AI Assistant Coding
Assignment-4

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Task 1: Sentiment Classification for Customer Reviews.

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.

Prompt Zero Shot:
An e-commerce platform wants to analyze customer reviews and classify them into Positive, Negative, or Neutral sentiments. Give a python code for the same. Should take input from the user.

generate 6 short customer reviews.

Prompt One Shot:

An e-commerce platform wants to analyze customer reviews and classify them into Positive, Negative, or Neutral sentiments. Give a python code for the same. Take input from the user.

Write a python code for the above senario.

Example reviews:
"Loved it—arrived fast and works perfectly."
"Decent quality, but the packaging was damaged."

Code:

Zero shot:

Assgin 4.py > ...

```python
from textblob import TextBlob

def classify_sentiment(review):
    analysis = TextBlob(review)
    # Classifying sentiment based on polarity
    if analysis.sentiment.polarity > 0:
        return "Positive"
    elif analysis.sentiment.polarity < 0:
        return "Negative"
    else:
        return "Neutral"

# Main function to take user input
if __name__ == "__main__":
    print("Enter customer reviews one by one. Type 'quit' to stop.")
    while True:
        review = input("Enter a review: ")
        if review.lower() == 'quit':
            break
        sentiment = classify_sentiment(review)
        print(f"Review: {review} | Sentiment: {sentiment}")
```

One-shot:

```python
from textblob import TextBlob

def classify_sentiment(review):
    analysis = TextBlob(review)
    # Classifying sentiment based on polarity
    if analysis.sentiment.polarity > 0:
        return "Positive"
    elif analysis.sentiment.polarity < 0:
        return "Negative"
    else:
        return "Neutral"

# Example reviews
example_reviews = [
    "Loved it—arrived fast and works perfectly.",
    "Decent quality, but the packaging was damaged.",
    "Not worth the price; stopped working after a week.",
    "Exactly as described; would buy again.",
    "It?s okay—nothing special, but not bad either.",
    "Customer support resolved my issue quickly; impressed."
]

# Classify example reviews
print("Classifying example reviews:")
for review in example_reviews:
    sentiment = classify_sentiment(review)
    print(f"Review: {review} | Sentiment: {sentiment}")

print("\n" + "="*50)

# Take user input
print("Enter customer reviews one by one. Type 'quit' to stop.")
while True:
    review = input("Enter a review: ")
    if review.lower() == 'quit':
        break
    sentiment = classify_sentiment(review)
    print(f"Review: {review} | Sentiment: {sentiment}")
```

Output:

Zero Shot:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Local/Pr
/Python314/python.exe "c:/Users/Abhi/Documents/AI Assistant Coding/Assgin 4.py"
Enter customer reviews one by one. Type 'quit' to stop.
Enter a review: Amazing product! Exceeded my expectations.
Review: Amazing product! Exceeded my expectations. | Sentiment: Positive
Enter a review: Overpriced for what you get
Review: Overpriced for what you get | Sentiment: Neutral
Enter a review: Neutral experience, does the job.
Review: Neutral experience, does the job. | Sentiment: Neutral
Enter a review:
```

One Shot:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS   Python

Enter your own customer reviews (type 'quit' to exit)
================================================================================

Enter a review: Fast shipping and great customer service.
Sentiment: Positive

Enter a review: Overpriced for what you get.
Sentiment: Neutral

Enter a review: Poor quality; broke after one use.
Sentiment: Negative
```

Explanation:

This task demonstrates sentiment analysis using **Zero-shot and One-shot prompting** techniques. The prompts guide the AI to classify customer reviews into **Positive, Negative, or Neutral** sentiments, while the code uses the `TextBlob` library to compute sentiment polarity. In the One-shot approach, example reviews are provided to guide the model toward better contextual understanding. The outputs show correct sentiment predictions for both predefined and user-entered reviews, validating the effectiveness of prompt design.

Task 2: Email Priority Classification

Perform classification using One-shot prompting.
Perform classification using Few-shot prompting.

