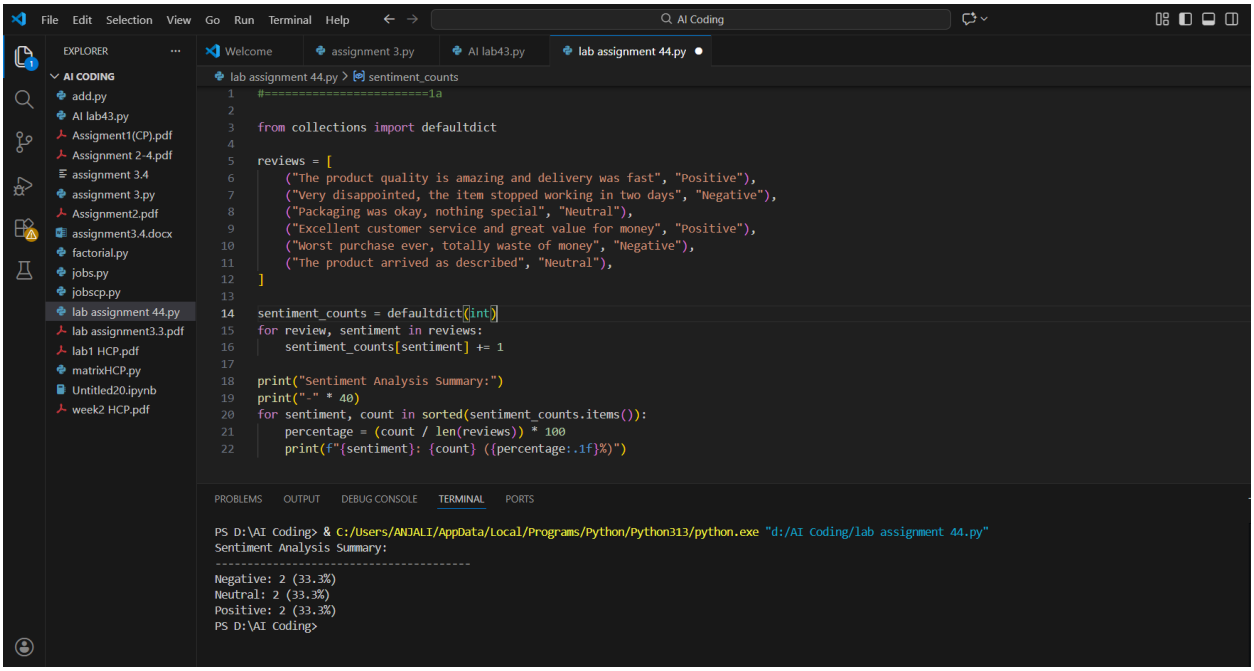
2303a51924

Lab assignment-4.4

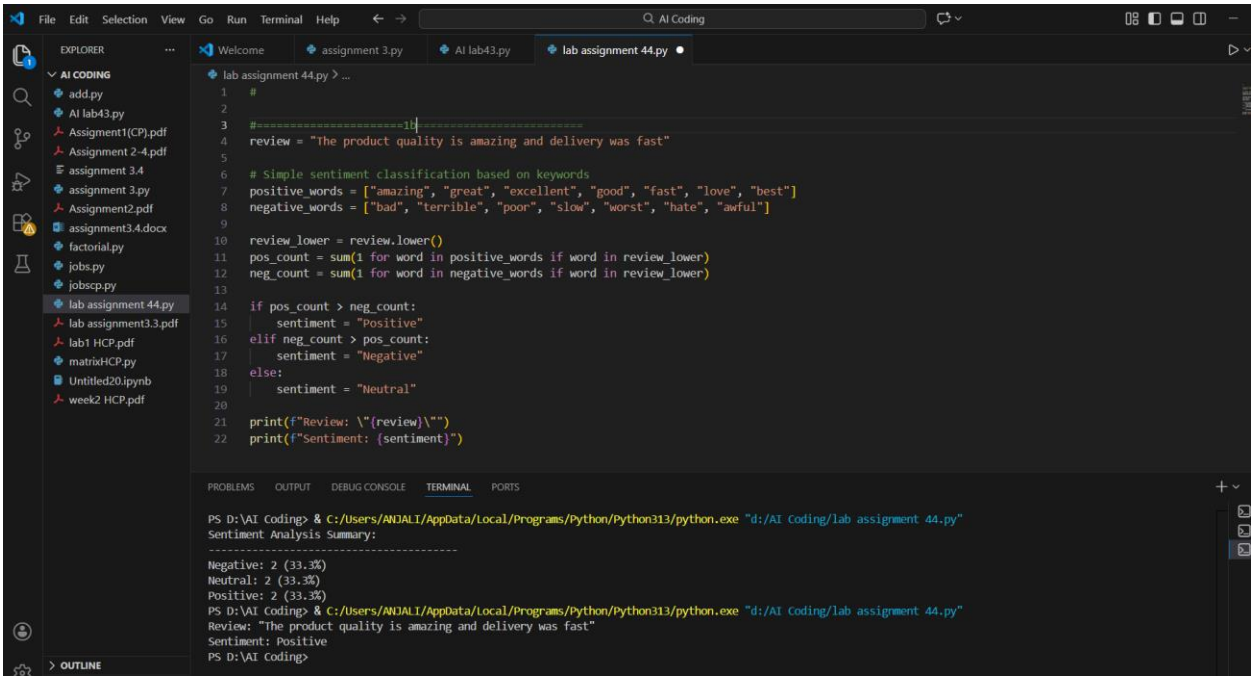
1. Sentiment Classification for Customer Reviews
   Scenario:
   An e-commerce platform wants to analyze customer reviews and classifythem into Positive, Negative, or Neutral sentiments using prompt engineering

Tasks:

a) Prepare 6 short customer reviews mapped to sentiment labels.



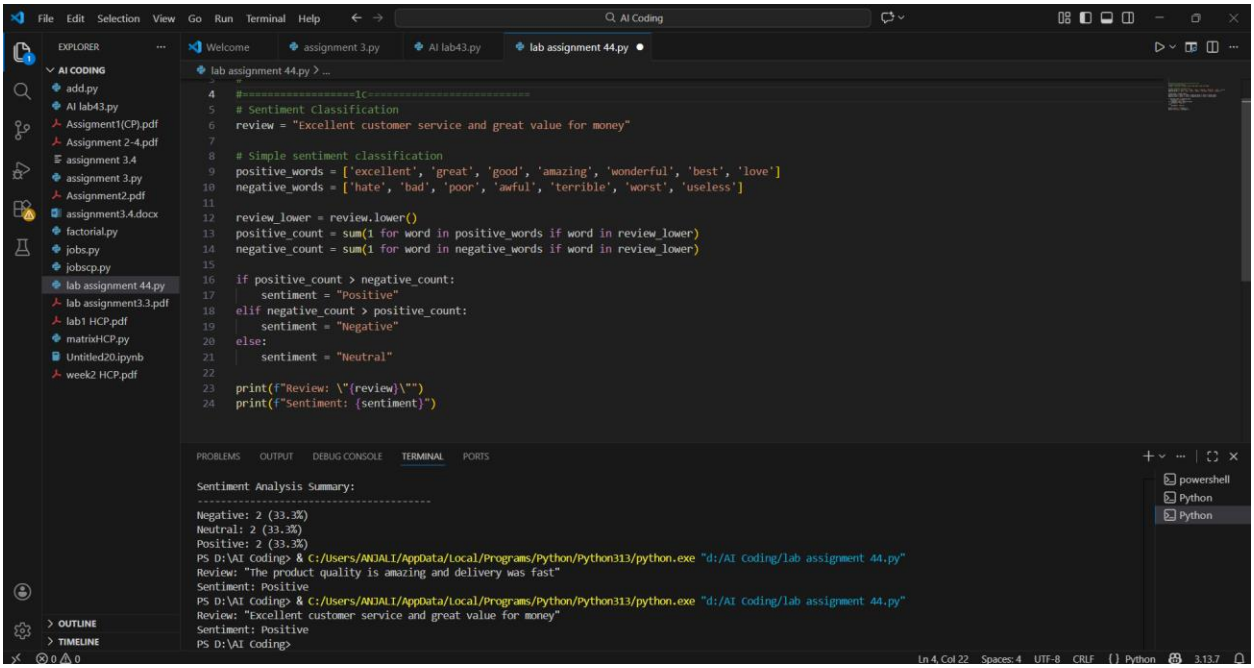
b)Design a Zero-shot prompt to classify sentiment.



```
#
#====================1b=======================
review = "The product quality is amazing and delivery was fast"

# Simple sentiment classification based on keywords
positive_words = ["amazing", "great", "excellent", "good", "fast", "love", "best"]
negative_words = ["bad", "terrible", "poor", "slow", "worst", "hate", "awful"]

review_lower = review.lower()
pos_count = sum(1 for word in positive_words if word in review_lower)
neg_count = sum(1 for word in negative_words if word in review_lower)

if pos_count > neg_count:
    sentiment = "Positive"
elif neg_count > pos_count:
    sentiment = "Negative"
else:
    sentiment = "Neutral"

print(f"Review: \"{review}\"")
print(f"Sentiment: {sentiment}")
```

```
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Sentiment Analysis Summary:
----------------------------------------
Negative: 2 (33.3%)
Neutral: 2 (33.3%)
Positive: 2 (33.3%)
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "The product quality is amazing and delivery was fast"
Sentiment: Positive
PS D:\AI Coding>
```

