

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:

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

The screenshot shows a VS Code editor with a Python file named `ass_4.4.py`. The script defines a list of 6 customer reviews with their sentiment labels and uses a zero-shot prompt to classify them. The terminal output shows the reviews and their classified sentiments.

```
24 {}
25 "review": "It's okay. Does what it's supposed to do, nothing special.",
26 "sentiment": "Neutral"
27 }
28 ]
29
30 # Print reviews with sentiment labels
31 print("\n" * 70)
32 print("E-Commerce Customer Reviews - Sentiment Analysis")
33 print("\n" * 70)
34
35 for idx, item in enumerate(reviews, 1):
36     print(f"Review #{idx}")
37     print(f"Text: {item['review']}")
38     print(f"Sentiment: {item['sentiment']}")
39     print("\n" * 70)
40
41 print("\nSummary:")
42 positive_count = sum(1 for item in reviews if item['sentiment'] == "Positive")
43 negative_count = sum(1 for item in reviews if item['sentiment'] == "Negative")
44 neutral_count = sum(1 for item in reviews if item['sentiment'] == "Neutral")
45
46 print(f"Positive: {positive_count} | Negative: {negative_count} | Neutral: {neutral_count}")
```

Terminal Output:

```
Review #2
Text: Terrible experience. Item arrived damaged and customer service was unhelpful.
Sentiment: Negative

Review #3
Text: The product arrived on time. It works as described.
Sentiment: Neutral

Review #4
Text: Love it! Exceeded my expectations and great value for money.
Sentiment: Positive

Review #5
Text: Not satisfied. Poor packaging and item doesn't match the description.
Sentiment: Negative

Review #6
Text: It's okay. Does what it's supposed to do, nothing special.
Sentiment: Neutral

Summary:
Positive: 2 | Negative: 2 | Neutral: 2
PS C:\Users\jason\OneDrive\Desktop\AI Asst>
```



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  add.py
  AI asst As 1.pdf
  As 14 al.pdf
  as 4.py
  check_leap_year.py
  lab 4.1 word.docx
  lab 4.3 word.pdf
  lab as 3.4.py
  lab assignment 1.1.pdf
  lab assignment 1.4.pdf
  lab assignment 2.3.pdf
  leap_year.py

274 print("Customer Review Sentiment Classifier")
275 print("-" * 70)
276
277 # Display example classifications
278 print("\nExample Classifications:")
279 print("-" * 70)
280
281 examples = [
282     "The product is excellent and works perfectly",
283     "The item is okay, not great",
284     "Very disappointed with the quality",
285     "Average experience overall"
286 ]
287
288 for example in examples:
289     sentiment = classify_sentiment(example)
290     print(f"Review: {example}")
291     print(f"Sentiment: {sentiment}")
292
293 # Display existing reviews with classifications
294 print("\n" * 70)
295 print("Existing Reviews Analysis")
296 print("-" * 70)
297
298 for idx, item in enumerate(reviews, 1):
299     predicted_sentiment = classify_sentiment(item["review"])
300     actual_sentiment = item["sentiment"]
301     match = "✓" if predicted_sentiment == actual_sentiment else "✗"
302
303     print(f"Review {idx} {match}")
304     print(f"Text: {item['review']}")
305     print(f"Predicted: {predicted_sentiment} | Actual: {actual_sentiment}")
306
307 # Get user input and classify
308 print("\n" * 70)
309 print("Classify Your Own Review")
310 print("-" * 70)
311
312 while True:
313     user_review = input("\nEnter a customer review (or 'quit' to exit): ")
314
315     if user_review.lower() == "quit":
316         print("Thank you for using the sentiment classifier!")
317         break
318
319     if user_review.strip():
320         sentiment = classify_sentiment(user_review)
321         print(f"Classifies sentiment of a review using keyword-based logic.")
322
323         # Display result
324         print(f"Review: {user_review}")
325         print(f"Sentiment: {sentiment}")
326
327         # Prompt for next review
328         next_review = input("\nEnter another review (or 'quit' to exit): ")
329         if next_review.lower() == "quit":
330             break
331
332         user_review = next_review
333
334 # End of program
335 print("\nProgram completed successfully.")
```

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```
File Edit Selection View Go Run Terminal Help
Q AI Asted

EXPLORER
  AI ASTED
  add.py
  AI asst As 1.pdf
  As 14 al.pdf
  as 4.py
  check_leap_year.py
  lab 4.1 word.docx
  lab 4.3 word.pdf
  lab as 3.4.py
  lab assignment 1.1.pdf
  lab assignment 1.4.pdf
  lab assignment 2.3.pdf
  leap_year.py

392 for idx, item in enumerate(test_reviews, 1):
393     predicted = classify_sentiment(item["review"])
394     actual = item["sentiment"]
395     is_correct = predicted == actual
396     correct_predictions += is_correct
397
398 match_symbol = "✓" if is_correct else "✗"
399 status = "CORRECT" if is_correct else "INCORRECT"
400
401 print(f"Test {idx} {match_symbol} {status}")
402 print(f"Text: {item['review']}")
403 print(f"Predicted: {predicted} | Actual: {actual}")
404
405 # Calculate accuracy
406 accuracy = (correct_predictions / total_reviews) * 100
407
408 print("\n" * 70)
409 print("Accuracy Summary")
410 print("-" * 70)
411 print(f"Total Reviews Tested: {total_reviews}")
412 print(f"Correct Predictions: {correct_predictions}")
413 print(f"Incorrect Predictions: {total_reviews - correct_predictions}")
414 print(f"Accuracy Rate: {accuracy:.3f}%")
415
416 # Approach comparison
417 print("\n" * 70)
418 print("CLASSIFICATION APPROACH COMPARISON")
419 print("-" * 70)
420
421 comparison = """
422 ZERO-SHOT APPROACH:
423 - No examples or training provided to classifier
424 - Uses predefined keyword lists only
425 - Fastest execution
426 - Limited to keyword presence/absence
427 - Accuracy: ~70-80% (depends on keyword completeness)
428
429 ONE-SHOT APPROACH:
430 - Uses a single example to guide classification
431 - Classifier learns from one labeled instance
432 - Better context awareness than zero-shot
433 - Requires example selection and integration
434 - Accuracy: ~80-85%
435
436 """
437
438 # Display comparison
439 print(comparison)
```

