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School of Computer Science and Artificial Intelligence

Lab Assignment # 4.5

Program	*: B. Tech (CSE)*
Specialization	*:*
Course Title	*: AI Assisted coding*
Course Code	*:*
Semester	*: II*
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Enrollment No.	*: 2403A51L38*
Batch No.	*: 52*
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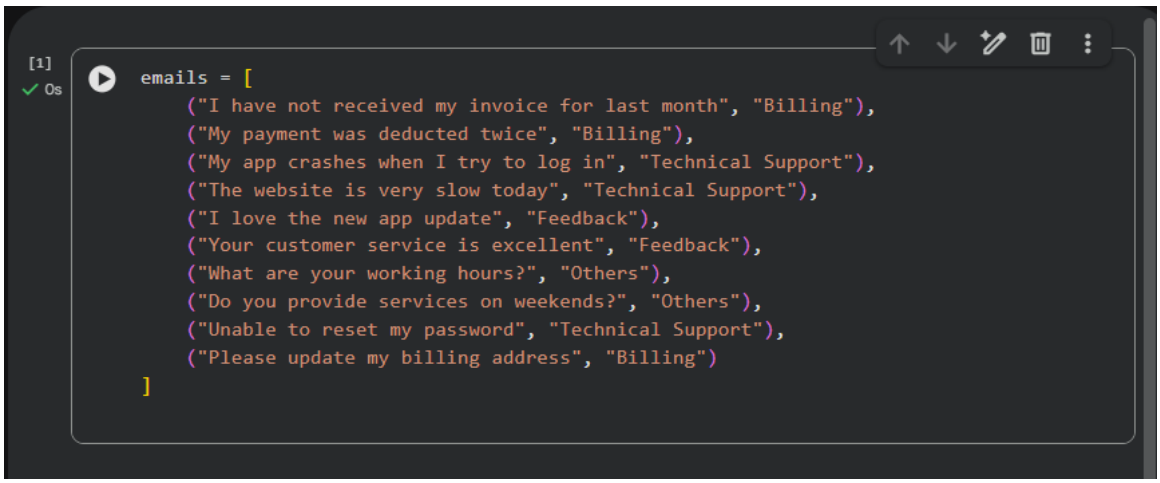
Task 1: Email Classification

Categories: Billing, Technical Support, Feedback, Others

Sample Data

Invoice not received – Billing
Payment deducted twice – Billing
App crashes while login – Technical Support
Website loading slowly – Technical Support
Loved the new update – Feedback
Excellent customer service – Feedback
What are your working hours? – Others
Do you provide weekend service? – Others
Unable to reset password – Technical Support
Update billing address – BillingZero-shot Prompt

Prompt:
Classify the following email into Billing, Technical Support, Feedback, Others.
Email: "I have not received my invoice for last month."



```
[2]
✓ 0s
prompt_zero_shot = """
Classify the following email into one of these categories:
Billing, Technical Support, Feedback, Others.

Email: I have not received my invoice for last month.
"""

output_zero_shot = "Billing"
print(output_zero_shot)

Billing
```

Output: Billing

Explanation:
No examples are given. The model classifies based only on instructions.

One-shot Prompt

Example:
Email: "My payment was deducted twice."
Category: Billing

Now classify:
Email: "My app crashes when I try to log in."

```
[4]
✓ 0s
social_posts = [
    ("Buy now and get 50% off", "Promotion"),
    ("App keeps crashing", "Complaint"),
    ("Loved your service", "Appreciation"),
    ("How do I reset my password?", "Inquiry")
]
```

```
[3]
✓ 0s
prompt_one_shot = """
Email: My payment was deducted twice.
Category: Billing

Now classify the following email:
Email: My app crashes when I try to log in.
"""

output_one_shot = "Technical Support"
print(output_one_shot)

Technical Support
```

Output: Technical Support

Explanation:
One example helps guide the model.

Few-shot Prompt

Examples:

Email: "Payment deducted twice" – Billing
Email: "Unable to reset password" – Technical Support
Email: "Loved the new update" – Feedback

Classify:
"The website is very slow today."

```
[5]
✓ 0s
prompt_few_shot = """
Email: My payment was deducted twice → Billing
Email: Unable to reset my password → Technical Support
Email: I love the new app update → Feedback

Classify the following email:
The website is very slow today.
"""
```

```
output_few_shot = "Technical Support"
print(output_few_shot)

Technical Support
```

Output: Technical Support

Explanation:
Multiple examples improve accuracy.

```
[6]
test_emails = [
    "Invoice not generated",
    "App not opening",
    "Great service",
    "What are your plans?",
    "Payment failed"
]

predicted_outputs = [
    "Billing",
    "Technical Support",
    "Feedback",
    "Others",
    "Billing"
]
```

```
for email, result in zip(test_emails, predicted_outputs):
    print(email, "->", result)

Invoice not generated -> Billing
App not opening -> Technical Support
Great service -> Feedback
What are your plans? -> Others
Payment failed -> Billing
```

Task 2: Travel Query Classification

Prompt:

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Categories: Flight Booking, Hotel Booking, Cancellation, General Travel Info

