AI ASSISTED CODING
ASSIGNMENT - 4.1
ROLL NO. 2303A510J0

Problem Statement - 1:
Customer Email Classification

1. **Sample Customer Emails:**

No.	Email Content	Category
E1	“I was charged twice for my last invoice. Please fix this.”	Billing
E2	“The app crashes every time I try to log in.”	Technical Support
E3	“I really like the new interface, it’s very user-friendly.”	Feedback
E4	“Can you tell me your office working hours?”	Others
E5	“My payment failed but the amount was deducted.”	Billing

2. **Zero shot prompting**

Prompt:

Classify the following customer email into one of these categories:
Billing, Technical Support, Feedback, Others.

Email: “The app crashes every time I try to log in.”

Output:
Technical Support

Observation:
The model correctly inferred the category without examples.

3. **<u>One-shot prompting</u>**

Prompt:
Example:
Email: “I was charged twice for my last invoice.”
Category: Billing

Now classify the following email into Billing, Technical Support, Feedback, or Others.
Email: “My payment failed but the amount was deducted.”

Output:
Billing

Observation:

One example helped improve consistency.

4. **Few shot prompting:**

Prompt:

Example 1:
Email: “The app crashes every time I try to log in.”
Category: Technical Support

Example 2:
Email: “I really like the new interface.”
Category: Feedback

Example 3:
Email: “I was charged twice for my last invoice.”
Category: Billing

Now classify the following email:
Email: “Can you tell me your office working hours?”

Output:

Others

Observation:

Few-shot prompting gave the most confident and accurate response.

5. Comparison:

Technique	Effectiveness
Zero-shot	Works well for simple emails
One-shot	Improves clarity
Few-shot	Best accuracy and reliability

Problem Statement - 2:
Intent Classification for Chatbot Queries

1. Intents:

- Account Issue
- Order Status
- Product Inquiry
- General Question

2. Sample Queries:

Query No.	Query	Intent

Q1	“I can’t reset my account password.”	Account Issue
Q2	“Where is my order?”	Order Status
Q3	“Does this phone support 5G?”	Product Inquiry
Q4	“What are your business hours?”	General Question
Q5	“My account was locked after login attempts.”	Account Issue
Q6	“When will my package arrive?”	Order Status

3. Zero-shot prompting:

Prompt:

Classify the following user query into one of these intents: Account Issue, Order Status, Product Inquiry, General Question.

Query: “Does this phone support 5G?”

Output:

Product Inquiry

Observation:

The model correctly classified the intent without any examples, but accuracy depends on how clearly the query is written.

4. **One - shot Prompting:**

Prompt:

Example:
Query: “Where is my order?”
Intent: Order Status

Now classify the following query:
Query: “My account was locked after login attempts.”

Output:

Account Issue

Observation:

Providing one labeled example helped the model better understand intent boundaries and improved consistency.

5. **Few - shot Prompting:**

Prompt:

Example 1:
Query: “I can’t reset my account password.”
Intent: Account Issue

Example 2:
Query: “Where is my order?”
Intent: Order Status

Example 3:
Query: “Does this phone support 5G?”

Intent: Product Inquiry

Now classify the following query:
Query: “What are your business hours?”

Output:
General Question

Observation:
Few-shot prompting produced the most accurate and confident result by giving the model clearer intent context.

6. Comparison

Prompting Technique	Effectiveness
Zero-shot	Works for simple and clear queries
One-shot	Improves intent clarity
Few-shot	Best accuracy and reliability

Problem Statement - 3:
Student Feedback Analysis

A university collects student feedback and wants to categorize comments as:

1. Positive
2. Negative
3. Neutral

1. **Zero - shot Prompting:**

Prompt:

Classify the sentiment of the following student feedback as

Positive, Negative, or Neutral.

Feedback: “The course content was very engaging.”

Output:
Positive

Observation:
The model correctly identified the sentiment without any examples, but subtle or mixed feedback may cause confusion.

2. **One - shot Prompting:**

Prompt:

Example:

Feedback: “The lectures were boring.”

Sentiment: Negative

Now classify the following feedback:

Feedback: “The professor explained concepts clearly.”

Output:

Positive

Observation:

Providing one example helped the model better distinguish sentiment tone.

3. **Few - shot Prompting:**

Prompt:

Example 1:

Feedback: “The course was excellent.”

Sentiment: Positive

Example 2:

Feedback: “The exams were too difficult.”

Sentiment: Negative

Example 3:

Feedback: “The syllabus was okay.”

Sentiment: Neutral

Now classify the following feedback:

Feedback: “The assignments were manageable.”

Output:

Neutral

Observation:

Few-shot prompting gave the most accurate result by clearly defining sentiment boundaries.

4. **Explanation:**

Examples help the model understand variations in language tone and context, improving sentiment classification accuracy, especially for neutral or mixed feedback.

Problem Statement - 4:

Course Recommendation System

An online learning platform wants to classify learner queries into:

- Beginner
- Intermediate
- Advanced

1. Zero - shot Prompting:

Prompt:

Classify the learner query into Beginner, Intermediate, or Advanced.

Query: “I want to learn Python from scratch.”

Output:

Beginner

Observation:

The model correctly classified the level without examples, but complex queries may lead to ambiguity.

2. One - shot Prompting:

Prompt:

Example:

Query: “I know basic Python and want to learn object-oriented programming.”

Level: Intermediate

Now classify the following query:

Query: “I want to master deep learning architectures.”

Output:

Advanced

Observation:

One example helped the model better understand the skill-level progression.

3. **Few - shot Prompting:**

Prompt:

Example 1:

Query: “I have never coded before.”

Level: Beginner

Example 2:

Query: “I know Python basics.”

Level: Intermediate

Example 3:

Query: “I want to optimize neural networks.”

Level: Advanced

Now classify the following query:

Query: “I want to learn data structures.”

Output:

Intermediate

Observation:

Few-shot prompting provided clearer distinctions between learning levels and improved classification accuracy.

4. **Discussion:**

Few-shot prompting improves recommendation quality by clearly defining expectations for each skill level, reducing misclassification.

Problem Statement - 5:

Social Media Post Moderation:

1. **Zero - shot Prompting:**

Prompt:

Classify the following social media post as

Acceptable, Offensive, or Spam.

Post: “Buy cheap followers now! Limited offer.”

Output:

Spam

Observation:

The model correctly identified obvious spam, but zero-shot prompting may struggle with sarcasm or context-dependent posts.

2. **One - shot Prompting:**

Prompt:

Example:

Post: “Get rich fast! Click here.”

Category: Spam

Now classify the following post:

Post: “You are stupid and useless.”

Output:

Offensive

Observation:

One labeled example improved the model's understanding of moderation categories.

3. **Few - shot Prompting:**

Prompt:

Example 1:

Post: "Have a great day everyone!"

Category: Acceptable

Example 2:

Post: "Buy now and earn money fast!"

Category: Spam

Example 3:

Post: "You are an idiot."

Category: Offensive

Now classify the following post:

Post: “Check out my blog for amazing tips.”

Output:

Spam

Observation:

Few-shot prompting produced the most reliable classification by clearly defining each category.

4. Challenges of zero - shot prompting:

Zero-shot prompting can misclassify posts due to lack of context, cultural differences, sarcasm, or indirect offensive language. Few-shot prompting reduces these issues by providing clearer guidance.