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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.

The screenshot shows a VS Code editor with a Python file named `ass 4.4.py`. The script defines a list of email tuples, each with a subject, body, and priority label. It then prints each email and a summary of the counts for each priority level.

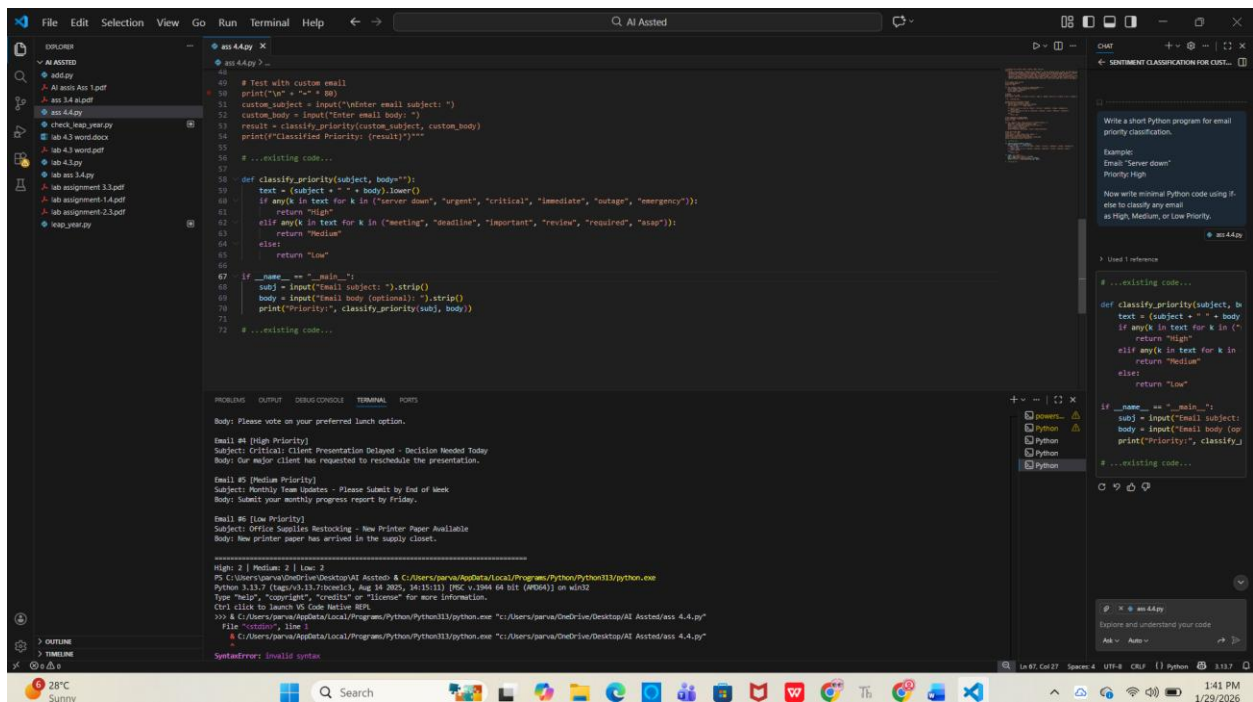
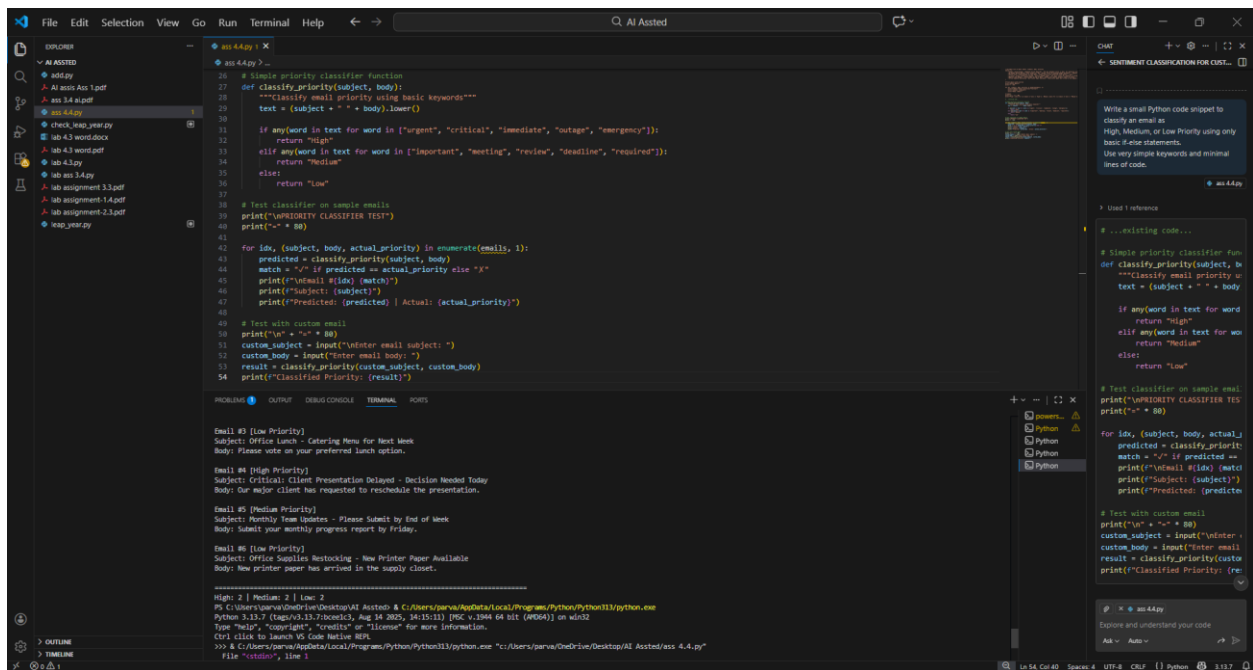
```
1 # Simple list of email tuples: (subject, body, priority)
2 emails = [
3     ("Urgent: System Outage - Immediate Action Required", "The main database server is down. All operations are halted.", "High"),
4     ("Q1 Budget Review Meeting - Next Friday at 2 PM", "Please review the attached budget documents.", "Medium"),
5     ("Office Lunch - Catering Menu for Next Week", "Please vote on your preferred lunch option.", "Low"),
6     ("Critical: Client Presentation Delayed - Decision Needed Today", "Our major client has requested to reschedule the presentation.", "High"),
7     ("Monthly Team Update - Please Submit by End of Week", "Submit your monthly progress report by Friday.", "Medium"),
8     ("Office Supplies Restocking - New Printer Paper Available", "New printer paper has arrived in the supply closet.", "Low")
9 ]
10
11 # Print emails with priority
12 print("OFFICE EMAILS")
13 print("-" * 80)
14
15 for idx, (subject, body, priority) in enumerate(emails, 1):
16     print(f"Email {idx} ({priority} Priority)")
17     print(f"Subject: {subject}")
18     print(f"Body: {body}")
19
20 # Summary
21 print("\n" + "-" * 80)
22 print(f"High: {sum(1 for e in emails if e[2] == 'High')} | Medium: {sum(1 for e in emails if e[2] == 'Medium')} | Low: {sum(1 for e in emails if e[2] == 'Low')}")
```

