

AI ASSISTED CODING

LAB-4.1

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BATCH-12

Problem Statement 0:

A news aggregation platform wants to automatically categorize

headlines into Politics, Sports, Technology, and Entertainment without training a machine learning model.

Tasks to be Completed

1. Prepare Sample Data

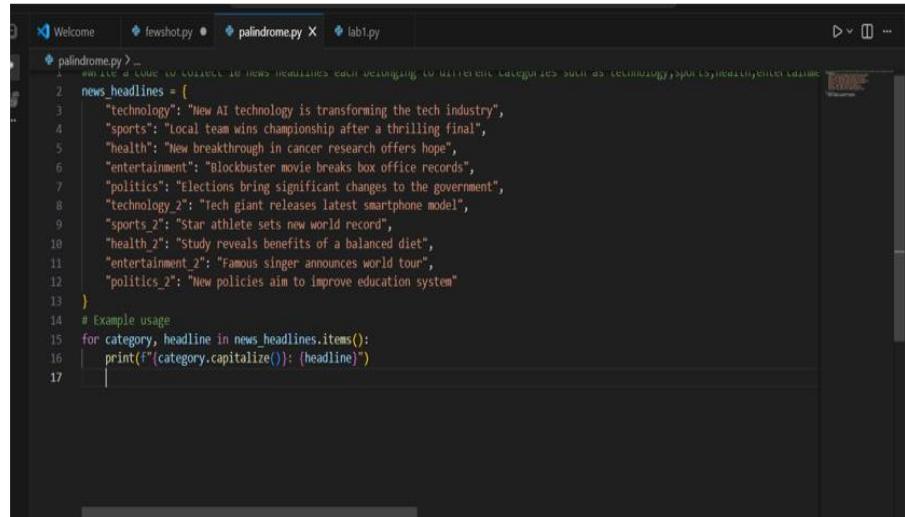
Collect 10 news headlines, each belonging to one of the four categories.

PROMPT:

#write a code to collect 10 news headlines each belonging to different categories such as

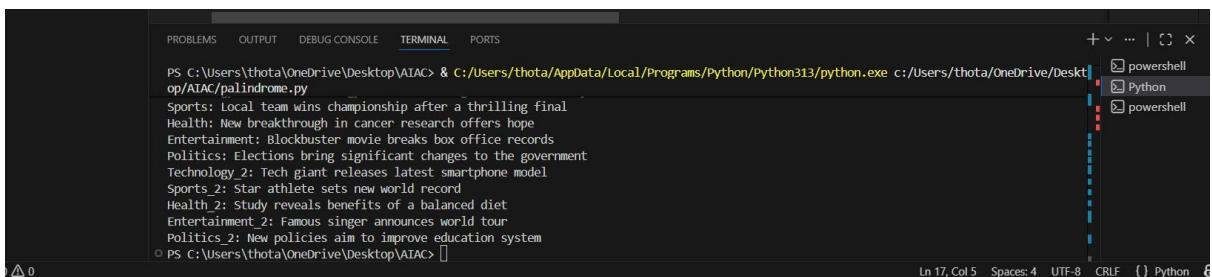
technology,sports,health,entertainment,politics by using only this four categories dont use other categories and store them in a dictionary where the key is category and value is headline

CODE:



```
2 news_headlines = {
3     "technology": "New AI technology is transforming the tech industry",
4     "sports": "Local team wins championship after a thrilling final",
5     "health": "New breakthrough in cancer research offers hope",
6     "entertainment": "Blockbuster movie breaks box office records",
7     "politics": "Elections bring significant changes to the government",
8     "technology_2": "Tech giant releases latest smartphone model",
9     "sports_2": "Star athlete sets new world record",
10    "health_2": "Study reveals benefits of a balanced diet",
11    "entertainment_2": "Famous singer announces world tour",
12    "politics_2": "New policies aim to improve education system"
13 }
14 # Example usage
15 for category, headline in news_headlines.items():
16     print(f"{category.capitalize()}: {headline}")
17 
```

