

# Lab Assignment-4.1

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Batch-11

**Problem Statement:** 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:

```
palindrome.py > ...
1  # WRITE A CODE TO COLLECT 10 NEWS HEADLINES EACH BELONGING TO DIFFERENT CATEGORIES SUCH AS TECHNOLOGY, SPORTS, HEALTH, ENTERTAINMENT, POLITICS
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:

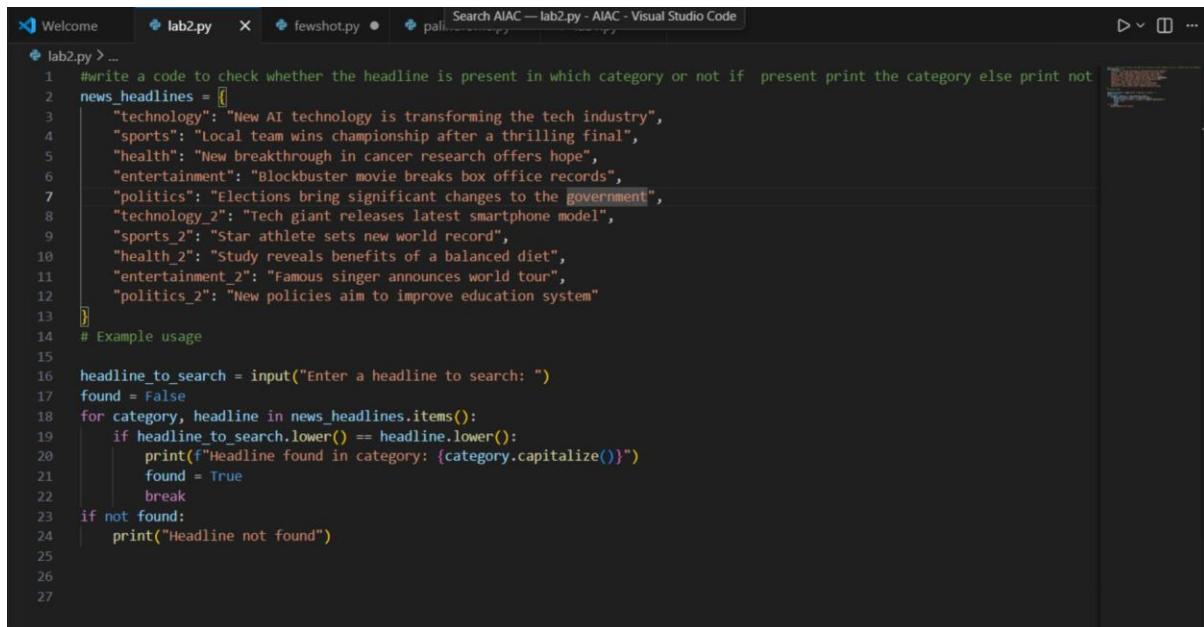
```
Sports: Local team wins championship after a thrilling final
Health: New breakthrough in cancer research offers hope
Entertainment: Blockbuster movie breaks box office records
Politics: Elections bring significant changes to the government
Technology_2: Tech giant releases latest smartphone model
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:



```
# Welcome  lab2.py  fewshot.py  pall...  Search AIAC — lab2.py - AIAC - Visual Studio Code
lab2.py > ...
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:

```
Enter a headline to search: Elections bring significant changes to the government
Headline found in category: Politics
```

### 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

#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,politics
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
```

**Output:**

```
Enter a headline to search: Elections bring significant changes to the government
Headline found in category: Politics
```