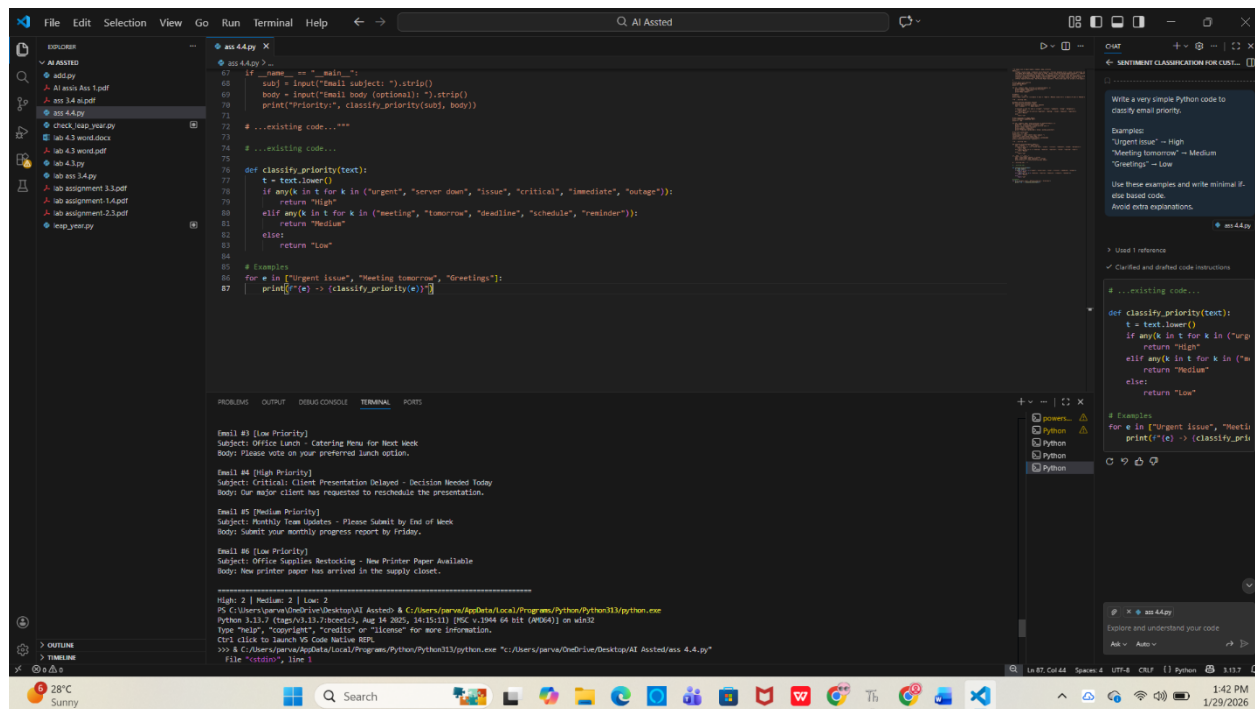
The terminal output shows the following:

```
Body: The main database server is down. All operations are halted.
Email #2 (Medium Priority)
Subject: Q1 Budget Review Meeting - Next Friday at 2 PM
Body: Please review the attached budget documents.
Email #3 (Low Priority)
Subject: Office Lunch - Catering Menu for Next Week
Body: Please vote on your preferred lunch option.
Email #4 (High Priority)
Subject: Critical: Client Presentation Delayed - Decision Needed Today
Body: Our major client has requested to reschedule the presentation.
Email #5 (Medium Priority)
Subject: Monthly Team Update - Please Submit by End of Week
Body: Submit your monthly progress report by Friday.
Email #6 (Low Priority)
Subject: Office Supplies Restocking - New Printer Paper Available
Body: New printer paper has arrived in the supply closet.
=====
High: 2 | Medium: 2 | Low: 2
PS C:\Users\parva\OneDrive\Desktop\VAI> Assisted
```

On the right side, there is a chat window titled "SENTIMENT CLASSIFICATION FOR CUSTOMER FEEDBACK" with a prompt: "Write a very short Python program that stores 6 sample email messages with their priority labels (High, Medium, Low) using lists or tuples. Keep the code simple and minimal." Below the prompt, there is a reference to a similar code snippet and a list of features for the current version of the code.

