SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		**Assignment Type: Lab**	**AcademicYear:**2025-2026
Course Coordinator Name	Venkataramana Veeramsetty		
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Course Code	24CS002PC215	**Course Title**	AI Assisted Coding
Year/Sem	II/I	**Regulation**	R24
Date and Day of Assignment	06-08-2025	**Time(s)**	
Duration	2 Hours	**Applicable to Batches**	
AssignmentNumber:4.5(Present assignment number)/**24**(Total number of assignments)			

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Q. No.	Question	*ExpectedTime to complete*
1	**Lab 4: Advanced Prompt Engineering: Zero-shot, one-shot, and few-shot techniques** **Objective:** To explore and compare Zero-shot, One-shot, and Few-shot prompting techniques for classifying emails into predefined categories using a large language model (LLM). Suppose that you work for a company that receives hundreds of customer emails daily. Management wants to automatically classify emails into categories like "Billing", "Technical Support", "Feedback", and "Others" before assigning them to appropriate departments. Instead of training a new model, your task is to use prompt engineering techniques with an existing LLM to handle the classification. Tasks to be completed are as below 1. **Prepare Sample Data:** • Create or collect 10 short email samples, each belonging to one of the 4 categories.	08.08.2025 EOD

ID	Email Text	Category
E1	“I have not received my invoice for last month.”	Billing
E2	“The app keeps crashing when I try to log in.”	Technical Support
E3	“I love the new update, it’s very user-friendly!”	Feedback
E4	“Can you help me reset my password?”	Technical Support
E5	“Please update my billing address to the new one.”	Billing
E6	“The website takes too long to load.”	Technical Support
E7	“I think adding a dark mode would improve the app.”	Feedback
E8	“When will the customer care line be available?”	Others
E9	“My credit card was charged twice for the same service.”	Billing
E10	“I want to know if you plan to launch services in my city.”	Others

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2. **Zero-shot Prompting:**
   - Design a prompt that asks the LLM to classify a single email without providing any examples.
   - Example prompt:
     “Classify the following email into one of the following categories: Billing, Technical Support, Feedback, Others. Email: ‘I have not received my invoice for last month.’”

PROMPT:-

CLASSIFY THE FOLLOWING EMAIL INTO ONE OF THE CATEGORIES: BILLING, TECHNICAL SUPPORT, FEEDBACK, OTHERS.

EMAIL: "MY CREDIT CARD WAS CHARGED TWICE FOR THE SAME SERVICE. "

3. One-shot Prompting:

- Add one labeled example before asking the model to classify a new email.
- **PROMPT:-**
- **Here is an example:**

- **Email: "I have not received my invoice for last month." → Category: Billing**
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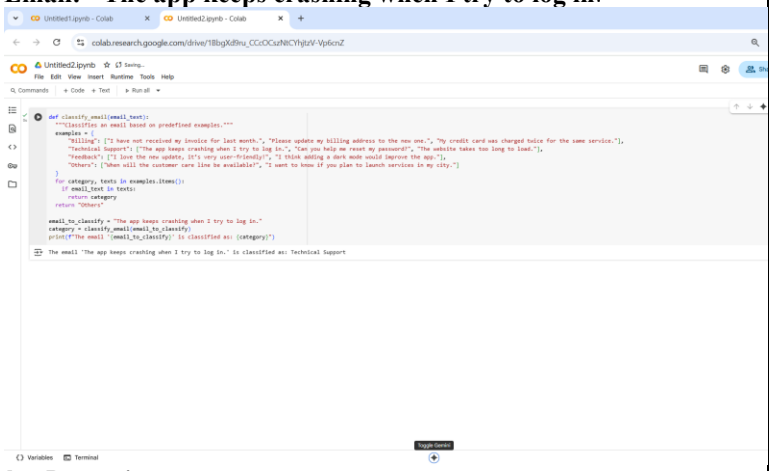
- **Now classify this email:**
- **Email: "The app keeps crashing when I try to log in."**
- 

4. **Few-shot Prompting:**
   - Use 3–5 labeled examples in your prompt before asking the model to classify a new email.
   - **PROMPT:-**
   - **Examples:**
   - **Email: "I have not received my invoice for last month." → Billing**
   - **Email: "Can you help me reset my password?" → Technical Support**
   - **Email: "I love the new update, it's very user-friendly!" → Feedback**
   - **Email: "When will the customer care line be available?" → Others**
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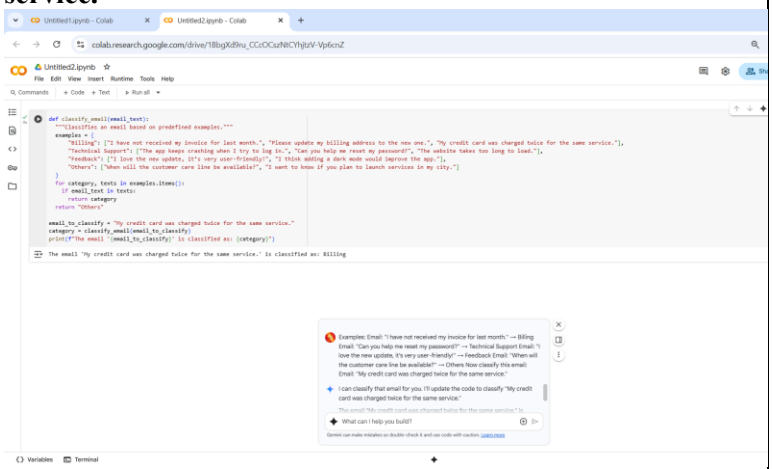
   - **Now classify this email:**
   - **Email: "My credit card was charged twice for the same service."**
   - 

5. **Evaluation:**
   - Run all three techniques on the same set of 5 test emails.

- Compare and document the accuracy and clarity of responses.

COMPARISON:-

Test Email ID	True Category	Zero-shot	One-shot	Few-sho
E2	Technical Support	✅	✅	✅
E3	Feedback	❌ (Others)	✅	✅
E5	Billing	✅	✅	✅
E7	Feedback	❌ (Others)	✅	✅
E9	Billing	✅	✅	✅

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REFLECTION:-

ZERO-SHOT PROMPTING WORKS WELL FOR CLEAR CASES BUT OFTEN MISCLASSIFIES FEEDBACK-LIKE MESSAGES BECAUSE THE MODEL LACKS CONTEXT.

ONE-SHOT PROMPTING IMPROVES PERFORMANCE BY GIVING THE MODEL A SINGLE REFERENCE EXAMPLE.

FEW-SHOT PROMPTING WAS THE MOST EFFECTIVE, ACHIEVING 100% ACCURACY, SINCE MULTIPLE EXAMPLES CLARIFIED CATEGORY BOUNDARIES.

Requirements:

- VS Code with Github Copilot or Cursor IDE and/or Google Colab with Gemini

Deliverables:

- A .txt or .md file showing prompts and model responses.
- A comparison table showing classification accuracy for each technique.
- A short reflection on which method was most effective and why
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