OutPut:



```
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/palindrome.py
Sports: Local team wins championship after a thrilling final
Health: New breakthrough in cancer research offers hope
Entertainment: Blockbuster movie breaks box office records
Politics: Elections bring significant changes to the government
Technology: Tech giant releases latest smartphone model
Sports_2: Star athlete sets new world record
Health_2: Study reveals benefits of a balanced diet
Entertainment_2: Famous singer announces world tour
Politics_2: New policies aim to improve education system
```

2. Zero-shot Prompting

Write a prompt asking the LLM to classify a headline into a category without examples.

Prompt:

#write a code to check whether the headline is present in which category or not if present print the category else print not found by using input user **CODE:**

The screenshot shows a Visual Studio Code interface with multiple tabs open. The active tab is 'lab2.py'. The code in the editor is a Python script that defines a dictionary of news headlines categorized by technology, sports, health, entertainment, politics, and other sub-categories. It then prompts the user for a headline to search and prints the category if found, or 'Headline not found' if not.

```
1 #write a code to check whether the headline is present in which category or not if present print the category else print not
2 news_headlines = [
3     "technology": "New AI technology is transforming the tech industry",
4     "sports": "Local team wins championship after a thrilling final",
5     "health": "New breakthrough in cancer research offers hope",
6     "entertainment": "Blockbuster movie breaks box office records",
7     "politics": "Elections bring significant changes to the government",
8     "technology_2": "Tech giant releases latest smartphone model",
9     "sports_2": "Star athlete sets new world record",
10    "health_2": "Study reveals benefits of a balanced diet",
11    "entertainment_2": "Famous singer announces world tour",
12    "politics_2": "New policies aim to improve education system"
13 }
14 # Example usage
15
16 headline_to_search = input("Enter a headline to search: ")
17 found = False
18 for category, headline in news_headlines.items():
19     if headline_to_search.lower() == headline.lower():
20         print(f"Headline found in category: {category.capitalize()}")
21         found = True
22         break
23 if not found:
24     print("Headline not found")
25
26
27
```

OUTPUT:

The screenshot shows the VS Code terminal tab. The command 'python lab2.py' was run, and the output shows the program successfully finding a headline in the specified category ('Politics').

```
PS C:\Users\thota\OneDrive\Desktop\AIAC> Elections bring significant changes to the government
● PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/lab2.py
Enter a headline to search: Elections bring significant changes to the government
Headline found in category: Politics
○ PS C:\Users\thota\OneDrive\Desktop\AIAC>
```