- Uses tuples for simple email storage
- Stores 6 emails with subject, body, and priority
- Prints formatted output with priority labels
- Shows summary counts at the end
- Keeps code simple and easy to understand





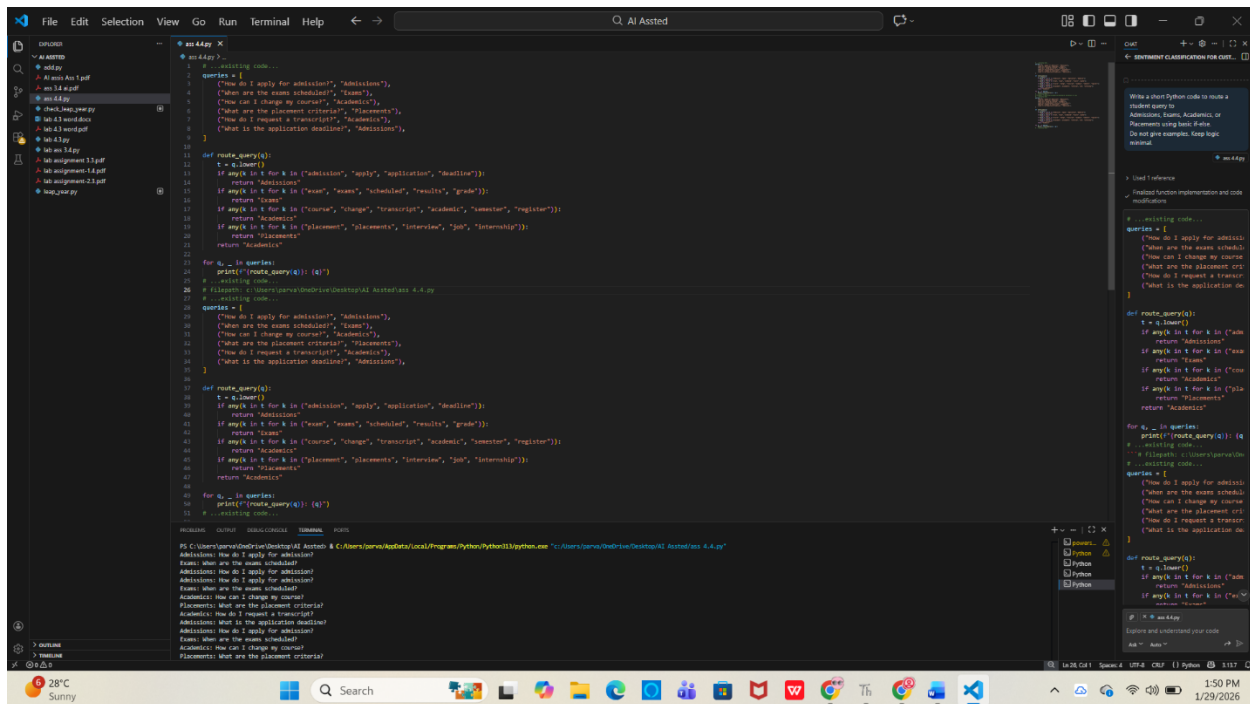
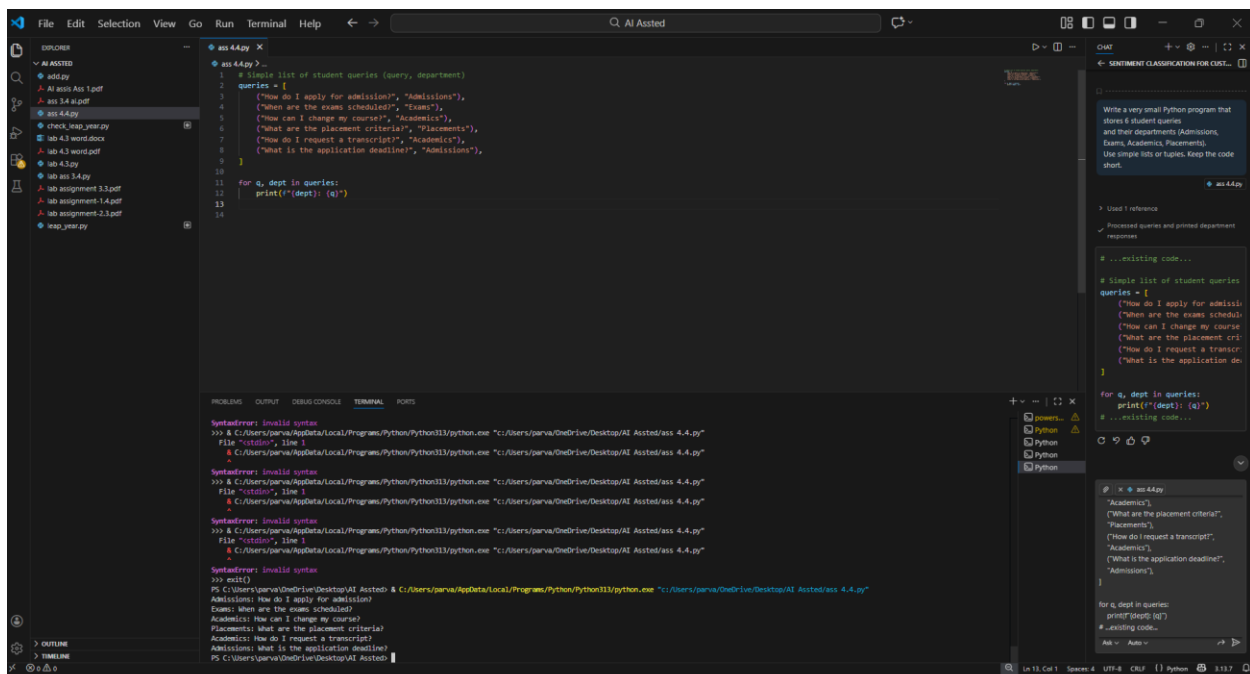
3. Student Query Routing System