### 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

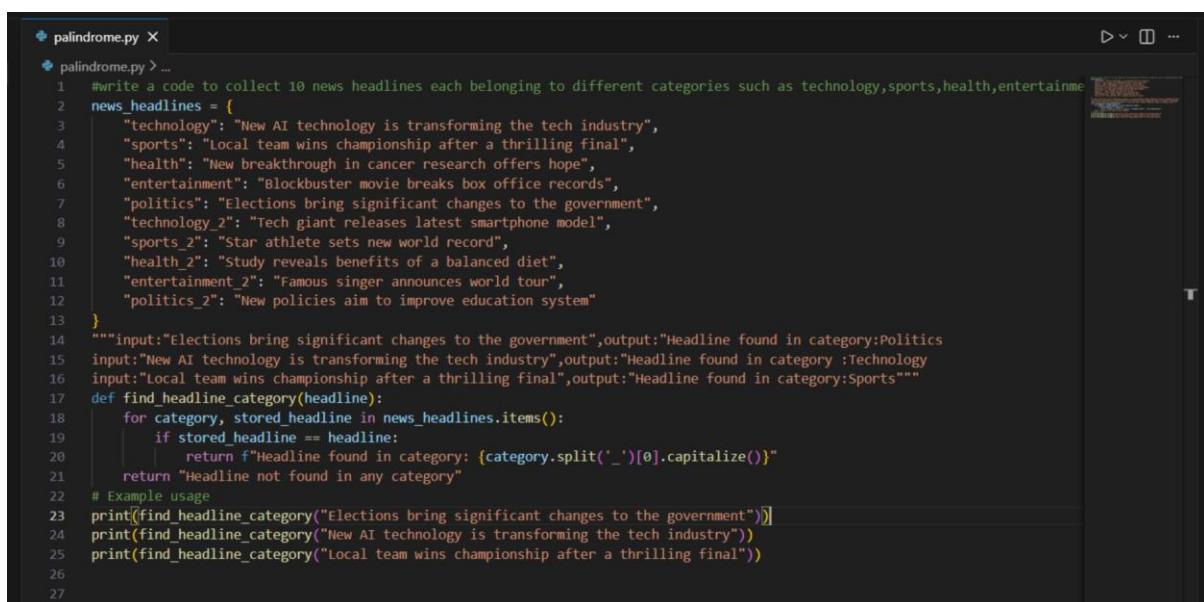
this four categories dont use other categories and store them in a dictionary where the key is category and value is headline

**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

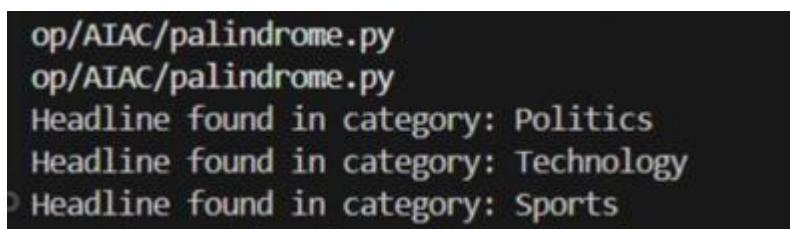
**input:**"Local team wins championship after a thrilling final",**output:**"Headline found in category:Sports"""

## CODE:



```
palindrome.py x
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:



```
op/AIAC/palindrome.py
op/AIAC/palindrome.py
Headline found in category: Politics
Headline found in category: Technology
Headline found in category: Sports
```

## 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 hogher 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

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

1. 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 shol 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 whether the given email is present in which 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:

```
op/AIAC/lab4.py
Email found in category: Billing
Email found in category: Technical
Email found in category: Feedback
```

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 <sup>s/</sup>technical\_support"

## Code and Output:

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface. The top bar displays the title "AIAC". The left sidebar includes search, replace, and file navigation tools. The main editor area contains Python code named "lab4.py". The code defines a dictionary of sample emails categorized by type (e.g., billing, technical support, feedback, others) and a function to categorize a new email based on its content. The terminal below shows the execution of the script and its output, which correctly identifies the category of a provided input email. A status bar at the bottom provides system information like weather, date, and time.

```
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 # Example usage
16 input_email = "The application crashes every time I try to log in. Please assist."
17 output_category = categorize_email(input_email)
18 print(f'Input: "{input_email}", Output: "{output_category}"')
19
20
21
22
23
```

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
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"
```

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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 shol sample emails each belonging to different categories like billling,technical suppo1,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

## Code & Output:

```
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.",
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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 """Input:"I was charged twice for my monthly subscription. Please help me get a refund.",output:"Email found in billing"
14 Input:"The application crashes every time I try to log in. Please assist.",output:"Email found in technical_support"
15 Input:"I would like to know your customer support working hours.",output:"Email found in others"""
16 def categorize_email(email):
17     for category, sample in sample_emails.items():
18         if email == sample:
19             return f"Email found in {category}"
20     return "Category not found"
21 # Example usage
22 email_to_categorize = "The application crashes every time I try to log in. Please assist."
23 result = categorize_email(email_to_categorize)
24 print(result) # Output: Email found in technical_support
25     "technical_support_2": "My internet connection drops frequently. Can you help me fix it?"
}

```

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 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>

In 25 Col 5 Spaces:4 UTF-8 CRLF [1] Python

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:**

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