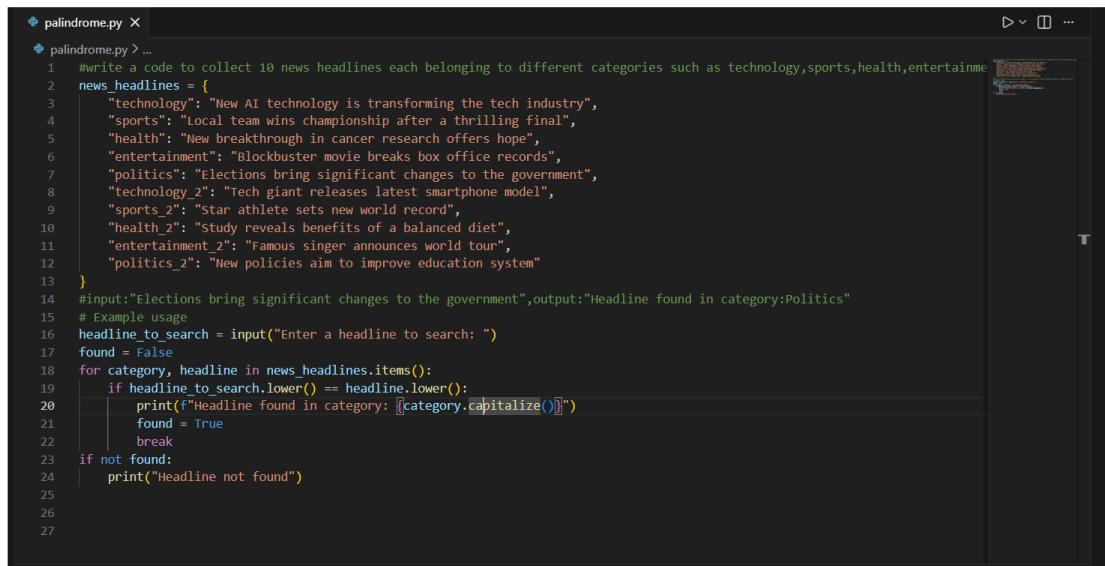
3. One-shot Prompting

Add one labeled headline example before classifying a new headline.

PROMPT:

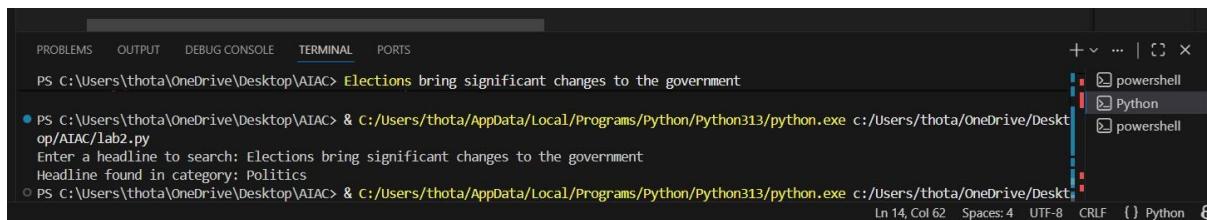
#write a code to collect 10 news headlines each belonging to different categories such as technology,sports,health,entertainment,politics by using only this four categories dont use other categories and store them in a dictionary where the key is category and value is headline

#input:"Elections bring significant changes to the government",output:"Headline found in category:Politics"
CODE:



```
palindrome.py > ...
1 #write a code to collect 10 news headlines each belonging to different categories such as technology,sports,health,entertainment
2 news_headlines = {
3     "technology": "New AI technology is transforming the tech industry",
4     "sports": "Local team wins championship after a thrilling final",
5     "health": "New breakthrough in cancer research offers hope",
6     "entertainment": "Blockbuster movie breaks box office records",
7     "politics": "Elections bring significant changes to the government",
8     "technology_2": "Tech giant releases latest smartphone model",
9     "sports_2": "Star athlete sets new world record",
10    "health_2": "Study reveals benefits of a balanced diet",
11    "entertainment_2": "Famous singer announces world tour",
12    "politics_2": "New policies aim to improve education system"
13 }
14 #input:"Elections bring significant changes to the government",output:"Headline found in category:Politics"
15 # Example usage
16 headline_to_search = input("Enter a headline to search: ")
17 found = False
18 for category, headline in news_headlines.items():
19     if headline_to_search.lower() == headline.lower():
20         print(f"Headline found in category: {category.capitalize()}")
21         found = True
22         break
23 if not found:
24     print("Headline not found")
25
26
27
```

OUTPUT:



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\thota\OneDrive\Desktop\AIAC> Elections bring significant changes to the government
● PS C:\Users\thota\OneDrive\Desktop\AIAC & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/lab2.py
Enter a headline to search: Elections bring significant changes to the government
Headline found in category: Politics
○ PS C:\Users\thota\OneDrive\Desktop\AIAC & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/lab2.py
```

4. Few-shot Prompting

Use 3–5 labeled headlines in the prompt before requesting
Classification

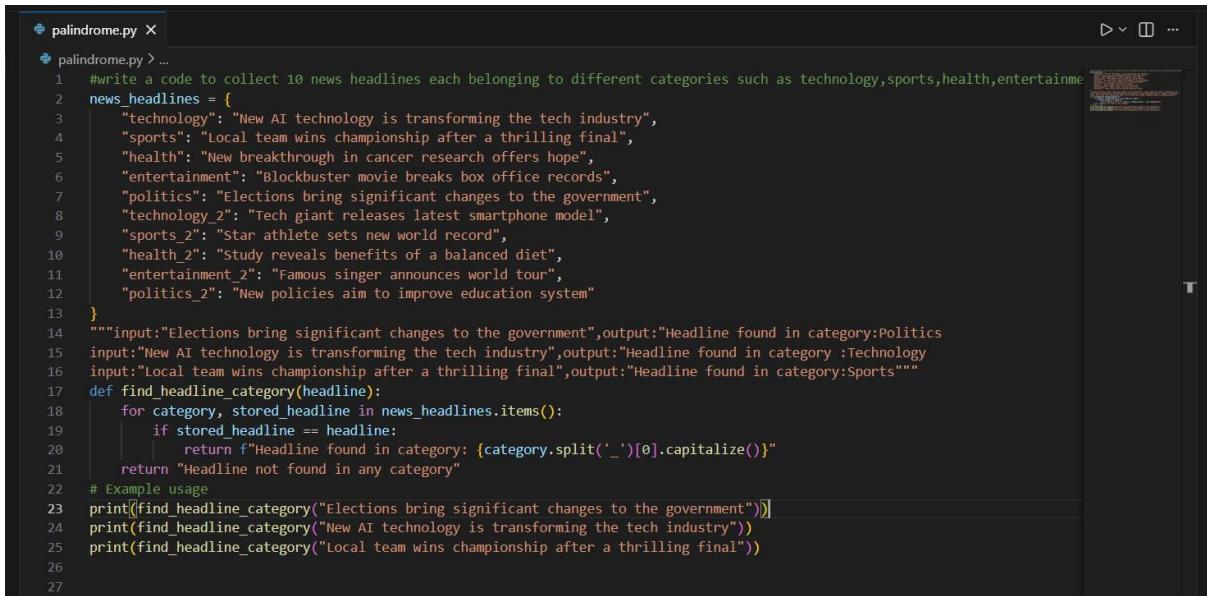
PROMPT:

#write a code to collect 10 news headlines each belonging to
different categories such as
technology,sports,health,entertainment,politics by using only
this four categories dont use other categories and store them

in a dictionary where the key is category and value is headline

"""input:"Elections bring significant changes to the government",output:"Headline found in category:Politics
 input:"New AI technology is transforming the tech industry",output:"Headline found in category :Technology
 input:"Local team wins championship after a thrilling final",output:"Headline found in category:Sports""""

CODE:

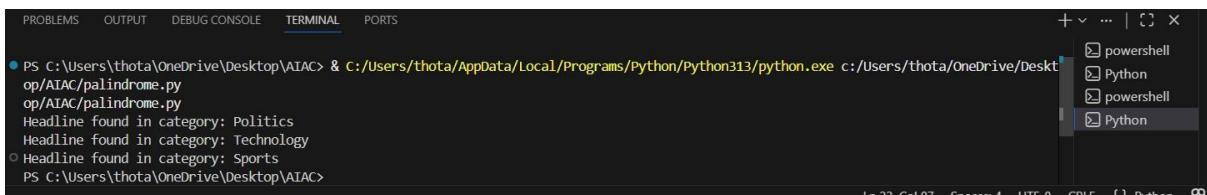