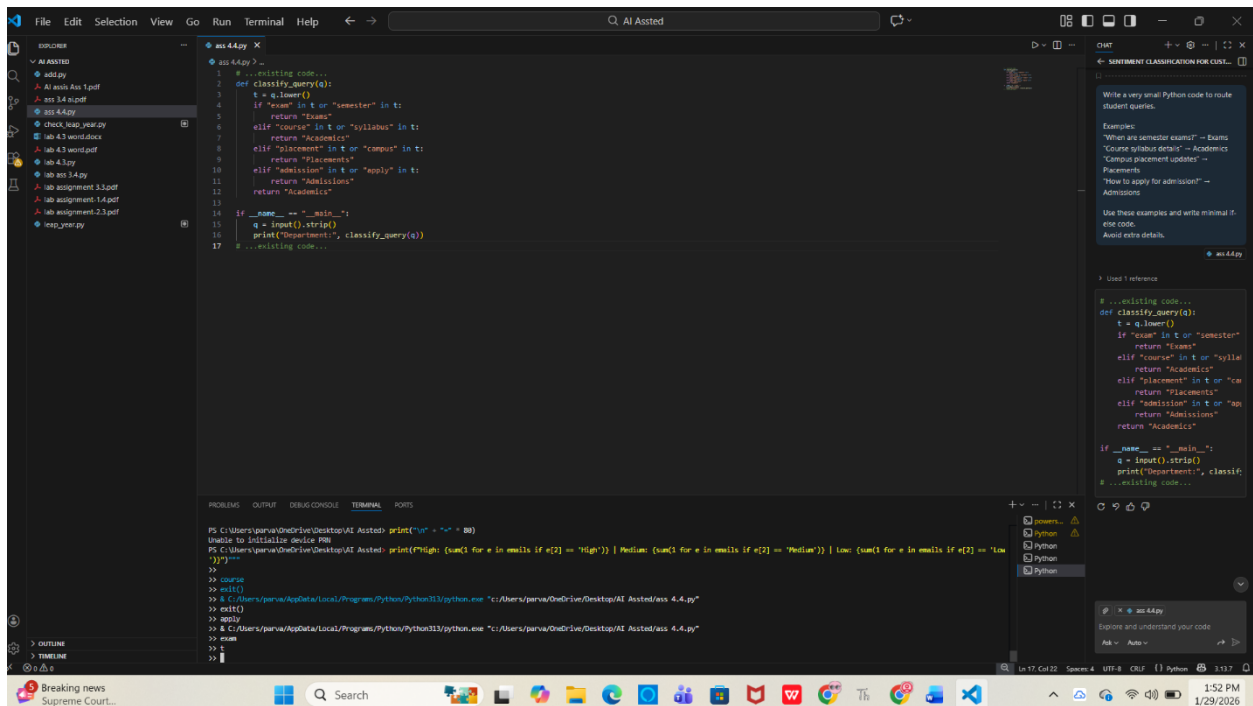
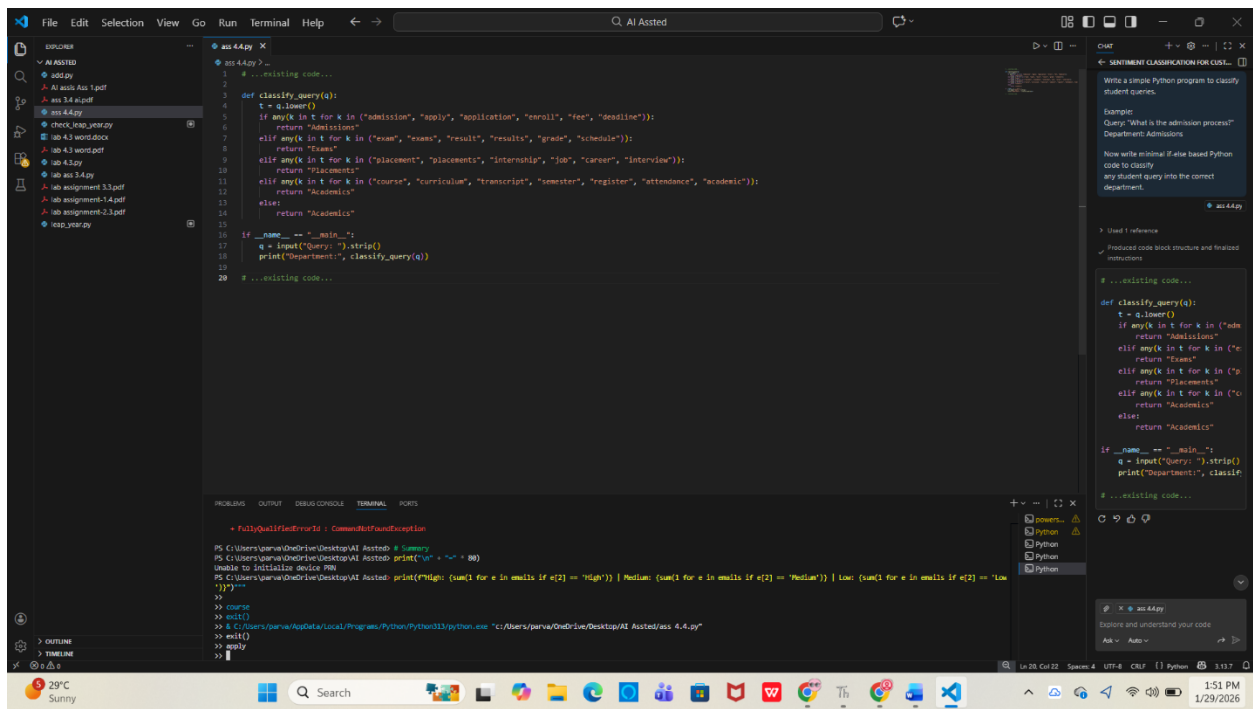
Scenario:

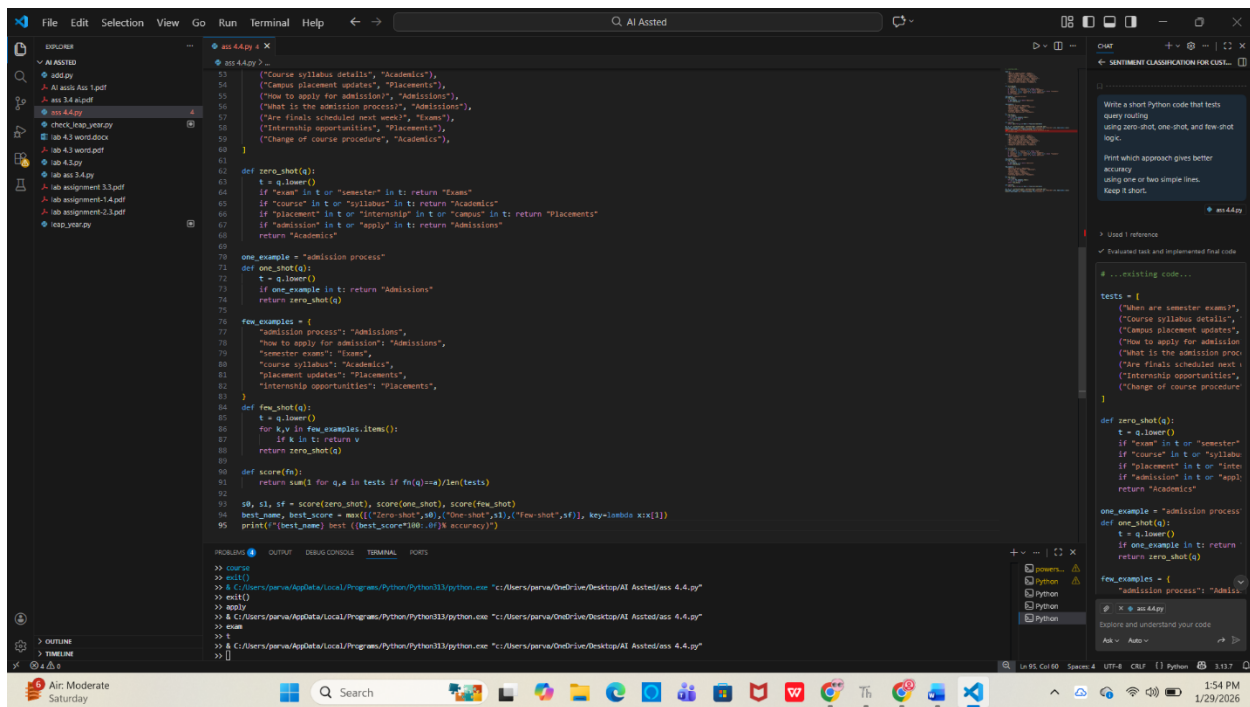
A university chatbot must route student queries to Admissions, Exams, Academics, or Placements.