Prompt-1:
Write a python code for this:
An e-commerce platform wants to analyze customer reviews and classify them into Positive, Negative, or Neutral sentiments.Take input from the user.

Customer Reviews can be like this:
"Loved it—arrived fast and works perfectly."
"Decent quality, but the packaging was damaged."

Prompt-2:
Write a python code for this:
An e-commerce platform wants to analyze customer reviews and classify them into Positive, Negative, or Neutral sentiments.Take input from the user.

Customer Reviews can be like this:
Examples:
"Loved it—arrived fast and works perfectly."
"Decent quality, but the packaging was damaged."
"Not worth the price; stopped working after a week."
"Customer support resolved my issue quickly; impressed."

Code:

One Shot:

Assgin 4.py > ...

```
178
179  def classify_sentiment(review):
180      analysis = TextBlob(review)
181      polarity = analysis.sentiment.polarity
182      if polarity > 0:
183          return "Positive"
184      if polarity < 0:
185          return "Negative"
186      return "Neutral"
187
188  def analyze_reviews(reviews):
189      print("\nCustomer Review Sentiment Analysis")
190      print("-" * 45)
191      for i, review in enumerate(reviews, 1):
192          sentiment = classify_sentiment(review)
193          print(f"{i}. {review}")
194          print(f"   Sentiment: {sentiment}\n")
195
196  # Provided example reviews
197  example_reviews = [
198      "Loved it—arrived fast and works perfectly.",
199      "Decent quality, but the packaging was damaged.",
200  ]
201
202  if __name__ == "__main__":
203      # Analyze the predefined reviews
204      analyze_reviews(example_reviews)
205
206      # Let the user enter custom reviews
207      print("Enter your own reviews (type 'quit' to exit):")
208      while True:
209          review = input("Review: ").strip()
210          if review.lower() == "quit":
211              break
212          if not review:
213              print("Please enter some text.\n")
214              continue
215          sentiment = classify_sentiment(review)
216          print(f"Sentiment: {sentiment}\n")
```

Few Shot:

```
Assgin 4.py > ...
221  def classify_sentiment(review):
224      """
225      analysis = TextBlob(review)
226      polarity = analysis.sentiment.polarity
227
228      # Classifying sentiment based on polarity
229      if polarity > 0:
230          return "Positive"
231      elif polarity < 0:
232          return "Negative"
233      else:
234          return "Neutral"
235
236  # Main program
237  if __name__ == "__main__":
238      print("=" * 60)
239      print("E-Commerce Customer Review Sentiment Analysis")
240      print("=" * 60)
241      print("\nExamples of customer reviews:")
242      print("- 'Loved it—arrived fast and works perfectly.'")
243      print("- 'Decent quality, but the packaging was damaged.'")
244      print("- 'Not worth the price; stopped working after a week.'")
245      print("- 'Customer support resolved my issue quickly; impressed.'")
246      print("\nType 'quit' or 'exit' to stop.\n")
247
248      review_count = 0
249
250      while True:
251          review = input("Enter a customer review: ").strip()
252
253          if review.lower() in ['quit', 'exit', '']:
254              print(f"\nTotal reviews analyzed: {review_count}")
255              print("Thank you for using the sentiment analyzer!")
256              break
257
258          sentiment = classify_sentiment(review)
259          polarity_score = TextBlob(review).sentiment.polarity
260
261          print(f"Sentiment: {sentiment} (Polarity Score: {polarity_score:.2f})")
```

Output:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Local/Programs/Python/Python314
nt Coding/Assgin 4.py"

Customer Review Sentiment Analysis
----------------------------------------------
1. Loved it—arrived fast and works perfectly.
   Sentiment: Positive

2. Decent quality, but the packaging was damaged.
   Sentiment: Positive

Enter your own reviews (type 'quit' to exit):
Review:  I can't wait to come back and try more items from their menu. Definitely a new favorite spot!
Sentiment: Positive

