

AI ASSIGNMENT 18.2

NAME: S.NADHIYA

ROLL NO: 2403A510C6

BATCH: 05

LAB QUESTION 1: WEATHER FORECASTING API

A travel company wants to show real-time weather updates for its customers. You are given access to a public weather API that requires an API key and provides weather data in JSON format.

TASK 1 & TASK 2: DESCRIPTION

Use AI-assisted coding to write a script that fetches the current temperature and weather description for a given city. The script should handle errors if the API key is invalid or missing, and extend it to save weather data into a CSV file while avoiding duplicates.

AI PROMPT

Write a Python program using the requests library to fetch current temperature and weather description for a given city using the OpenWeatherMap API. Include error handling for invalid API key, missing city, and network errors. Extend the program to save results into a CSV file without duplicates.

PYTHON CODE

```
import requests

import csv
import os

API_KEY = "5cb2ea3714f5d71bbba4704ed7600383"
BASE_URL = "https://api.openweathermap.org/data/2.5/weather"

def fetch_weather(city):
    try:
        params = {"q": city, "appid": API_KEY, "units": "metric"}
        response = requests.get(BASE_URL, params=params, timeout=5)
        response.raise_for_status()

        data = response.json()

        if data.get("cod") != 200:
            print(f"Error: {data.get('message', 'Unknown error')}")
            return None
```

AI ASSIGNMENT 18.2

```
temp = data["main"]["temp"]
desc = data["weather"][0]["description"]
return {"city": city, "temperature": temp, "description": desc}

except requests.exceptions.RequestException as e:
    print(f"Network/API Error: {e}")
    return None

def save_to_csv(weather_data, filename="weather_data.csv"):
    if not weather_data:
        return

    try:
        file_exists = os.path.isfile(filename)
        with open(filename, "a", newline="") as file:
            writer = csv.DictWriter(file, fieldnames=["city",
"temperature", "description"])

            if not file_exists:
                writer.writeheader()

            # Avoid duplicates
            existing = []
            if file_exists:
                with open(filename, "r") as f:
                    existing = [row["city"].lower() for row in
csv.DictReader(f)]

            if weather_data["city"].lower() not in existing:
                writer.writerow(weather_data)
                print(f"Saved weather data for {weather_data['city']}")
            else:
                print("Duplicate entry avoided.")

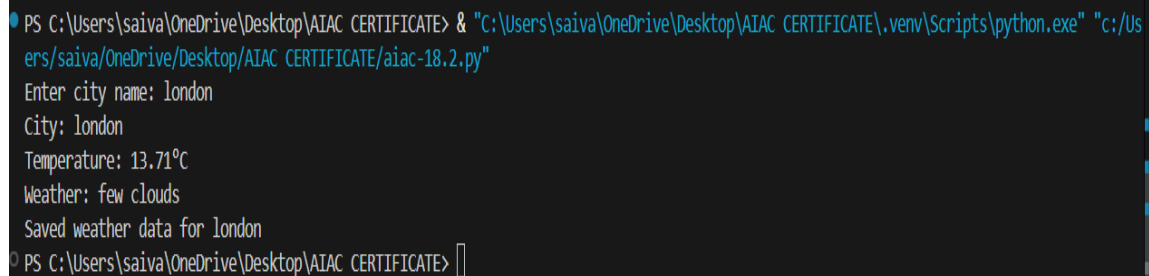
    except IOError as e:
        print(f"File I/O Error: {e}")

# --- Main Execution ---
city_name = input("Enter city name: ")
result = fetch_weather(city_name)
if result:
    print(f"City: {result['city']}")
    print(f"Temperature: {result['temperature']}°C")
```

AI ASSIGNMENT 18.2

```
print(f"Weather: {result['description']}")
save_to_csv(result)
```

SAMPLE OUTPUT



```
PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\python.exe" "C:/Users/saiva/OneDrive/Desktop/AIAC CERTIFICATE/aiac-18.2.py"
Enter city name: london
City: london
Temperature: 13.71°C
Weather: few clouds
Saved weather data for london
PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE>
```

OBSERVATION

Successfully fetched and displayed real-time weather information. The script handled API and file errors gracefully and prevented duplicate entries.