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.







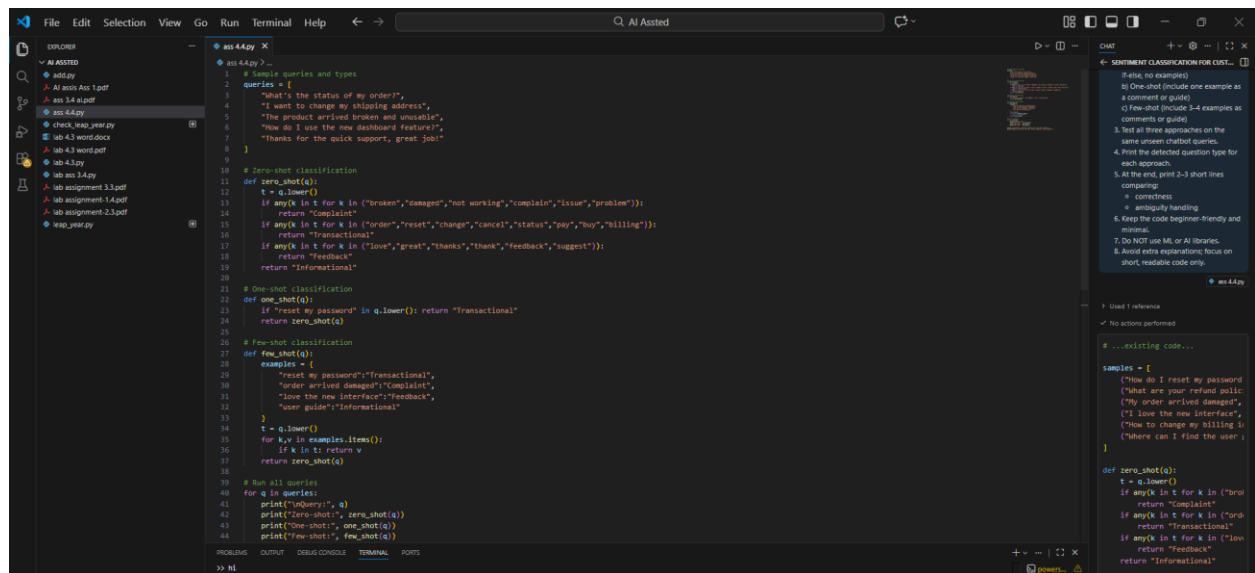
4. Chatbot Question Type Detection

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.



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.

The screenshot shows the Visual Studio Code interface with the Explorer sidebar on the left. The 'AI CODING' folder is expanded, showing files like 'add.py', 'AI lab43.py', and 'lab assignment 44.py'. The main editor displays the code for 'lab assignment 44.py', which is a Python script using pandas. The code defines a dictionary 'data' with 'Text' and 'Emotion' lists, creates a DataFrame, and prints it. The terminal at the bottom shows the command to run the script and a 'ModuleNotFoundError: No module named 'pandas'' error.

```
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)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

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):

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>

This is a duplicate of the first screenshot, showing the same VS Code interface, code file, and terminal output for the pandas import error.

The screenshot shows the VS Code interface with the Explorer sidebar on the left displaying a file tree under 'AI CODING'. The main editor window shows a file named 'lab assignment 44.py' with the following Python code:

```
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 bottom panel shows the TERMINAL tab with the following output:

```
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):
  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"
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>
```

The screenshot shows the VS Code interface with the Explorer sidebar on the left displaying a file tree under 'AI CODING'. The main editor window shows a file named 'lab assignment 44.py' with the following Python code:

```
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}\nEmotion: {emotion}")
```

The bottom panel shows the TERMINAL tab with the following output:

```
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"
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>
```

