "Angry",
17        "Anxious",
18        "Neutral",
19        "Happy"
20    ]
21 }
22
23 df = pd.DataFrame(data)
24
25 # Display the DataFrame
26 print(df)
```

PROBLEMSOUTPUTDEBUG CONSOLETERMINALPORTS

PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Traceback (most recent call last):
 File "d:\AI Coding\lab assignment 44.py", line 1, in <module>
 import pandas as pd
ModuleNotFoundError: No module named 'pandas'
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Traceback (most recent call last):
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PS D:\AI Coding>

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10        "Today is just normal",
11        "Feeling excited about results"
12    ],
13    "Emotion": [
14        "Happy",
15        "Sad",
16        "Angry",
17        "Anxious",
18        "Neutral",
19        "Happy"
20    ]
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```

PROBLEMSOUTPUTDEBUG CONSOLETERMINALPORTS

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 File "d:\AI Coding\lab assignment 44.py", line 1, in <module>
 import pandas as pd
ModuleNotFoundError: No module named 'pandas'
PS D:\AI Coding>

VS Code editor interface showing a Python script named 'lab assignment 44.py'. The script defines a function 'identify_emotion(text)' that checks for the word 'frustrating' and returns 'frustrated' or 'neutral'. It includes an example usage where the text 'This is so frustrating' is passed to the function, resulting in the output 'Emotion: Anxious'.

```
1 def identify_emotion(text):
2     if "frustrating" in text:
3         return "frustrated"
4     return "neutral"
5
6 # Example usage
7 text = "This is so frustrating"
8 emotion = identify_emotion(text)
9 print(f"Emotion: {emotion}")
```

The terminal output shows a 'ModuleNotFoundError' for 'pandas' because the script imports 'pandas as pd' at the top, which is not defined in the provided code snippet.

```
import pandas as pd
ModuleNotFoundError: No module named 'pandas'
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Traceback (most recent call last):
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ModuleNotFoundError: No module named 'pandas'
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Emotion: Anxious
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Emotion: Frustrated
PS D:\AI Coding>
```

VS Code editor interface showing a Python script named 'lab assignment 44.py'. The script defines a function 'classify_emotion(text)' that uses a dictionary to map keywords to emotions. It includes an example usage where the text 'This is so frustrating' is passed to the function, resulting in the output 'Text: "This is so frustrating" Emotion: frustrated'.

```
1 def classify_emotion(text):
2     emotions = {
3         "happy": ["happy", "joyful", "excited", "pleased"],
4         "sad": ["lonely", "depressed", "sad", "down"],
5         "anxious": ["worried", "anxious", "nervous", "stressed"],
6         "neutral": ["normal", "fine", "okay", "average"],
7         "frustrated": ["frustrating", "annoyed", "irritated"]
8     }
9
10    for emotion, keywords in emotions.items():
11        if any(keyword in text.lower() for keyword in keywords):
12            return emotion
13    return "Unknown"
14
15 # Example usage
16 text = "This is so frustrating"
17 emotion = classify_emotion(text)
18 print(f"Text: \"{text}\" Emotion: {emotion}")
```

The terminal output shows a 'ModuleNotFoundError' for 'pandas' because the script imports 'pandas as pd' at the top, which is not defined in the provided code snippet.

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Emotion: Anxious
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Emotion: Frustrated
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Text: "This is so frustrating"
Emotion: frustrated
PS D:\AI Coding>
```