LAB QUESTION 2: CURRENCY EXCHANGE RATE API

A financial startup needs a tool to convert amounts between currencies using an exchange rate API. The API occasionally fails due to server downtime.

PYTHON CODE

```
import requests
import time

API_URL = "https://open.er-api.com/v6/latest/"

def fetch_exchange_rate(src_currency, tgt_currency):
    attempts = 0
    while attempts < 3:
        try:
            response = requests.get(API_URL + src_currency.upper(),
            timeout=5)
            response.raise_for_status()
            data = response.json()

            if "rates" not in data or tgt_currency.upper() not in
            data["rates"]:
                print("Invalid currency code.")
```

AI ASSIGNMENT 18.2

```
        return None

    return data["rates"][tgt_currency.upper()]

except requests.exceptions.RequestException as e:
    attempts += 1
    with open("error_log.txt", "a") as log:
        log.write(f"Attempt {attempts}: {e}\n")
    print(f"Attempt {attempts} failed. Retrying...")
    time.sleep(2)

print("API failed after 3 attempts.")
return None

def convert_currency(amount, src_currency, tgt_currency):
    rate = fetch_exchange_rate(src_currency, tgt_currency)
    if rate:
        converted = amount * rate
        print(f"{amount} {src_currency.upper()} = {converted:.2f} {tgt_currency.upper()}")
    else:
        print("Conversion failed.")

# --- Main Execution ---
amount = float(input("Enter amount: "))
src = input("Enter source currency (e.g., USD): ")
tgt = input("Enter target currency (e.g., INR): ")

convert_currency(amount, src, tgt)
```

SAMPLE OUTPUT:

AI ASSIGNMENT 18.2

The screenshot shows a Windows PowerShell terminal window with the following tabs: PROBLEMS, OUTPUT, TERMINAL (active), DEBUG CONSOLE, and PORTS. The terminal displays two consecutive executions of a Python script named `currency_18.py`.

```
.venv PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\python.exe" "c:/Users/saiva/OneDrive/Desktop/AIAC CERTIFICATE/.venv/currency_18.py"
```

First Execution:

- Prompt: Enter amount: 10
- Prompt: Enter source currency (e.g., USD): usd
- Prompt: Enter target currency (e.g., INR): inr
- Output: 10.0 USD = 888.26 INR

```
.venv PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\python.exe" "c:/Users/saiva/OneDrive/Desktop/AIAC CERTIFICATE/.venv/currency_18.py"
```

Second Execution:

- Prompt: Enter amount: 1
- Prompt: Enter source currency (e.g., USD): inr
- Prompt: Enter target currency (e.g., INR): usd
- Output: 1.0 INR = 0.01 USD

The terminal ends with the prompt `.venv PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE>`.

OBSERVATION

The program performs currency conversion with API retry logic and logs all failed attempts. Invalid inputs and network errors are handled effectively.

LAB QUESTION 3: NEWS HEADLINES API

A news aggregator wants to display the latest technology news headlines using a news API. Sometimes, the API responds slowly or returns incomplete data.

PYTHON CODE

```
import requests

import re

API_KEY = "8798032b9ca8445aa5dd3dec8d925a7c"
URL = f"https://newsapi.org/v2/top-
headlines?category=technology&language=en&apiKey={API_KEY}"

def fetch_headlines():
    try:
        response = requests.get(URL, timeout=5)
        response.raise_for_status()
        data = response.json()

        if not data.get("articles"):
            print("No headlines found or incomplete response.")
            return []

        headlines = [a["title"] for a in data["articles"] if
a.get("title")]
        return headlines[:5]
```