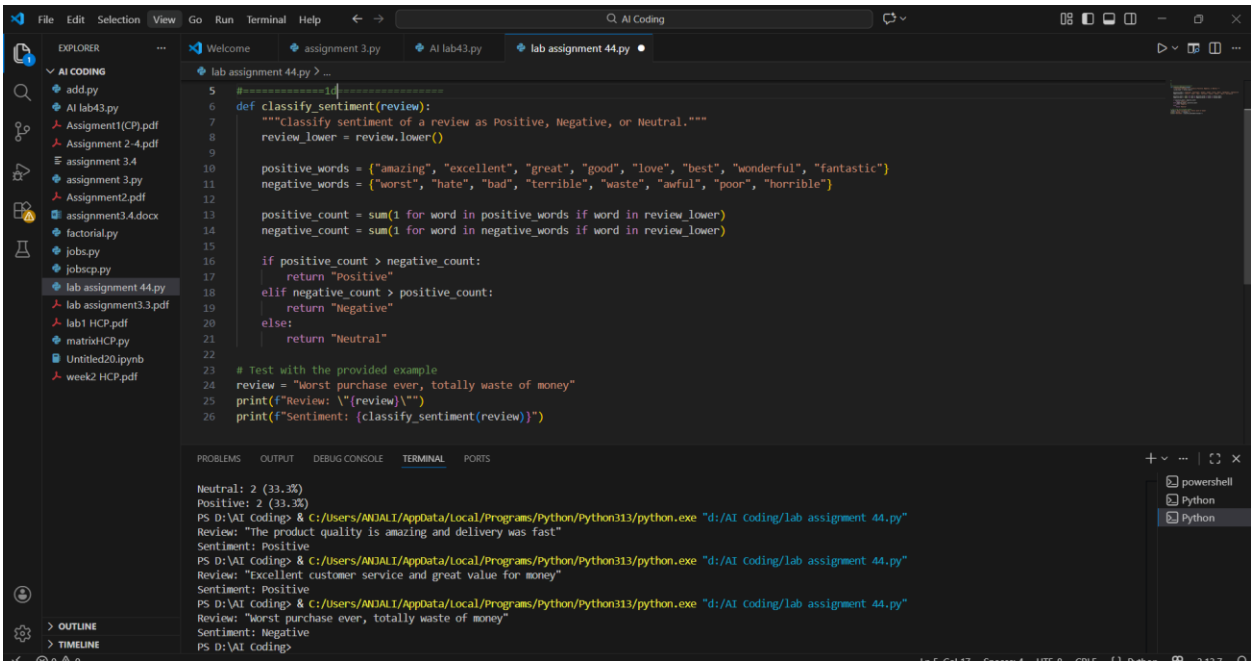
1c) Design a One-shot prompt with one labeled example.



```
#
#================1c=========================
# Sentiment Classification
review = "Excellent customer service and great value for money"

# Simple sentiment classification
positive_words = ['excellent', 'great', 'good', 'amazing', 'wonderful', 'best', 'love']
negative_words = ['hate', 'bad', 'poor', 'awful', 'terrible', 'worst', 'useless']

review_lower = review.lower()
positive_count = sum(1 for word in positive_words if word in review_lower)
negative_count = sum(1 for word in negative_words if word in review_lower)

if positive_count > negative_count:
    sentiment = "Positive"
elif negative_count > positive_count:
    sentiment = "Negative"
else:
    sentiment = "Neutral"

print(f"Review: \"{review}\"")
print(f"Sentiment: {sentiment}")
```

```
Sentiment Analysis Summary:
----------------------------------------
Negative: 2 (33.3%)
Neutral: 2 (33.3%)
Positive: 2 (33.3%)
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "The product quality is amazing and delivery was fast"
Sentiment: Positive
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "Excellent customer service and great value for money"
Sentiment: Positive
PS D:\AI Coding>
```

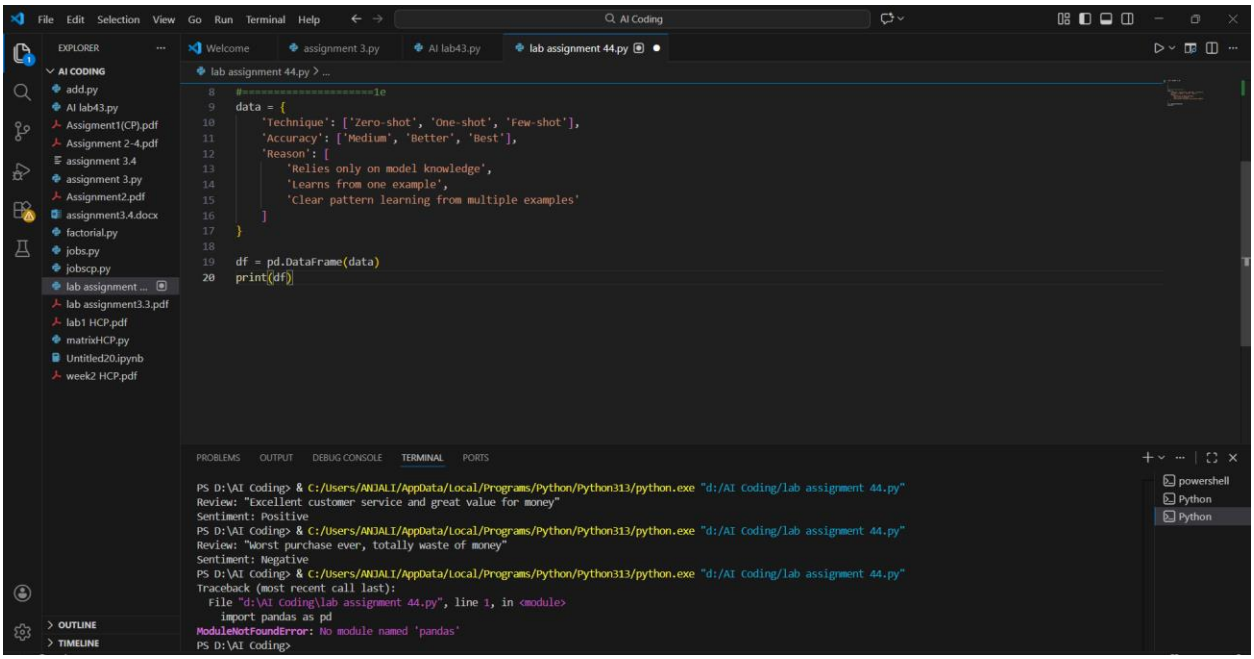
1d) Design a Few-shot prompt with 3–5 labeled examples.



```
#============14================
def classify_sentiment(review):
    """Classify sentiment of a review as Positive, Negative, or Neutral."""
    review_lower = review.lower()

    positive_words = {"amazing", "excellent", "great", "good", "love", "best", "wonderful", "fantastic"}
    negative_words = {"worst", "hate", "bad", "terrible", "waste", "awful", "poor", "horrible"}

    positive_count = sum(1 for word in positive_words if word in review_lower)
    negative_count = sum(1 for word in negative_words if word in review_lower)

    if positive_count > negative_count:
        return "Positive"
    elif negative_count > positive_count:
        return "Negative"
    else:
        return "Neutral"

# Test with the provided example
review = "Worst purchase ever, totally waste of money"
print(f"Review: \"{review}\"")
print(f"Sentiment: {classify_sentiment(review)}")
```

```
Neutral: 2 (33.3%)
Positive: 2 (33.3%)
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "The product quality is amazing and delivery was fast"
Sentiment: Positive
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "Excellent customer service and great value for money"
Sentiment: Positive
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "Worst purchase ever, totally waste of money"
Sentiment: Negative
PS D:\AI Coding>
```

1e) Compare the outputs and discuss accuracy differences.



```
#====================1e
data = {
    'Technique': ['Zero-shot', 'One-shot', 'Few-shot'],
    'Accuracy': ['Medium', 'Better', 'Best'],
    'Reason': [
        'Relies only on model knowledge',
        'Learns from one example',
        'Clear pattern learning from multiple examples'
    ]
}

df = pd.DataFrame(data)
print(df)
```

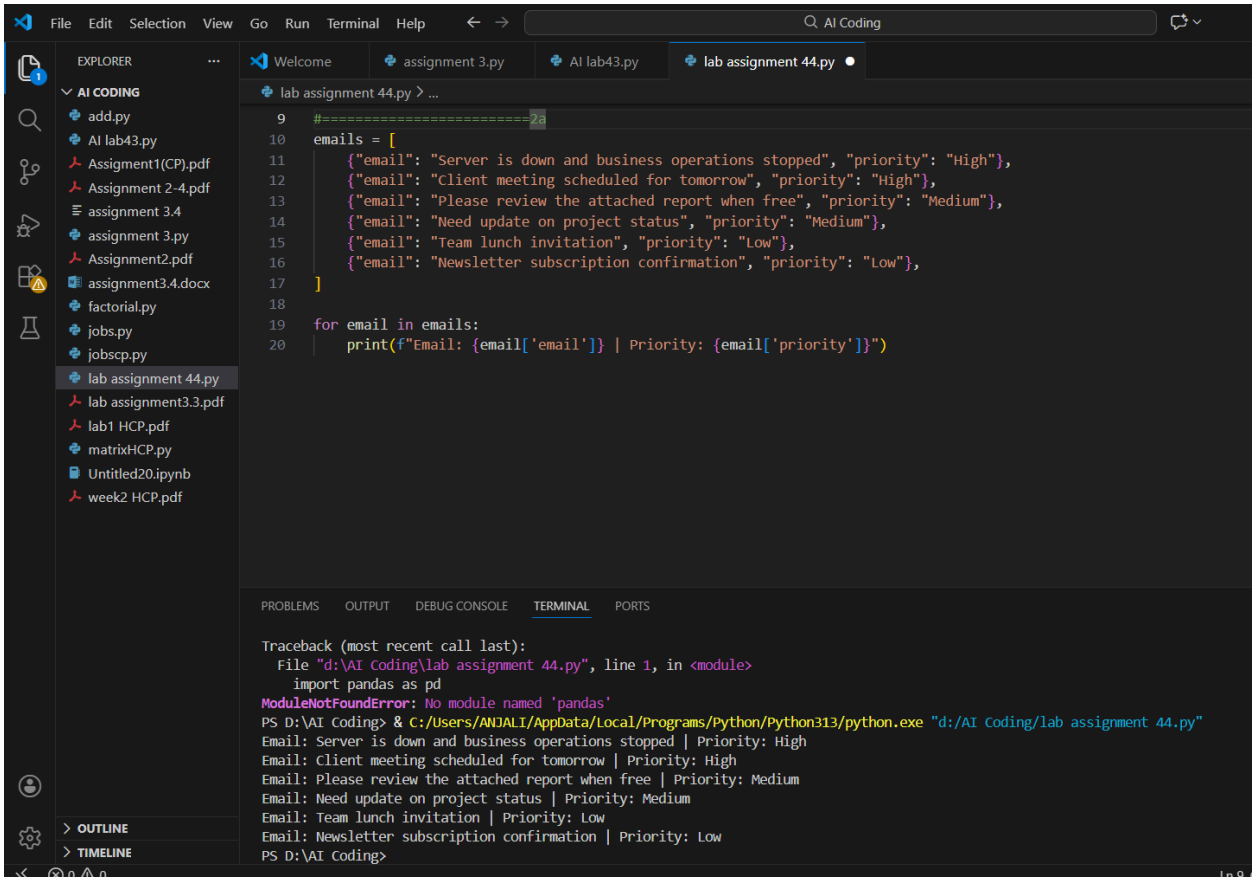
```
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "Excellent customer service and great value for money"
Sentiment: Positive
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Review: "Worst purchase ever, totally waste of money"
Sentiment: Negative
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>
```

2. Email Priority Classification

Scenario:

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

2a) Create 6 sample email messages with priority labels.