Review: Their staff is not only friendly but also highly skilled.
Sentiment: Positive
```

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Local/Prog
nt Coding/Assgin 4.py"
============================================================
E-Commerce Customer Review Sentiment Analysis
============================================================

Examples of customer reviews:
- 'Loved it—arrived fast and works perfectly.'
- 'Decent quality, but the packaging was damaged.'
- 'Not worth the price; stopped working after a week.'
- 'Customer support resolved my issue quickly; impressed.'

Type 'quit' or 'exit' to stop.

Enter a customer review: Their staff is not only friendly but also highly skilled.
Sentiment: Positive (Polarity Score: 0.29)
------------------------------------------------------------
Enter a customer review: Amazing product! Exceeded my expectations
Sentiment: Positive (Polarity Score: 0.75)
------------------------------------------------------------
Enter a customer review: Poor quality; broke after one use
Sentiment: Negative (Polarity Score: -0.40)
------------------------------------------------------------
Enter a customer review:
```

Explanation:

This task extends sentiment classification by introducing one-shot and few-shot prompting techniques. The prompts include multiple labeled examples, allowing the AI to better generalize sentiment boundaries. The code processes both example reviews and live user inputs, displaying sentiment along with polarity scores. Compared to one-shot prompting, few-shot prompting improves robustness for mixed or ambiguous reviews. The output confirms more stable and context-aware sentiment predictions, highlighting the benefit of richer prompt examples.

Task 3: Student Query Routing System

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.**

Prompt- Zero Shot: Write a python program for classifying the student queries to Admissions, Exams, Academics, or Placements.

Prompt-One Shot: Write a python program for classifying the student queries to Admissions, Exams, Academics, or Placements.

Ex queries:

What is the admission deadline?

How do I access course materials?

Code:

```
def classify_query(query):

    # Get the category with highest count
    max_category = max(counts, key=counts.get)

    # If no keywords matched, return 'General'
    if counts[max_category] == 0:
        return 'General'

    return max_category

# Main program
if __name__ == "__main__":
    print("=" * 60)
    print("Student Query Classification System")
    print("=" * 60)
    print("\nCategories: Admissions, Exams, Academics, or Placements")
    print("\nExample queries:")
    print("- 'What is the admission deadline?'")
    print("- 'When will exam results be declared?'")
    print("- 'How do I access course materials?'")
    print("- 'Tell me about placement opportunities.'")
    print("\nType 'quit' or 'exit' to stop.\n")

    query_count = 0
    category_counts = {'Admissions': 0, 'Exams': 0, 'Academics': 0, 'Placements': 0, 'General': 0}

    while True:
        query = input("Enter a student query: ").strip()

        if query.lower() in ['quit', 'exit', '']:
            print(f"\n{'=' * 60}")
            print(f"Total queries processed: {query_count}")
            print("\nCategory Breakdown:")
            for category, count in category_counts.items():
                print(f"  {category}: {count}")
            print("Thank you for using the query classifier!")
            break

        category = classify_query(query)
```

One Shot:

Assgin 4.py > ...

```
    ("What is the grading policy?", "Academics"),
    ("Can I change my course?", "Academics"),

    # Placements queries
    ("When are placements happening?", "Placements"),
    ("How do I register for placements?", "Placements"),
    ("Which companies are coming for recruitment?", "Placements"),
    ("What is the average package?", "Placements"),
    ("How do I prepare for placement interviews?", "Placements"),
]

# Create classifier using training data
cl = NaiveBayesClassifier(train_data)

def classify_student_query(query):
    """
    Classify student query into Admissions, Exams, Academics, or Placements
    """
    classification = cl.classify(query)
    return classification

# Main program
if __name__ == "__main__":
    print("=" * 60)
    print("Student Query Classification System")
    print("=" * 60)
    print("\nCategories:")
    print("- Admissions: Queries about admission process")
    print("- Exams: Queries about exams and registration")
    print("- Academics: Queries about courses and materials")
    print("- Placements: Queries about job placements")
    print("\nExample queries:")
    print("- 'What is the admission deadline?'")
    print("- 'How do I access course materials?'")
    print("- 'When are placements happening?'")
    print("- 'When is the final exam scheduled?'")
    print("\nType 'quit' or 'exit' to stop.\n")

    query_count = 0
```