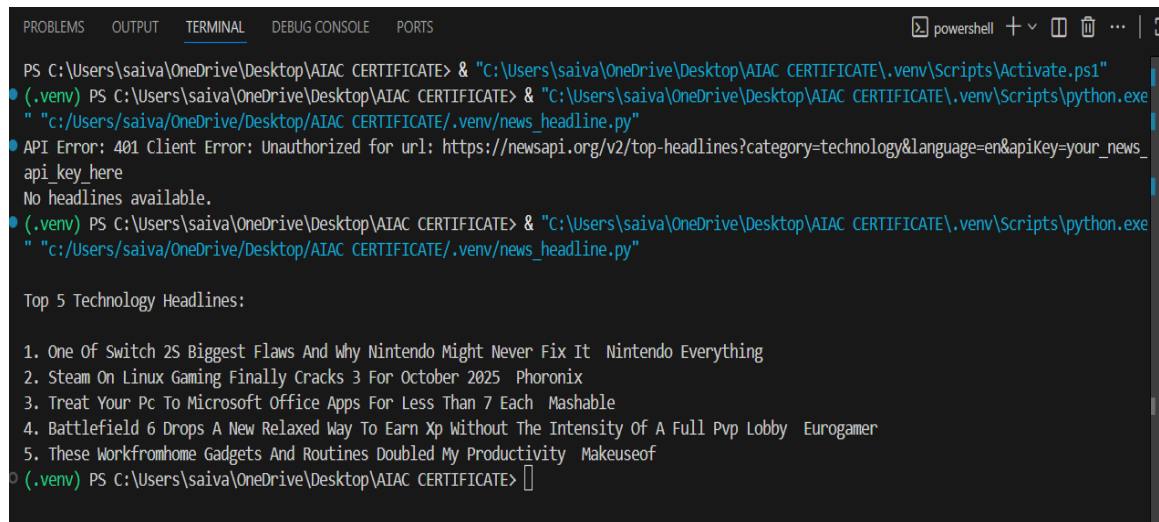
AI ASSIGNMENT 18.2

```
except requests.exceptions.Timeout:
    print("Request timed out.")
    return []
except requests.exceptions.RequestException as e:
    print(f"API Error: {e}")
    return []

def clean_headline(text):
    text = re.sub(r"^[A-Za-z0-9\s]", "", text)
    return text.title().strip()

# --- Main Execution ---
headlines = fetch_headlines()
if headlines:
    print("\nTop 5 Technology Headlines:\n")
    for i, headline in enumerate(headlines, 1):
        print(f"{i}. {clean_headline(headline)}")
else:
    print("No headlines available.")
```

SAMPLE OUTPUT



```
PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\Activate.ps1"
(.venv) PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\python.exe"
" "c:/Users/saiva/OneDrive/Desktop/AIAC CERTIFICATE/.venv/news_headline.py"
API Error: 401 Client Error: Unauthorized for url: https://newsapi.org/v2/top-headlines?category=technology&language=en&apiKey=your_news_
api_key_here
No headlines available.
(.venv) PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE> & "C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE\.venv\Scripts\python.exe"
" "c:/Users/saiva/OneDrive/Desktop/AIAC CERTIFICATE/.venv/news_headline.py"

Top 5 Technology Headlines:

1. One Of Switch 2S Biggest Flaws And Why Nintendo Might Never Fix It Nintendo Everything
2. Steam On Linux Gaming Finally Cracks 3 For October 2025 Phoronix
3. Treat Your Pc To Microsoft Office Apps For Less Than 7 Each Mashable
4. Battlefield 6 Drops A New Relaxed Way To Earn Xp Without The Intensity Of A Full Pvp Lobby Eurogamer
5. These Workfromhome Gadgets And Routines Doubled My Productivity Makeuseof
(.venv) PS C:\Users\saiva\OneDrive\Desktop\AIAC CERTIFICATE>
```

AI ASSIGNMENT 18.2

OBSERVATION

Fetches and cleans top 5 technology news headlines. The script handled slow responses, incomplete data, and text preprocessing effectively.