File Edit Selection View Go Run Terminal Help
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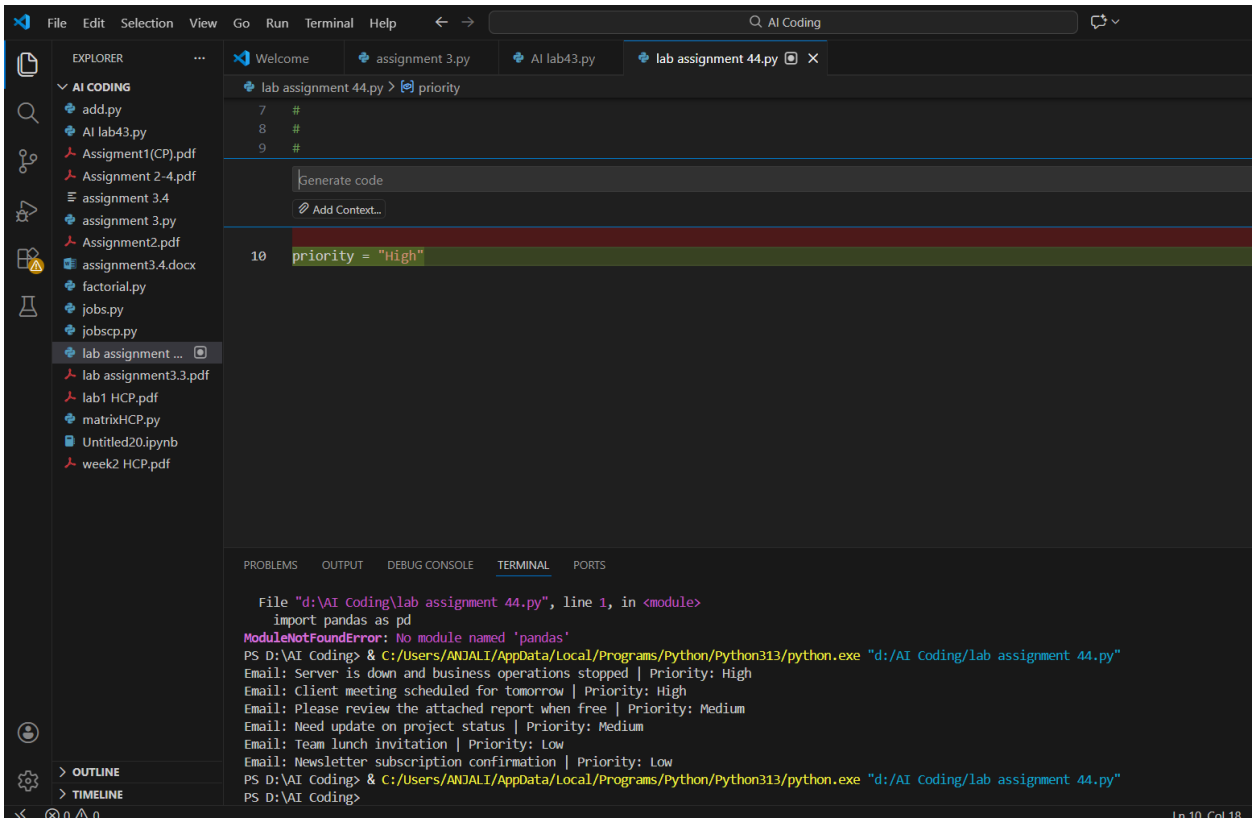
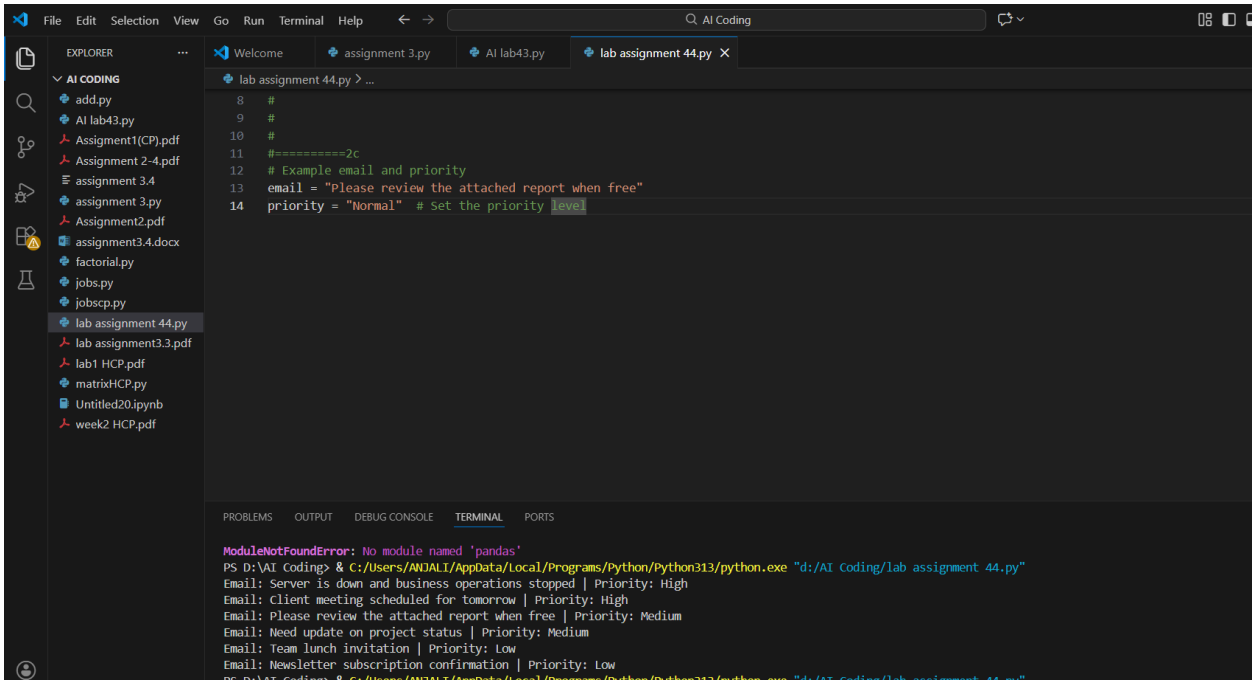
EXPLORER
AI CODING
add.py
AI lab43.py
Assigment1(CP).pdf
Assignment 2-4.pdf
assignment 3.4
assignment 3.py
Assignment2.pdf
assignment3.4.docx
factorial.py
jobs.py
jobscp.py
lab assignment 44.py
lab assignment3.3.pdf
lab1 HCP.pdf
matrixHCP.py
Untitled20.ipynb
week2 HCP.pdf
OUTLINE
TIMELINE
Welcome
assignment 3.py
AI lab43.py
lab assignment 44.py
lab assignment 44.py > ...
9 #========================2a
10 emails = [
11 {"email": "Server is down and business operations stopped", "priority": "High"},
12 {"email": "Client meeting scheduled for tomorrow", "priority": "High"},
13 {"email": "Please review the attached report when free", "priority": "Medium"},
14 {"email": "Need update on project status", "priority": "Medium"},
15 {"email": "Team lunch invitation", "priority": "Low"},
16 {"email": "Newsletter subscription confirmation", "priority": "Low"},
17]
18
19 for email in emails:
20 print(f"Email: {email['email']} | Priority: {email['priority']}")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
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"
Email: Server is down and business operations stopped | Priority: High
Email: Client meeting scheduled for tomorrow | Priority: High
Email: Please review the attached report when free | Priority: Medium
Email: Need update on project status | Priority: Medium
Email: Team lunch invitation | Priority: Low
Email: Newsletter subscription confirmation | Priority: Low
PS D:\AI Coding>

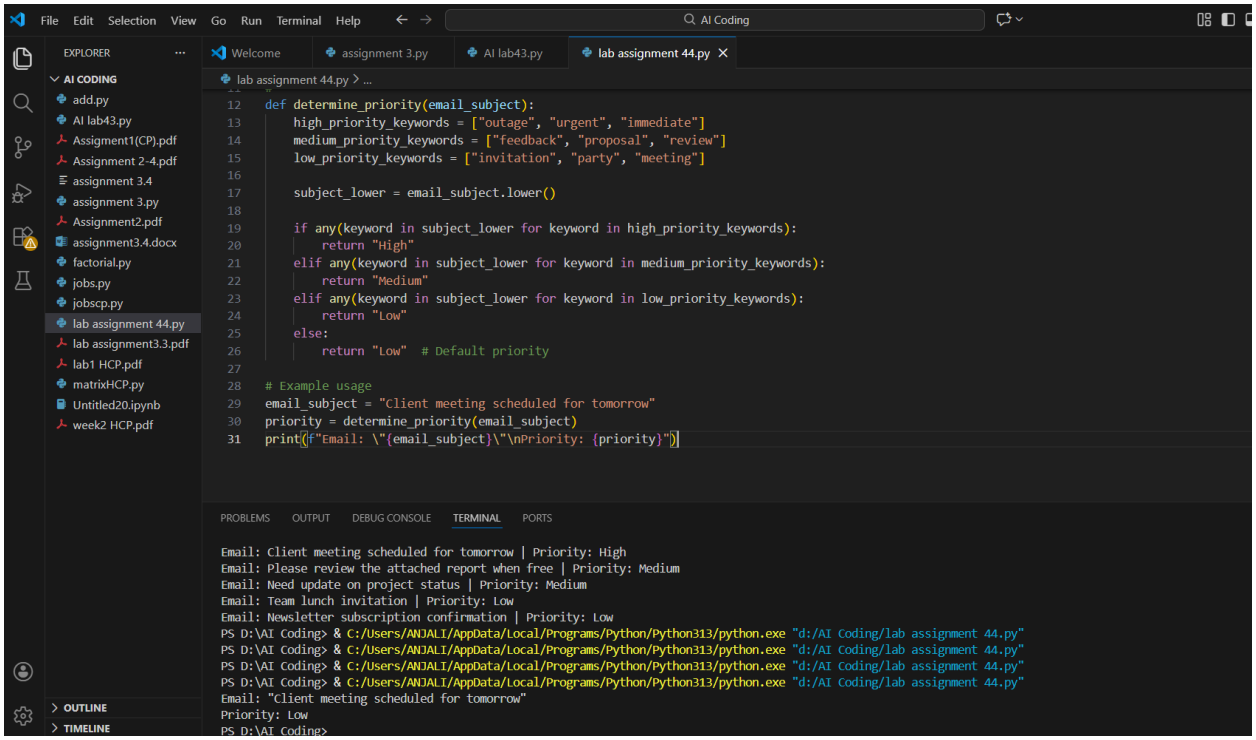
2b) Perform intent classification using Zero-shot prompting