```

palindrome.py > ...
palindrome.py > ...
1 #write a code to collect 10 news headlines each belonging to different categories such as technology,sports,health,entertainment
2 news_headlines = {
3     "technology": "New AI technology is transforming the tech industry",
4     "sports": "Local team wins championship after a thrilling final",
5     "health": "New breakthrough in cancer research offers hope",
6     "entertainment": "Blockbuster movie breaks box office records",
7     "politics": "Elections bring significant changes to the government",
8     "technology_2": "Tech giant releases latest smartphone model",
9     "sports_2": "Star athlete sets new world record",
10    "health_2": "Study reveals benefits of a balanced diet",
11    "entertainment_2": "Famous singer announces world tour",
12    "politics_2": "New policies aim to improve education system"
13 }
14 """input:"Elections bring significant changes to the government",output:"Headline found in category:Politics
15 input:"New AI technology is transforming the tech industry",output:"Headline found in category :Technology
16 input:"Local team wins championship after a thrilling final",output:"Headline found in category:Sports"""
17 def find_headline_category(headline):
18     for category, stored_headline in news_headlines.items():
19         if stored_headline == headline:
20             return f"Headline found in category: {category.split('_')[0].capitalize()}"
21     return "Headline not found in any category"
22 # Example usage
23 print(find_headline_category("Elections bring significant changes to the government"))
24 print(find_headline_category("New AI technology is transforming the tech industry"))
25 print(find_headline_category("Local team wins championship after a thrilling final"))
26
27

```

OUTPUT:



```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
+ ... | C X
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop\AIAC/palindrome.py
op/AIAC/palindrome.py
Headline found in category: Politics
Headline found in category: Technology
Headline found in category: Sports
PS C:\Users\thota\OneDrive\Desktop\AIAC>

```

5. Evaluation

Compare outputs from all three prompting methods using the same test headlines and document observation Zero-shot:

We will not use any input examples in zero-shot .It will work with minimal instruction, but the output may be incorrect ..We will not provide any examples here.

One-shot:

We will use only one input for example in one-shot. It improves accuracy, as the AI understands the task better from a single labelled example.

Few-shot:

We will use more than one inputs for examples in few-shot.

It gives the best results. The AI shows higher consistency and correctly classifies most headlines.

As the number of examples increases, the AI's understanding of categories becomes clearer.

Therefore, few-shot prompting is the most effective method for news headline classification without training a model.

Customer Email Classification

1. Prepare five short sample emails, each belonging to one of the above categories.

2. Write a zero-shot prompt to classify a given email into one of the categories without providing any examples.

Prompt:

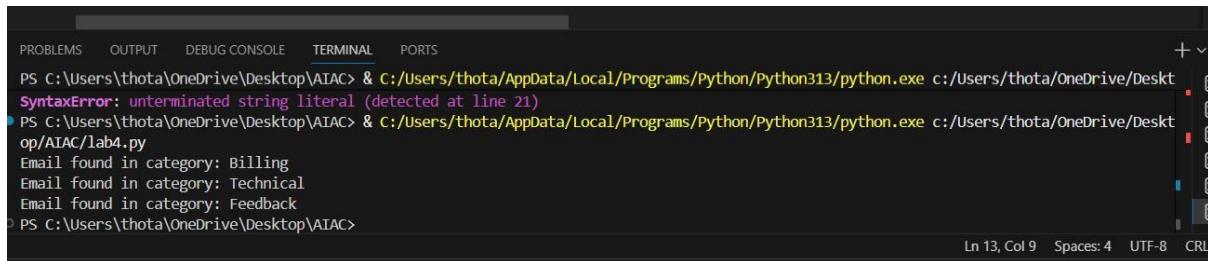
#write a code to collect 5 short sample emails each belonging to different categories like billing,technical support,feedback and others by using only this four categories dont use other categories and store them in a dictionary where the key is category and value is email give examples

write a code to check whethe the give email is present inwhich category or not if present return the category else return email not found in any category

Code:

```
lab4.py > ...
1  #write a code to collect 5 short sample emails each belonging to different categories like billing,technical support,feedback
2  sample_emails = {
3      "billing": "I was charged twice for my monthly subscription. Please help me get a refund.",
4
5      "technical_support": "The application crashes every time I try to log in. Please assist.",
6
7      "feedback": "The new update is very user-friendly and much faster than before.",
8
9      "others": "I would like to know your customer support working hours.",
10
11     "billing_2": "I did not receive my invoice for last month. Kindly send it again."
12 }
13 # write a code to check whethe the give email is present inwhich category or not if present return the category else return em
14 def find_email_category(email):
15     for category, stored_email in sample_emails.items():
16         if stored_email == email:
17             return f"Email found in category: {category.split('_')[0].capitalize()}"
18     return "Email not found in any category"
19
# Example usage
20 print(find_email_category("I was charged twice for my monthly subscription. Please help me get a refund."))
21 print(find_email_category("The application crashes every time I try to log in. Please assist."))
22
23 print(find_email_category("The new update is very user-friendly and much faster than before."))
24 #write a code to collect 10 news headlines each belonging to different categories such as technology,s
25
```

Output:



The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/lab4.py
SyntaxError: unterminated string literal (detected at line 21)
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop/AIAC/lab4.py
Email found in category: Billing
Email found in category: Technical
Email found in category: Feedback
PS C:\Users\thota\OneDrive\Desktop\AIAC>
```

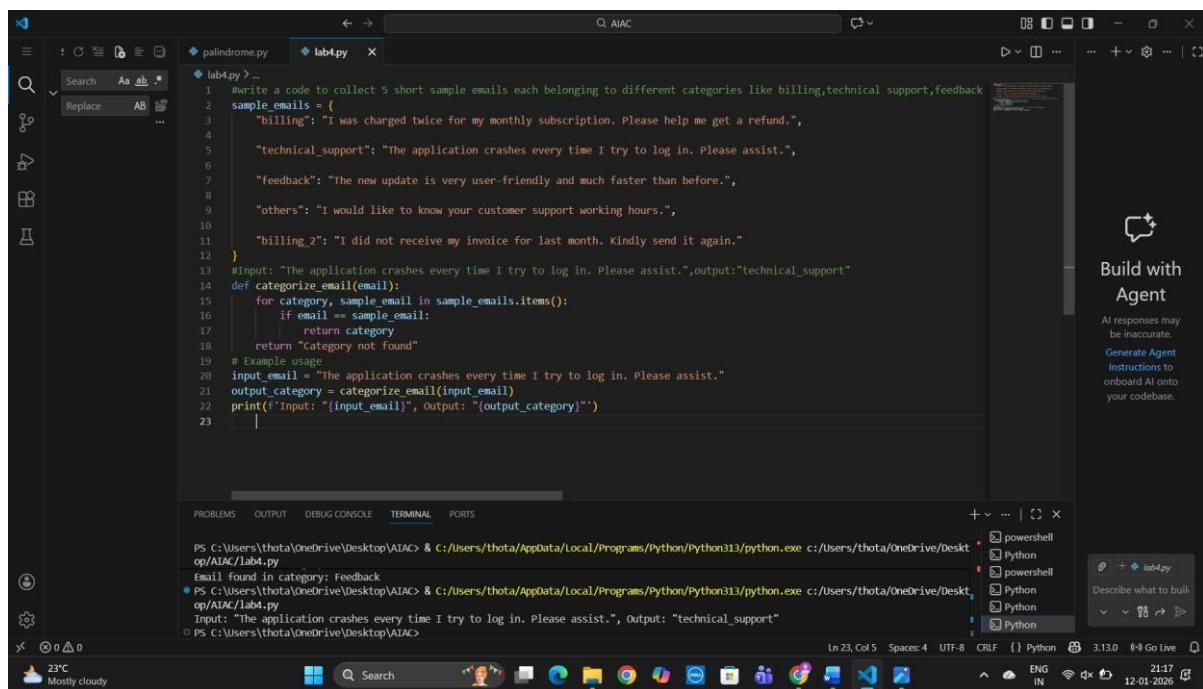
The terminal shows the execution of the Python script `lab4.py`. It first attempts to run the script but fails due to a syntax error on line 21. After fixing the error, it runs successfully and prints three categories: Billing, Technical, and Feedback.