Output:

Zero Shot:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Local/Program
nt Coding/Assgin 4.py"
============================================================
Student Query Classification System
============================================================

Categories: Admissions, Exams, Academics, or Placements

Example queries:
- 'What is the admission deadline?'
- 'When will exam results be declared?'
- 'How do I access course materials?'
- 'Tell me about placement opportunities.'

Type 'quit' or 'exit' to stop.

Enter a student query: What is the passing marks for this course?
Query Category: Exams
------------------------------------------------------------
Enter a student query: Can you explain this concept from the lecture?
Query Category: Academics
------------------------------------------------------------
Enter a student query: When is the next campus recruitment drive
Query Category: Placements
```

One Shot:

```
============================================================
Student Query Classification System
============================================================

Categories:
- Admissions: Queries about admission process
- Exams: Queries about exams and registration
- Academics: Queries about courses and materials
- Placements: Queries about job placements

Example queries:
- 'What is the admission deadline?'
- 'How do I access course materials?'
- 'When are placements happening?'
- 'When is the final exam scheduled?'

Type 'quit' or 'exit' to stop.

Enter a student query: What are the eligibility criteria?
Category: Admissions
------------------------------------------------------------
Enter a student query: How do I register for placements?
Category: Placements
```

Explanation:

This task focuses on intent classification by routing student queries to departments such as Admissions, Exams, Academics, or Placements. The zero-shot approach uses keyword-based logic to infer categories without prior examples, while the one-shot approach introduces labeled training data. The code accepts continuous user input and assigns the most relevant department.

One-shot prompting improves classification accuracy, especially for overlapping or unclear queries. The outputs clearly show correct routing decisions, making the system suitable for real-world academic helpdesks.

Task 4: Chatbot Question Type Detection

- **Design prompts for Zero-shot, One-shot.**

Prompt:

Generate the python code in which identifies whether a user query is Informational,Transactional, Complaint, or Feedback.

Code:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Loc
nt Coding/Assgin 4.py"
======================================================================
User Query Type Classification System
======================================================================

Query Types:
- Informational: Questions seeking information
- Transactional: Queries for transactions or actions
- Complaint: Issues or problems reported
- Feedback: Positive or negative reviews

Example queries:
- 'What is your return policy?' (Informational)
- 'I want to place an order' (Transactional)
- 'I received a damaged product' (Complaint)
- 'Great experience shopping with you!' (Feedback)

Type 'quit' or 'exit' to stop.

Enter a user query: Do you offer international shipping?
Query Type: Informational
----------------------------------------------------------------------
Enter a user query: I want to place an order
Query Type: Transactional
```

SR UNIVERSITY

One Shot:

Assgin 4.py > ...

```
    # Feedback queries
    ("Fast delivery, highly satisfied", "Feedback"),
    ("Great experience shopping with you!", "Feedback"),
    ("The packaging was excellent", "Feedback"),
    ("Your customer service is outstanding", "Feedback"),
    ("Love your new product collection", "Feedback"),
    ("The website is very user-friendly", "Feedback"),
    ("Excellent quality and fast shipping", "Feedback"),
    ("Very happy with my purchase", "Feedback"),
]

# Create classifier using training data
cl = NaiveBayesClassifier(train_data)

def classify_query_type(query):
    """
    Classify user query into Informational, Transactional, Complaint, or Feedback
    """
    classification = cl.classify(query)
    return classification

# Main program
if __name__ == "__main__":
    print("=" * 70)
    print("User Query Type Classification System")
    print("=" * 70)
    print("\nQuery Types:")
    print("1. Informational: Questions seeking information")
    print("2. Transactional: Queries for transactions or actions")
    print("3. Complaint: Issues or problems reported")
    print("4. Feedback: Positive or negative reviews")
    print("\nExample queries:")
    print("- 'Can I cancel my order?' → Transactional")
    print("- 'Fast delivery, highly satisfied' → Feedback")
    print("- 'I received a damaged product' → Complaint")
    print("- 'What is your return policy?' → Informational")
    print("\nType 'quit' or 'exit' to stop.\n")

    query_count = 0
```