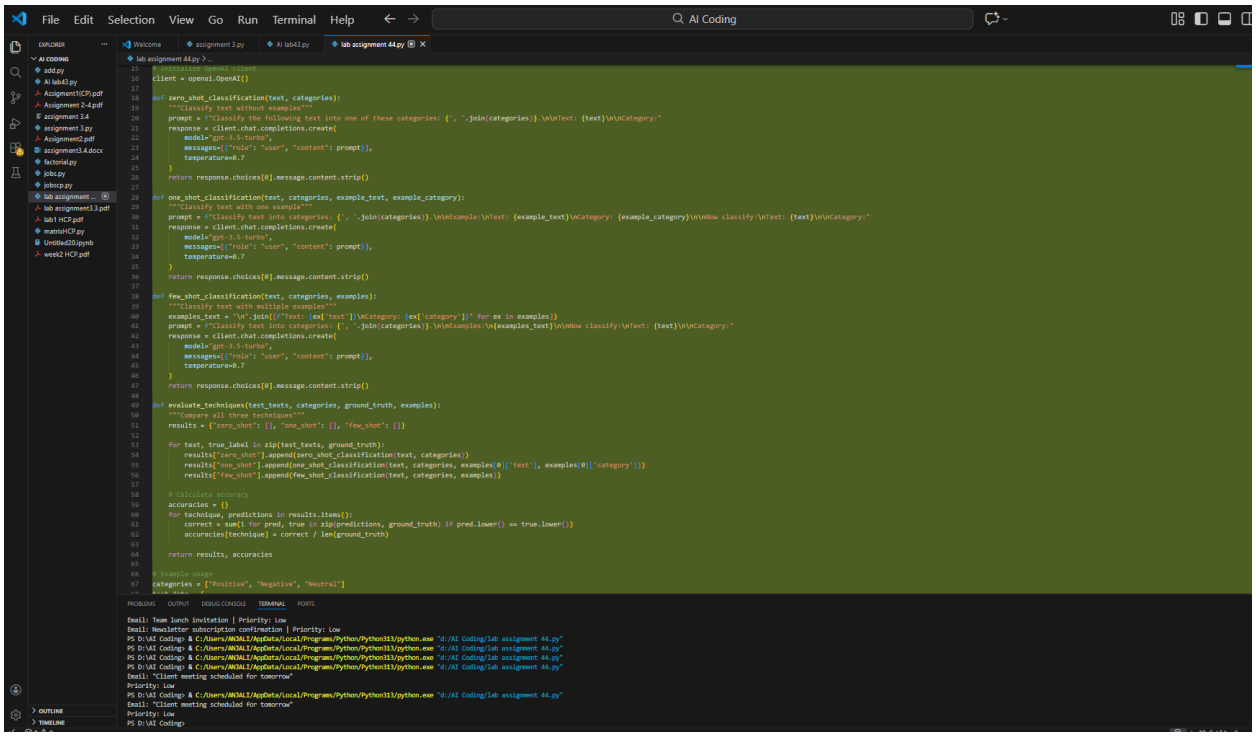
2c) Perform classification using One-shot prompting



2d) Perform classification using Few-shot prompting.



2e) Evaluate which technique produces the most reliable results and why.

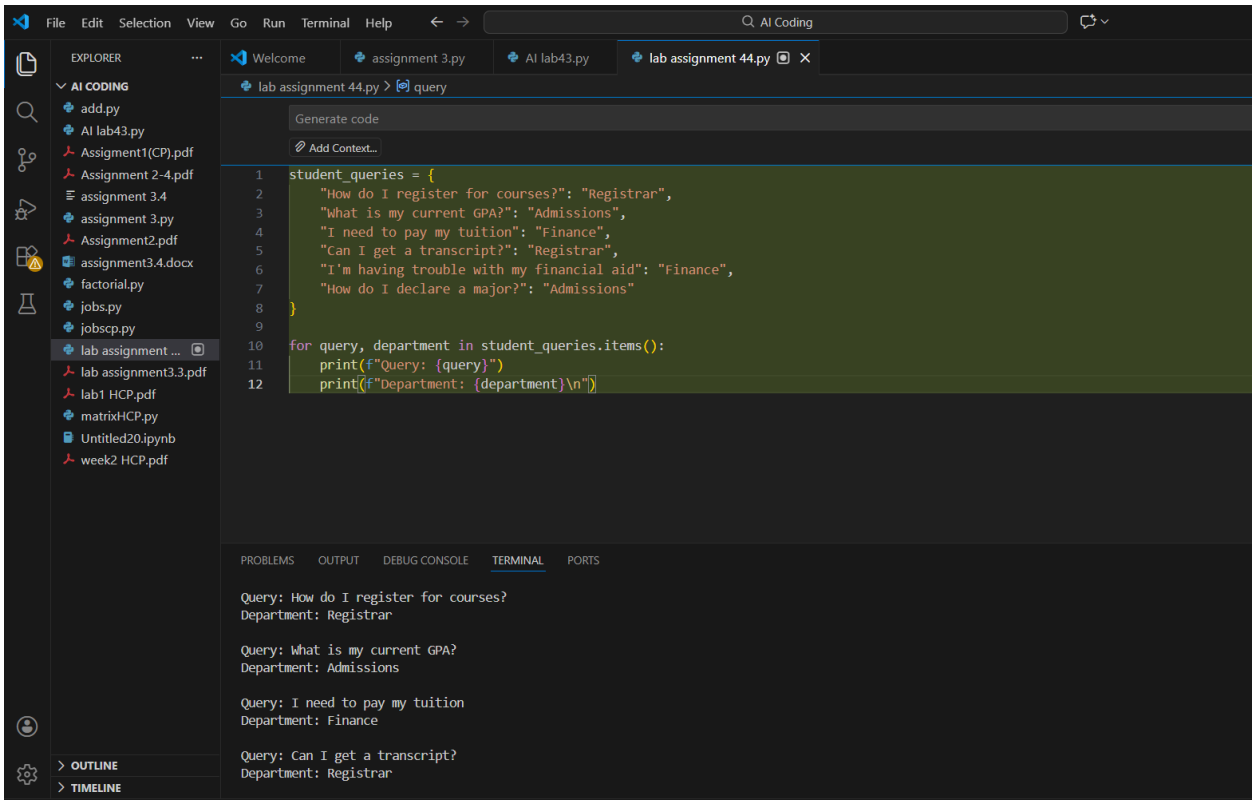


3. Student Query Routing System

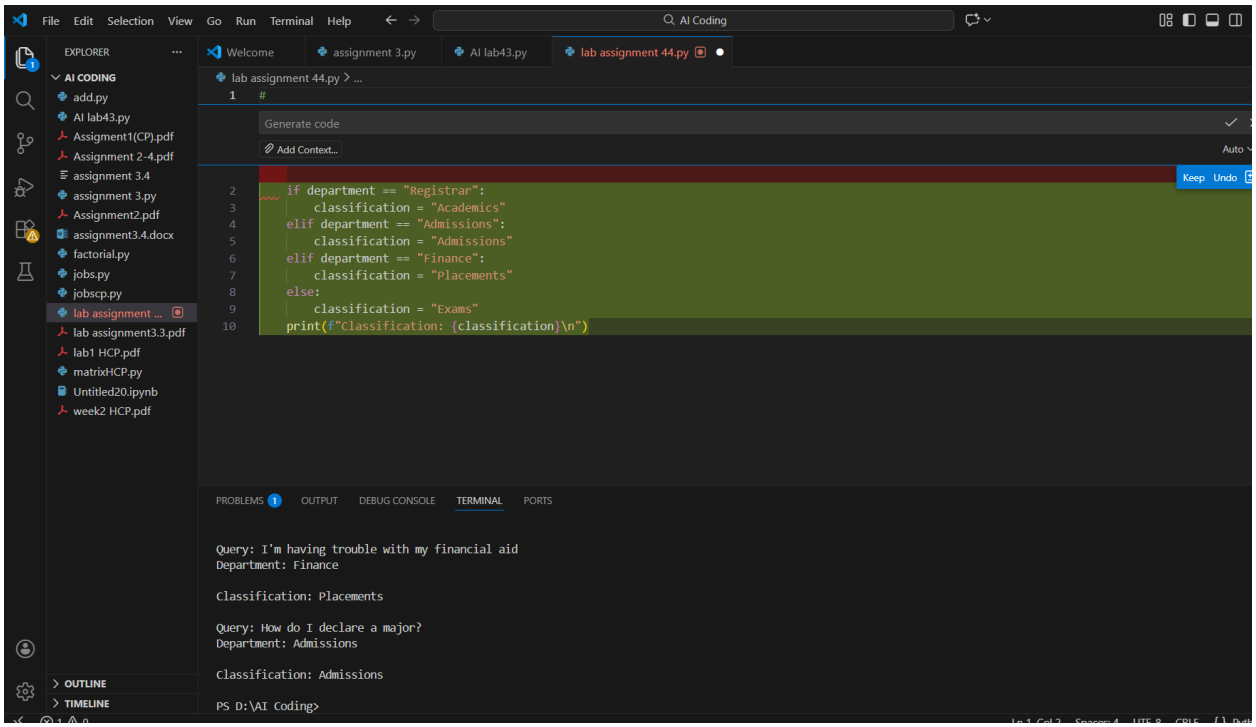
Scenario:

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

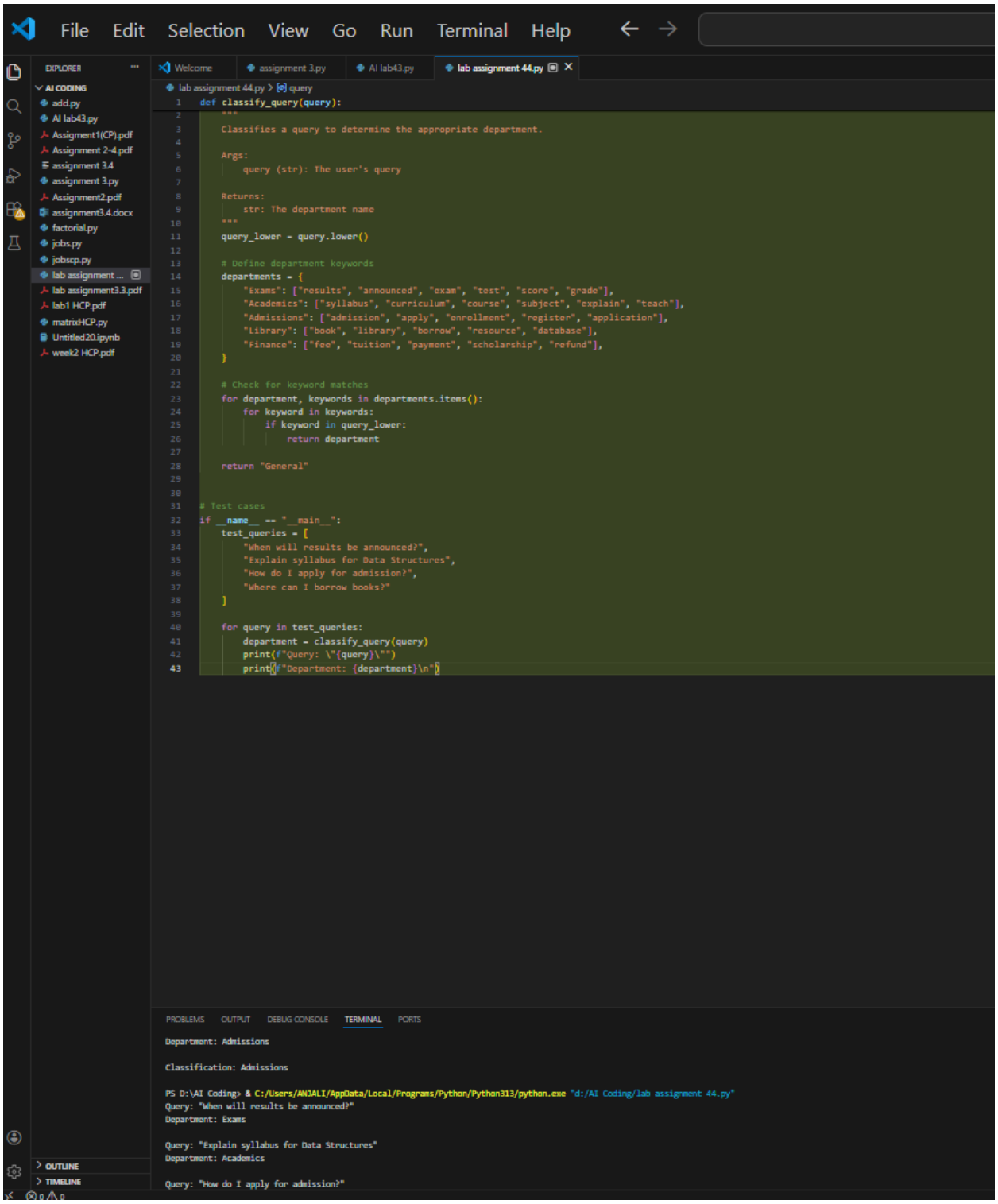
3a) . Create 6 sample student queries mapped to departments.



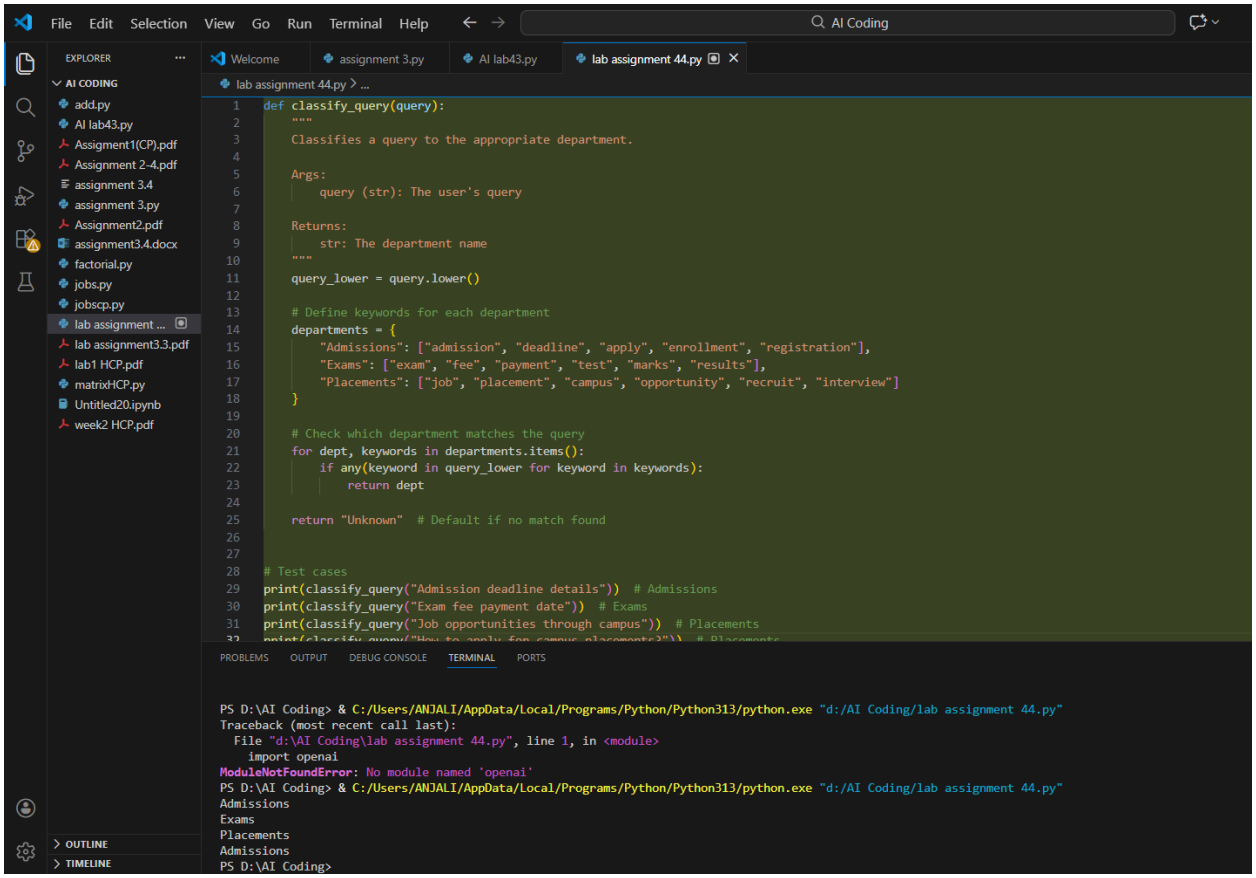
3b) Implement Zero-shot intent classification using an LLM.



3c) mprove results using One-shot prompting.



3d) Further refine results using Few-shot prompting.


File Edit Selection View Go Run Terminal Help
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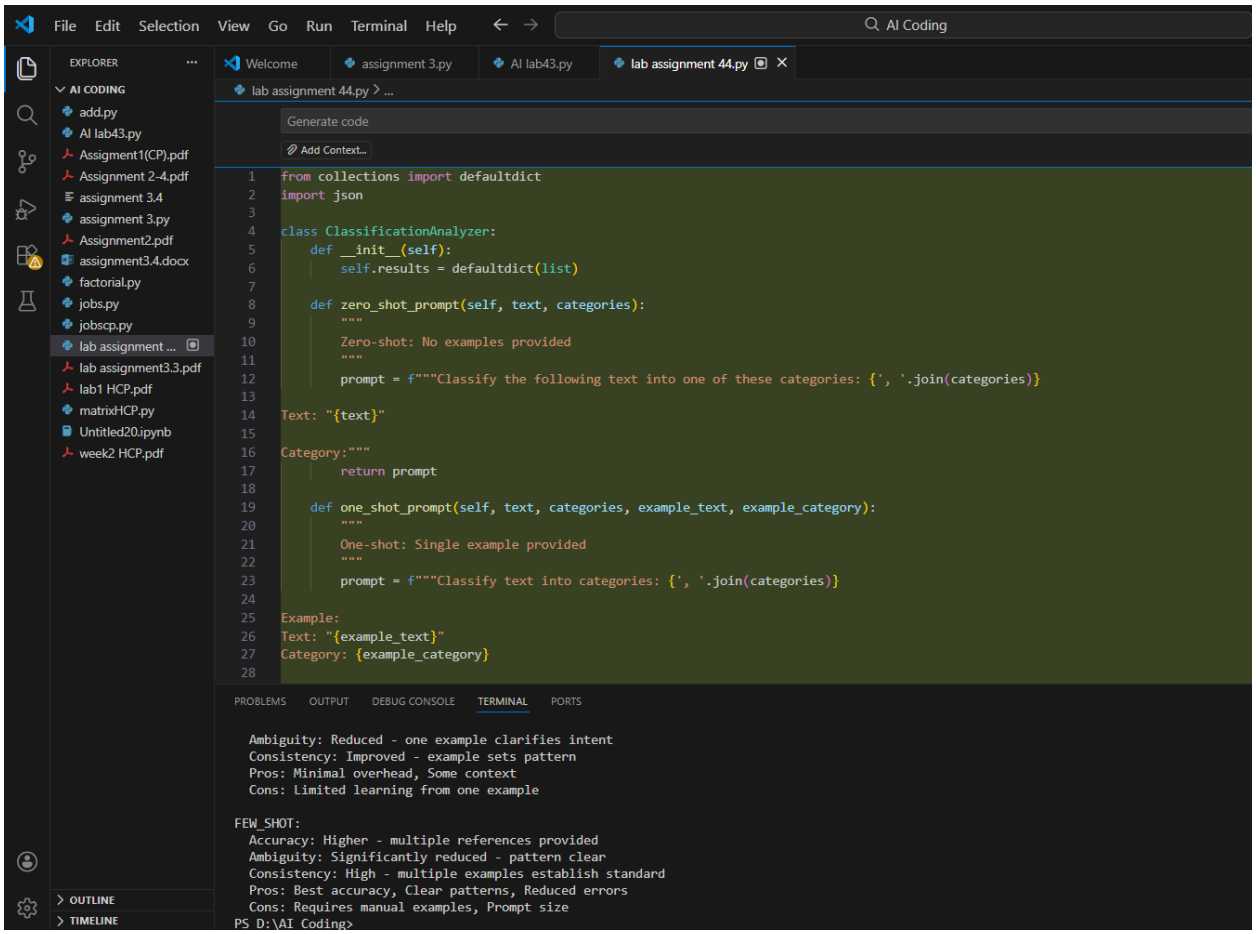
EXPLORER
AI CODING
add.py
AI lab43.py
Assigment1(CP).pdf
Assignment 2-4.pdf
assignment 3.4
assignment 3.py
Assignment2.pdf
assignment3.4.docx
factorial.py
jobs.py
jobscp.py
lab assignment ...
lab assignment3.3.pdf
lab1 HCP.pdf
matrixHCP.py
Untitled20.ipynb
week2 HCP.pdf
OUTLINE
TIMELINE
Welcome
assignment 3.py
AI lab43.py
lab assignment 44.py
lab assignment 44.py > ...
def classify_query(query):
"""
Classifies a query to the appropriate department.
Args:
query (str): The user's query
Returns:
str: The department name
"""
query_lower = query.lower()
# Define keywords for each department
departments = {
"Admissions": ["admission", "deadline", "apply", "enrollment", "registration"],
"Exams": ["exam", "fee", "payment", "test", "marks", "results"],
"Placements": ["job", "placement", "campus", "opportunity", "recruit", "interview"]
}
# Check which department matches the query
for dept, keywords in departments.items():
if any(keyword in query_lower for keyword in keywords):
return dept
return "Unknown" # Default if no match found
Test cases
print(classify_query("Admission deadline details")) # Admissions
print(classify_query("Exam fee payment date")) # Exams
print(classify_query("Job opportunities through campus")) # Placements
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"
Traceback (most recent call last):
File "d:\AI Coding\lab assignment 44.py", line 1, in <module>
import openai
ModuleNotFoundError: No module named 'openai'
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Admissions
Exams
Placements
Admissions
PS D:\AI Coding>