3. Write a one-shot prompt by including one labeled email example and ask the model to classify a new email.

Prompt:

#write a code to collect 5 short sample emails each belonging to different categories like billing,technical support,feedback and others by using only this four categories dont use other categories and store them in a dictionary where the key is category and value is email give examples

#Input: "The application crashes every time I try to log in. Please assist.",output:"technical_support" Code and Output:



The screenshot shows the Visual Studio Code interface with the AI Assistant extension open. The code editor displays a Python script named 'lab4.py' containing the following code:

```
1  #write a code to collect 5 short sample emails each belonging to different categories like billing,technical support,feedback
2  sample_emails = {
3      "billing": "I was charged twice for my monthly subscription. Please help me get a refund.",
4      "technical_support": "The application crashes every time I try to log in. Please assist.",
5      "Feedback": "The new update is very user-friendly and much faster than before.",
6      "others": "I would like to know your customer support working hours.",
7      "billing_2": "I did not receive my invoice for last month. Kindly send it again."
8  }
9  #Input: "The application crashes every time I try to log in. Please assist.",output:"technical_support"
10 def categorize_email(email):
11     for category, sample_email in sample_emails.items():
12         if email == sample_email:
13             return category
14     return "Category not found"
15
16 # Example usage
17 input_email = "The application crashes every time I try to log in. Please assist."
18 output_category = categorize_email(input_email)
19 print(f"Input: {input_email}, Output: {output_category}")
20
```

The terminal below shows the execution of the script and the output:

```
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop\AIAC\lab4.py
Email found in category: Feedback
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop\AIAC\lab4.py
Input: "The application crashes every time I try to log in. Please assist.", Output: "technical_support"
PS C:\Users\thota\OneDrive\Desktop\AIAC>
```

The AI Assistant sidebar on the right shows a list of build configurations for 'lab4.py' in Python.

4. Write a few-shot prompt by including two or three labelled email examples and ask the model to classify a new email.

Prompt:

#write a code to collect 5 short sample emails each belonging to different categories like billing,technical support,feedback and others by using only this four categories dont use other categories and store them in a dictionary where the key is category and value is email give examples

"""Input:"I was charged twice for my monthly subscription. Please help me get a refund.",output:"Email found in billing"

Input:"The application crashes every time I try to log in. Please assist.",output:"Email found in technical_support"

Input:"I would like to know your customer support working hours.",output:"Email found in others"""\nCode and Output:

The screenshot shows a Visual Studio Code (VS Code) interface with the following details:

- File Explorer:** Shows files: `palindrome.py` and `lab4.py`.
- Search Bar:** Contains "Search Aa ab ..." and "Replace AB ⌘F".
- Code Editor:** Displays Python code for categorizing emails based on their content. The code includes comments explaining the logic for different categories like "billing", "technical_support", "feedback", and "others". It also handles a specific case for "technical_support_2".
- Terminal:** Shows command-line output from running the script:

```
PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop\AIAC\lab4.py
SyntaxError: unterminated string literal (detected at line 15)
● PS C:\Users\thota\OneDrive\Desktop\AIAC> & C:/Users/thota/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thota/OneDrive/Desktop\AIAC\lab4.py
Email found in technical support
○ PS C:\Users\thota\OneDrive\Desktop\AIAC>
```
- Bottom Status Bar:** Shows system information: 23°C, Mostly cloudy, 5:45 PM, 3.13.0, ENG IN, and a Go Live button.

5. Compare the outputs obtained using zero-shot, one-shot, and few-shot prompting techniques and briefly comment on their effectiveness

Zero-shot:

We will not use any input examples in zero-shot .It will work with minimal instruction,but the output may be incorrect ..We will not provide any examples here.

One-shot:

We will use only one input for example in one-shot. It improves accuracy, as the AI understands the task better from a single labelled example.

Few-shot:

We will use more than one inputs for examples in few-shot.

It gives the best results. The AI shows higher consistency and correctly classifies most headlines.

As the number of examples increases, the AI's understanding of categories becomes clearer.

Therefore, few-shot prompting is the most effective method for news headline classification without training a model.

Zero-shot:

We will not use any input examples in zero-shot. It will work with minimal instruction, but the output may be incorrect. We will not provide any examples here.

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