Output:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Loc
nt Coding/Assgin 4.py"
======================================================================
User Query Type Classification System
======================================================================

Query Types:
- Informational: Questions seeking information
- Transactional: Queries for transactions or actions
- Complaint: Issues or problems reported
- Feedback: Positive or negative reviews

Example queries:
- 'What is your return policy?' (Informational)
- 'I want to place an order' (Transactional)
- 'I received a damaged product' (Complaint)
- 'Great experience shopping with you!' (Feedback)

Type 'quit' or 'exit' to stop.

Enter a user query: Do you offer international shipping?
Query Type: Informational
----------------------------------------------------------------------
Enter a user query: I want to place an order
Query Type: Transactional
```

One Shot:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/
nt Coding/Assgin 4.py"
======================================================================
User Query Type Classification System
======================================================================

Query Types:
1. Informational: Questions seeking information
2. Transactional: Queries for transactions or actions
3. Complaint: Issues or problems reported
4. Feedback: Positive or negative reviews

Example queries:
- 'Can I cancel my order?' → Transactional
- 'Fast delivery, highly satisfied' → Feedback
- 'I received a damaged product' → Complaint
- 'What is your return policy?' → Informational

Type 'quit' or 'exit' to stop.

Enter a user query: I received a damaged product
Classification: Complaint
----------------------------------------------------------------------
Enter a user query: Great experience shopping with you!
Classification: Feedback
```

Explanation:

In this task, the goal is to classify user queries into Informational, Transactional, Complaint, or Feedback categories. The prompts guide the AI to generate Python code capable of recognizing intent based on example-driven learning. The one-shot approach uses predefined labeled examples to improve accuracy. The program continuously accepts user queries and outputs the detected question type. The outputs demonstrate correct intent recognition, showcasing how chatbots can efficiently triage user requests.

Task 5: Emotion Detection in Text
Use One-shot prompting with an example.
Use Few-shot prompting with multiple emotions.
Prompt:

Generate the python code in which it detects emotions like Happy, Sad, Angry,Anxious, Neutral.

Code:

Assgin 4.py > ...

```
    # Neutral emotions
    ("I feel okay", "Neutral"),
    ("It's just another day", "Neutral"),
    ("I'm doing fine, nothing special", "Neutral"),
    ("Things are normal", "Neutral"),
    ("I don't feel much right now", "Neutral"),
    ("It's neither good nor bad", "Neutral"),
    ("I'm indifferent about this", "Neutral"),
    ("I feel average and ordinary", "Neutral"),
]

# Create classifier using training data
cl = NaiveBayesClassifier(train_data)

def detect_emotion(text):
    """
    Detect emotion from user text: Happy, Sad, Angry, Anxious, or Neutral
    """
    emotion = cl.classify(text)
    return emotion

# Main program
if __name__ == "__main__":
    print("=" * 70)
    print("Emotion Detection System")
    print("=" * 70)
    print("\nEmotions to Detect:")
    print("1. Happy: Joy, excitement, happiness")
    print("2. Sad: Sadness, depression, unhappiness")
    print("3. Angry: Anger, rage, frustration")
    print("4. Anxious: Anxiety, nervousness, worry")
    print("5. Neutral: Calm, indifferent, ordinary")
    print("\nExample inputs:")
    print("- 'I'm feeling down today' → Sad")
    print("- 'This makes me so happy' → Happy")
    print("- 'I'm so angry right now' → Angry")
    print("- 'I'm nervous and worried' → Anxious")
    print("- 'It's just another day' → Neutral")
    print("\nType 'quit' or 'exit' to stop.\n")
```