3e) Analyze how contextual examples affect classification accuracy.

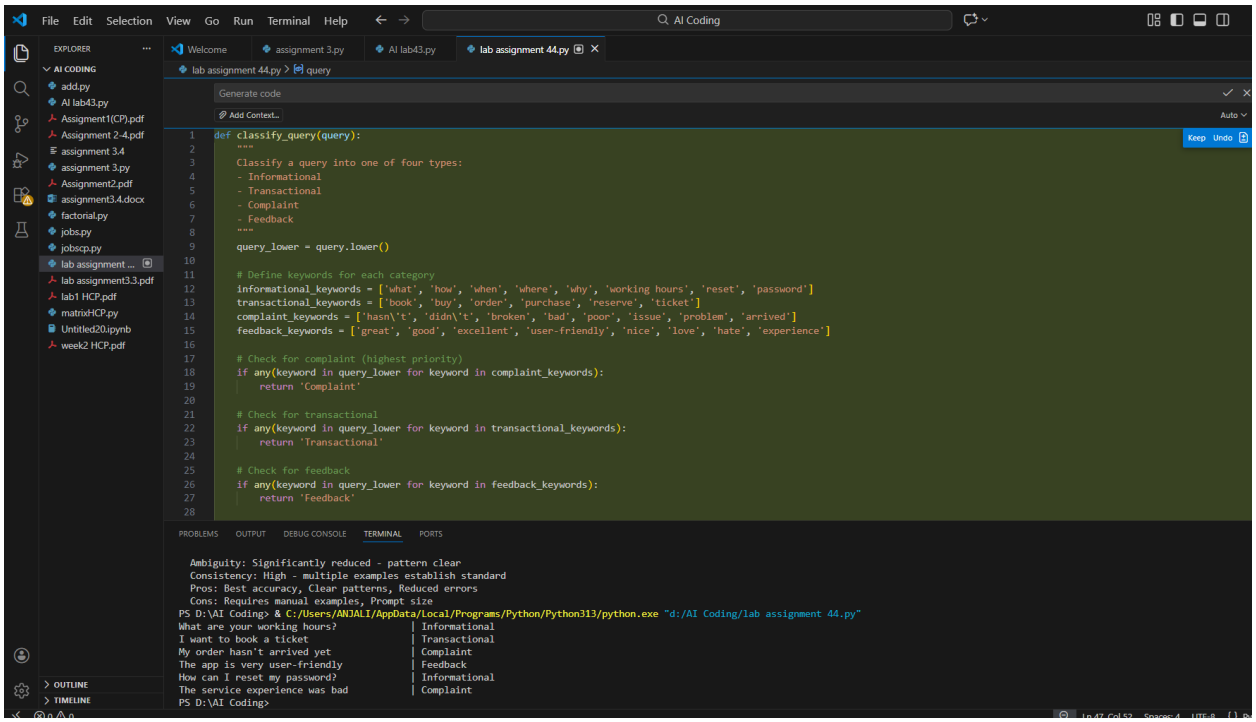


4)Chatbot Question Type Detection

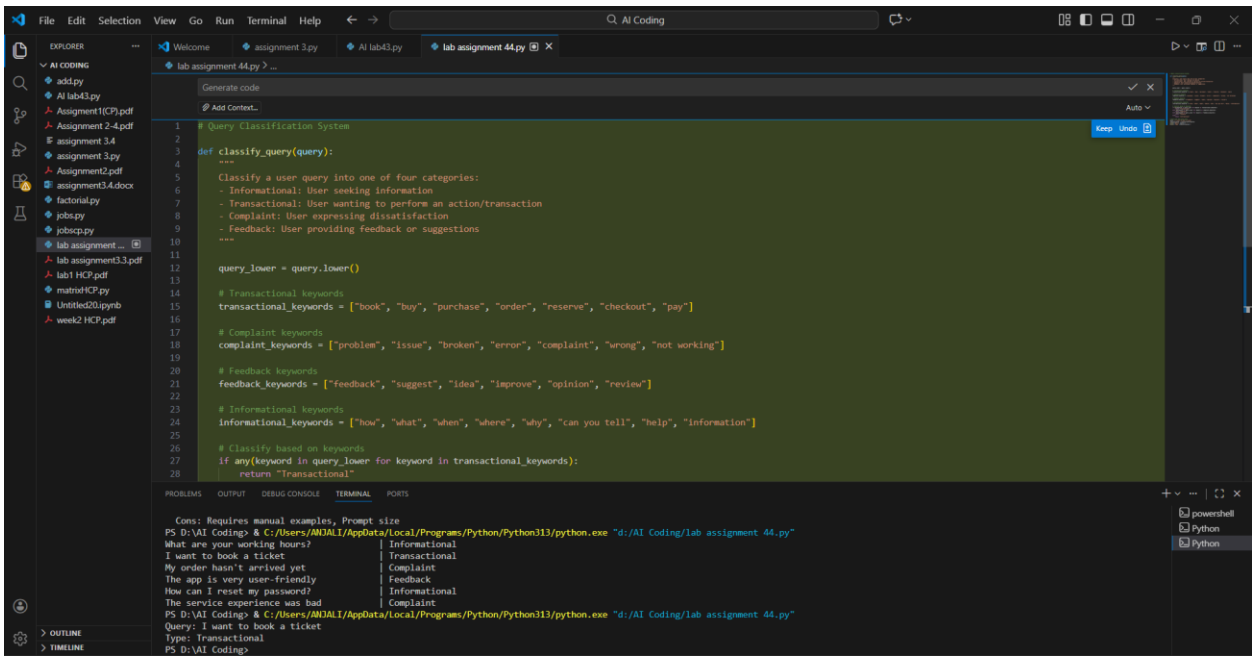
Scenario:

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

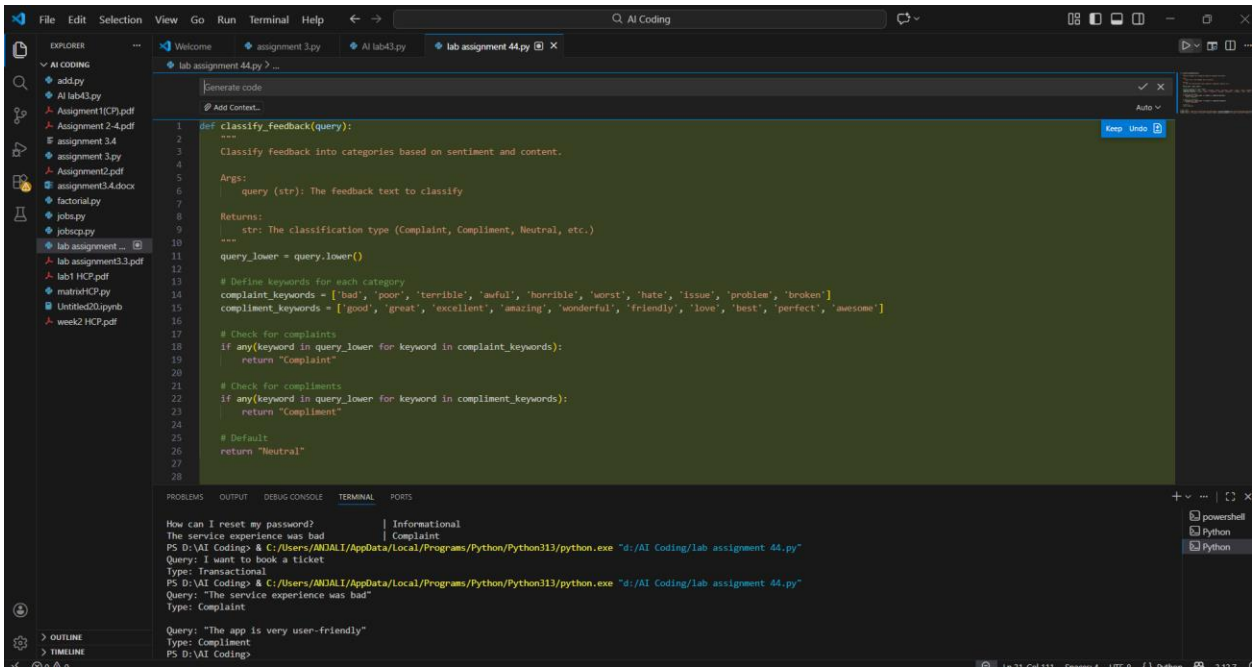
4a) Prepare 6 chatbot queries mapped to question types.