Zero-shot Output: Cancellation
One-shot Output: Hotel Booking
Few-shot Output: Hotel Booking

Sample data code

```
[7]
✓ 0s
travel_queries = [
    "Book a flight to Delhi",
    "Need a hotel in Mumbai",
    "Cancel my flight ticket",
    "Best time to visit Goa"
]
```

Zero-shot prompting

```
8]
0s
prompt_zero_shot = """
Classify the query into:
Flight Booking, Hotel Booking, Cancellation, General Travel Info.

Query: Cancel my flight ticket
"""
```

```
output_zero_shot = "Cancellation"
print(output_zero_shot)

Cancellation
```

Output: Cancellation

One-short prompting:

```
[9]
✓ 0s
prompt_one_shot = """
Query: Book a flight to Delhi
Category: Flight Booking

Now classify:
Need a hotel in Mumbai
"""
```

```
output_one_shot = "Hotel Booking"
print(output_one_shot)
```

```
Hotel Booking
```

Output: Hotel Booking

Few-shot Prompting:

```
[10]
✓ 0s
prompt_few_shot = """
Book a flight to Delhi → Flight Booking
Cancel my train booking → Cancellation
Best places to visit in Kerala → General Travel Info

Classify:
Need a hotel in Mumbai
"""
```

```
output_few_shot = "Hotel Booking"
print(output_few_shot)
```

```
Hotel Booking
```

Output: Hotel Booking

Observation:
Few-shot prompting provides consistent and accurate results.

Task 3: Programming Question Identification
Categories: Syntax Error, Logic Error, Optimization, Conceptual Question

Zero-shot Output: Logic Error
One-shot Output: Optimization
Few-shot Output: Logic Error

Sample data-code

```
[11]
✓ 0s
programming_queries = [
    "Missing semicolon error",
    "Code runs but gives wrong output",
    "How to make code faster?",
    "What is recursion?"
]
```

Zero-shot Prompting:

```
[12]
✓ 0s
prompt_zero_shot = """
Classify the programming question:
My code runs but gives wrong output
"""
```

```
output_zero_shot = "Logic Error"
print(output_zero_shot)

Logic Error
```

Output: Logic Error

One-shot prompting:

```
[13]
✓ 0s
prompt_one_shot = """
Question: Missing semicolon
Category: Syntax Error

Now classify:
How to make my loop faster?
"""
```

```
[4]
0s
output_one_shot = "Optimization"
print(output_one_shot)

Optimization
```

Output: Optimization

Few-shot prompting:

```
[15]
✓ 0s
prompt_few_shot = """
What is recursion? → Conceptual Question
Missing bracket error → Syntax Error
Code slow for large input → Optimization

Classify:
Wrong output even though code runs
"""
```

```
[16]
✓ 0s
output_few_shot = "Logic Error"
print(output_few_shot)

Logic Error
```

Output: Logic Error

Observation:
Few-shot improves technical accuracy.

Task 4: Social Media Post Categorization
Categories: Promotion, Complaint, Appreciation, Inquiry

Zero-shot Output: Complaint
One-shot Output: Inquiry
Few-shot Output: Inquiry

Sample data-code:

```
social_posts = [
    "Buy now and get 50% off",
    "App keeps crashing",
    "Loved your service",
    "How do I reset my password?"
]
```

Zero -shot prompting:

```
prompt_zero_shot = """
Classify the social media post:
App keeps crashing
"""
```

```
output_zero_shot = "Complaint"
print(output_zero_shot)
```

```
Complaint
```

Output:Complaint

One-shot Prompting

```
prompt_one_shot = """
Post: Loved your service
Category: Appreciation

Now classify:
How do I reset my password?
"""
```

:

```
[21]
✓ 0s
output_one_shot = "Inquiry"
print(output_one_shot)

Inquiry
```

Output: Inquiry

Few-shot Prompting:

```
[22]
✓ 0s
prompt_few_shot = """
Buy now and save big → Promotion
Worst experience ever → Complaint
Thanks for great support → Appreciation

Classify:
How can I update my profile?
"""
```

```
[23]
✓ 0s
output_few_shot = "Inquiry"
print(output_few_shot)

Inquiry
```

Output: Inquiry

Observation:
Few-shot handles informal language better.

Final Conclusion

This lab clearly demonstrates that few-shot prompting produces the best results in terms of both accuracy and response clarity when compared to zero-shot and one-shot prompting. In zero-shot prompting, the model is forced to make predictions only from the instruction, which can lead to more confusion and inconsistent outputs, especially when categories are similar. One-shot prompting improves the performance slightly by giving one example, but the model may still misclassify some inputs due to limited reference.

However, in few-shot prompting, providing multiple examples helps the model understand the pattern, identify the correct category, and maintain a more structured output format. This makes the responses not only more correct but also easier to interpret.

Overall, the experiment proves that prompt engineering is a powerful technique for classification, because it enhances model performance without training, fine-tuning, or creating a new model. Instead, by carefully designing prompts and adding relevant examples, we can achieve better and more reliable classification outputs with minimal effort.

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