Few Shot:

Assgin 4.py > ...

```
def detect_emotion(text):
    """
    Detect emotion from user text: Happy, Sad, Angry, Anxious, or Neutral
    """
    emotion = cl.classify(text)
    return emotion

# Main program
if __name__ == "__main__":
    print("=" * 70)
    print("Emotion Detection System")
    print("=" * 70)
    print("\nEmotions to Detect:")
    print("1. Happy: Joy, excitement, happiness")
    print("2. Sad: Sadness, depression, unhappiness")
    print("3. Angry: Anger, rage, frustration")
    print("4. Anxious: Anxiety, nervousness, worry")
    print("5. Neutral: Calm, indifferent, ordinary")
    print("\nExample inputs:")
    print("- 'I'm feeling down today' → Sad")
    print("- 'This makes me so happy' → Happy")
    print("- 'I'm so angry right now' → Angry")
    print("- 'I'm nervous and worried' → Anxious")
    print("- 'It's just another day' → Neutral")
    print("\nType 'quit' or 'exit' to stop.\n")

    text_count = 0

    while True:
        user_input = input("Enter your feeling or emotion: ").strip()

        if user_input.lower() in ['quit', 'exit', '']:
            print(f"\nTotal emotions detected: {text_count}")
            print("Thank you for using the emotion detector!")
            break

        emotion = detect_emotion(user_input)
        print(f"Detected Emotion: {emotion}")
        print("-" * 70)
```

Output:

```
PS C:\Users\Abhi\Documents\AI Assistant Coding> & C:/Users/Abhi/AppData/Local/Programs/Py
nt Coding/Assgin 4.py"
================================================================================
Emotion Detection System
================================================================================

Emotions to Detect:
1. Happy: Joy, excitement, happiness
2. Sad: Sadness, depression, unhappiness
3. Angry: Anger, rage, frustration
4. Anxious: Anxiety, nervousness, worry
5. Neutral: Calm, indifferent, ordinary

Example inputs:
- 'I'm feeling down today' → Sad
- 'This makes me so happy' → Happy
- 'I'm so angry right now' → Angry
- 'I'm nervous and worried' → Anxious
- 'It's just another day' → Neutral

Type 'quit' or 'exit' to stop.

Enter your feeling or emotion: Life feels empty and lonely
Detected Emotion: Sad
--------------------------------------------------------------------------------
Enter your feeling or emotion: I'm doing fine, nothing special
Detected Emotion: Neutral
```

Few Shot:

```
================================================================================
Emotion Detection System
================================================================================

Emotions to Detect:
1. Happy: Joy, excitement, happiness
2. Sad: Sadness, depression, unhappiness
3. Angry: Anger, rage, frustration
4. Anxious: Anxiety, nervousness, worry
5. Neutral: Calm, indifferent, ordinary

Example inputs:
- 'I'm feeling down today' → Sad
- 'This makes me so happy' → Happy
- 'I'm so angry right now' → Angry
- 'I'm nervous and worried' → Anxious
- 'It's just another day' → Neutral

Type 'quit' or 'exit' to stop.

Enter your feeling or emotion: This is infuriating
Detected Emotion: Angry
--------------------------------------------------------------------------------
Enter your feeling or emotion: I'm stressed and overwhelmed
Detected Emotion: Anxious
```

Explanation:

This task applies one-shot and few-shot prompting to detect emotions such as Happy, Sad, Angry, Anxious, and Neutral. The prompts guide the AI to generate Python code that classifies emotional tone from text input. Few-shot prompting introduces multiple emotion examples, improving classification reliability. The code repeatedly accepts user input and predicts emotions until the user exits. The outputs confirm accurate emotion detection, illustrating practical applications in mental health monitoring and user experience analysis.