4b) Design prompts for Zero-shot, One-shot, and Few-shot learning.



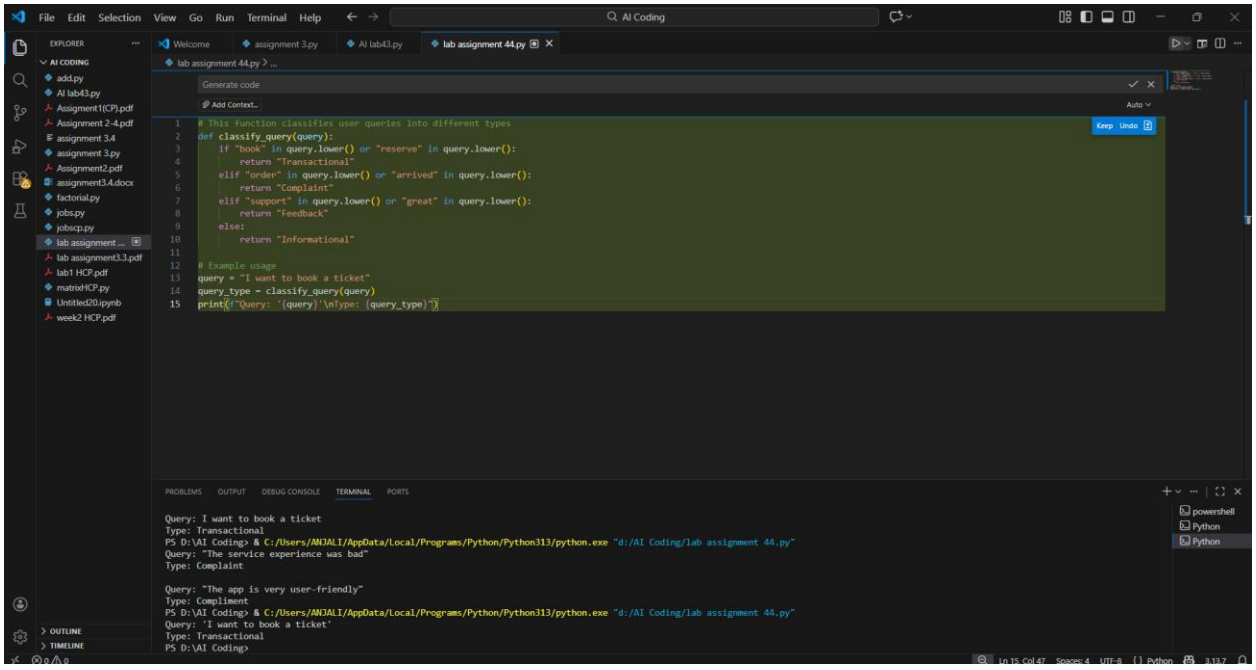
4c) Test all prompts on the same unseen queries.



```
def classify_feedback(query):
    """
    Classify feedback into categories based on sentiment and content.

    Args:
        query (str): The feedback text to classify

    Returns:
        str: The classification type (Complaint, Compliment, Neutral, etc.)
    """
    query_lower = query.lower()

    # Define keywords for each category
    complaint_keywords = ['bad', 'poor', 'terrible', 'awful', 'horrible', 'worst', 'hate', 'issue', 'problem', 'broken']
    compliment_keywords = ['good', 'great', 'excellent', 'amazing', 'wonderful', 'friendly', 'love', 'best', 'perfect', 'awesome']

    # Check for complaints
    if any(keyword in query_lower for keyword in complaint_keywords):
        return "Complaint"

    # Check for compliments
    if any(keyword in query_lower for keyword in compliment_keywords):
        return "Compliment"

    # Default
    return "Neutral"
```

```
How can I reset my password?            | Informational
The service experience was bad          | Complaint
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Query: I want to book a ticket
Type: Transactional
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Query: "The service experience was bad"
Type: Complaint

Query: "The app is very user-friendly"
Type: Compliment
PS D:\AI Coding>
```

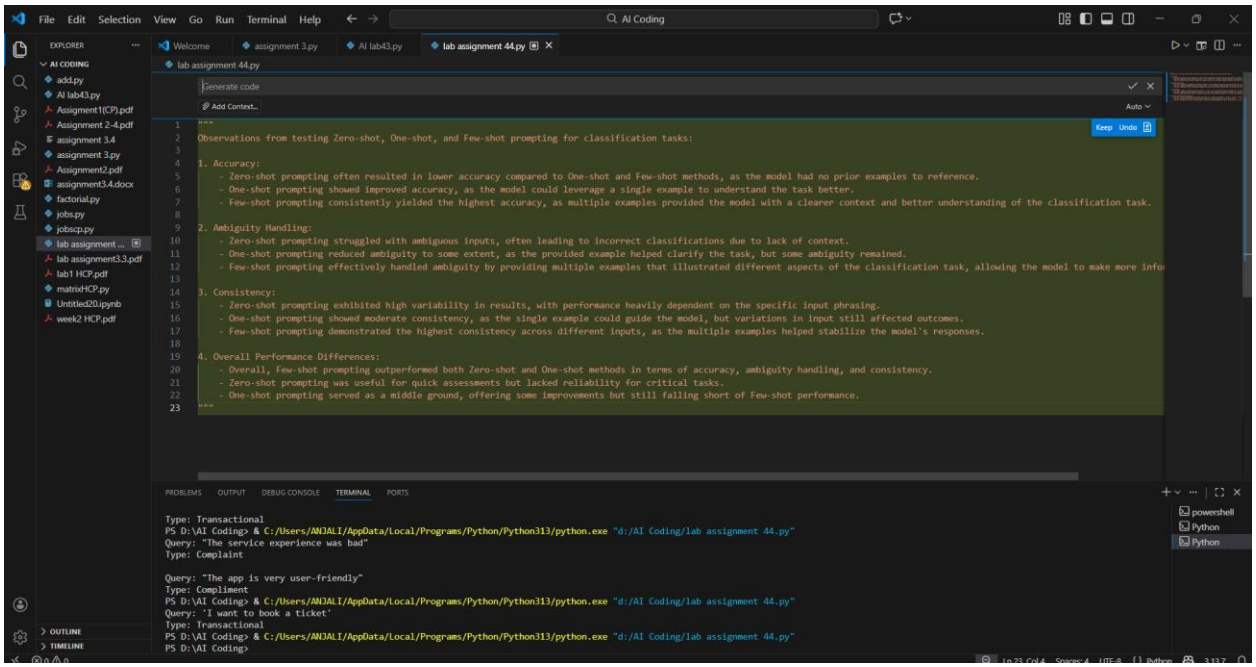
4d) Compare response correctness and ambiguity handling.



```
# This function classifies user queries into different types
def classify_query(query):
    if "book" in query.lower() or "reserve" in query.lower():
        return "Transactional"
    elif "order" in query.lower() or "arrived" in query.lower():
        return "Complaint"
    elif "support" in query.lower() or "great" in query.lower():
        return "Feedback"
    else:
        return "Informational"

# Example usage
query = "I want to book a ticket"
query_type = classify_query(query)
print(f"Query: '{query}'\nType: {query_type}")
```

```
Query: I want to book a ticket
Type: Transactional
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Query: "The service experience was bad"
Type: Complaint

Query: "The app is very user-friendly"
Type: Compliment
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 44.py"
Query: 'I want to book a ticket'
Type: Transactional
PS D:\AI Coding>
```

4e) Document observations.

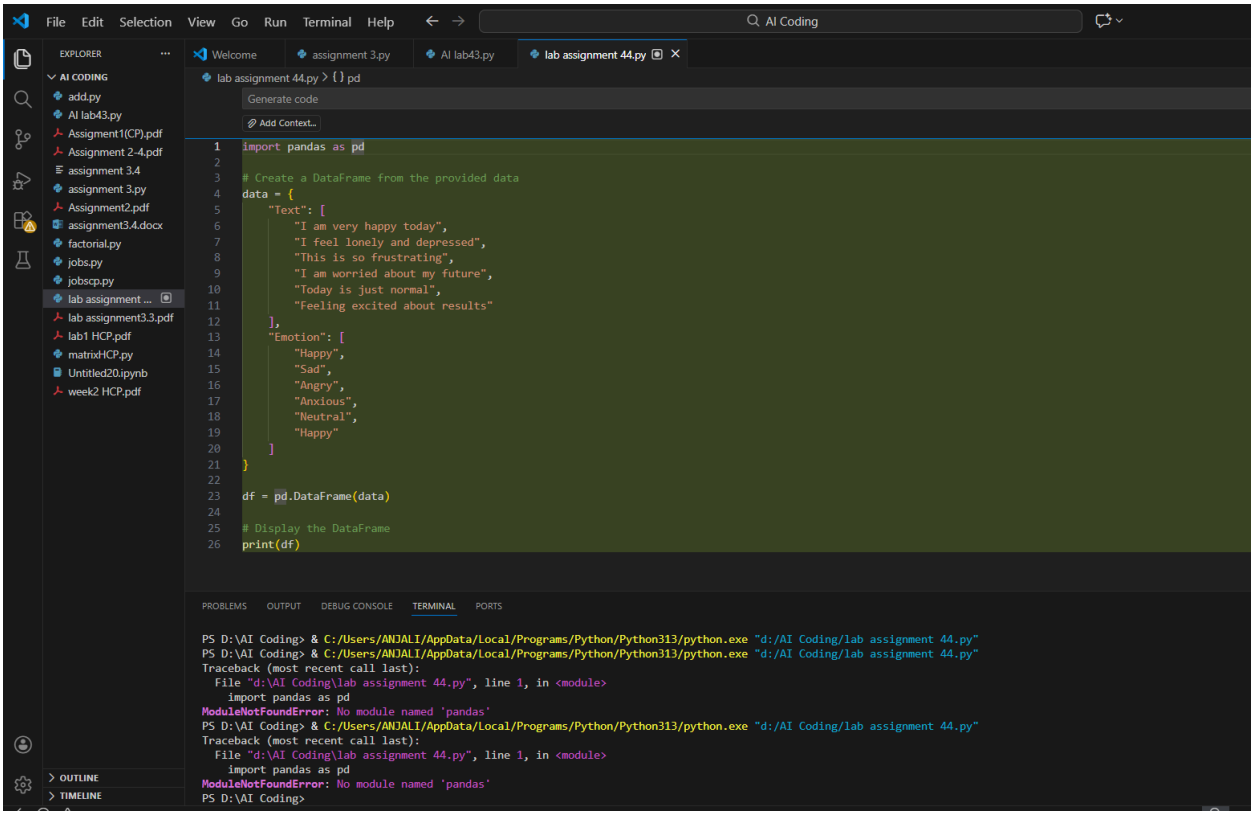


5)Emotion Detection in Text

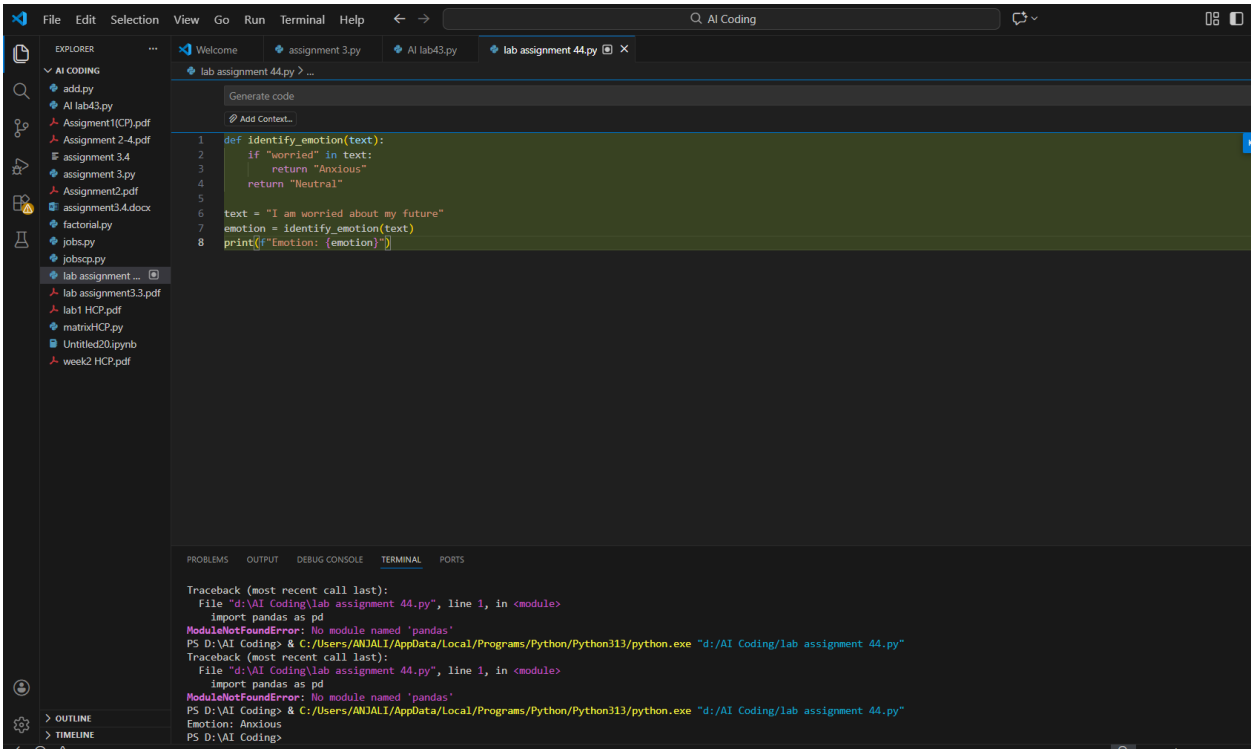
Scenario:

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

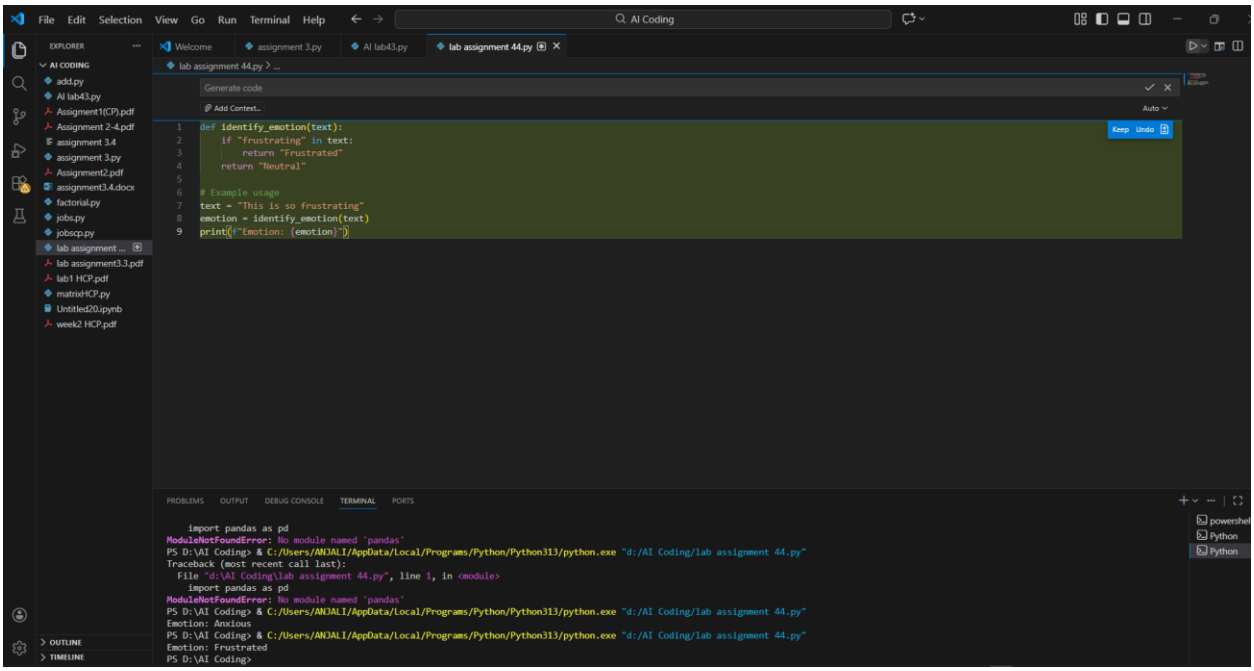
5a)Create labeled emotion samples.



5b) Use Zero-shot prompting to identify emotions.



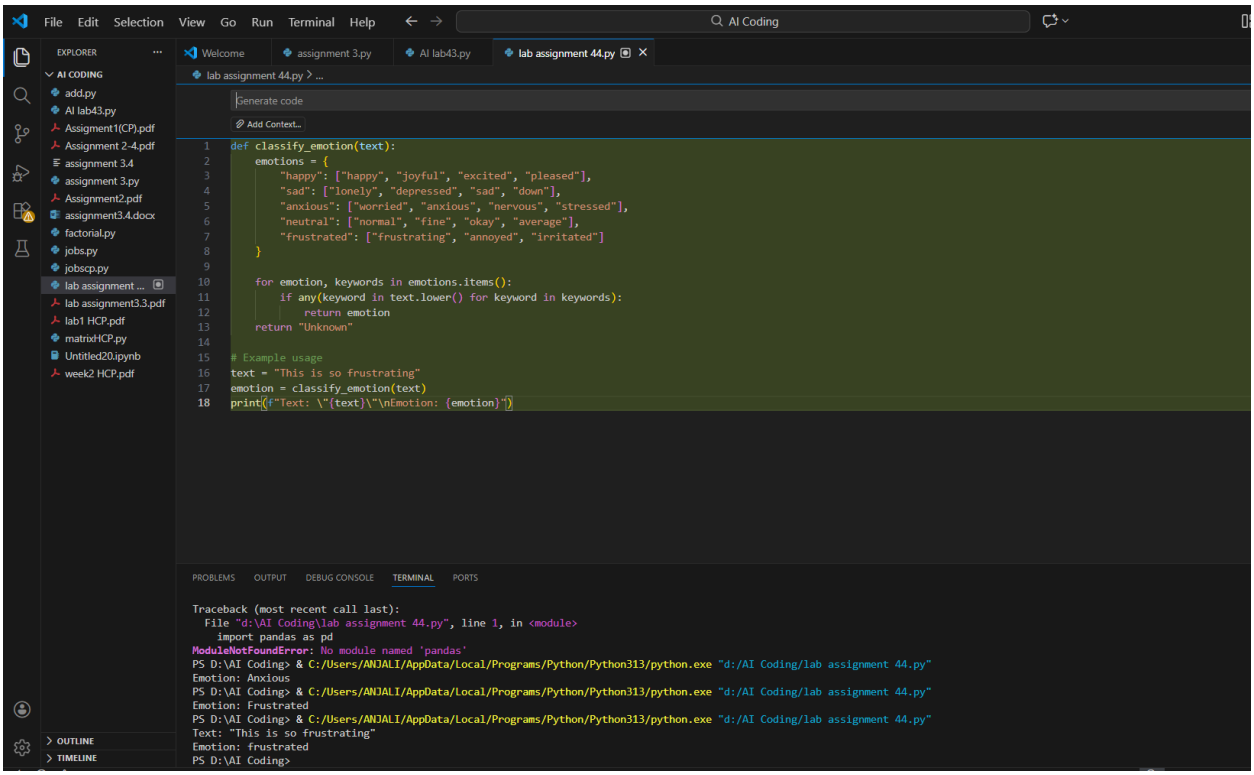
5c) Use One-shot prompting with an example.



```
def identify_emotion(text):
    if "frustrating" in text:
        return "Frustrated"
    return "Neutral"

# Example usage
text = "This is so frustrating"
emotion = identify_emotion(text)
print(f"Emotion: {emotion}")
```

```
    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>
```

5d) Use Few-shot prompting with multiple emotions.



```
def classify_emotion(text):
    emotions = {
        "happy": ["happy", "joyful", "excited", "pleased"],
        "sad": ["lonely", "depressed", "sad", "down"],
        "anxious": ["worried", "anxious", "nervous", "stressed"],
        "neutral": ["normal", "fine", "okay", "average"],
        "frustrated": ["frustrating", "annoyed", "irritated"]
    }

    for emotion, keywords in emotions.items():
        if any(keyword in text.lower() for keyword in keywords):
            return emotion
    return "Unknown"

# Example usage
text = "This is so frustrating"
emotion = classify_emotion(text)
print(f"Text: \"{text}\"\nEmotion: {emotion}")
```

```
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>
```

5e) Discuss ambiguity handling across techniques.