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Roll No-30

# Assignment No-02

You are given a large log file containing various system events. Each line in the log file follows this format:

[YYYY-MM-DD HH:MM:SS] [LOG\_LEVEL] [MODULE] Message where:

* YYYY-MM-DD HH:MM:SS is a timestamp.
* LOG\_LEVEL can be INFO, WARN, ERROR, or DEBUG.
* MODULE represents the system module name (alphanumeric, can contain underscores).
* Message is the actual log message (it may contain any characters).

task is :

Write a function extract\_critical\_errors(log\_data: str) -> list[tuple] that takes a multiline string log\_data (containing log entries) and returns a list of tuples containing:

1. The timestamp
2. The module name3. The error message BUT only if:

* The LOG\_LEVEL is ERROR.
* The message contains at least one IP address in IPv4 format (xxx.xxx.xxx.xxx, where xxx is in the range 0-255).
* The message contains a hexadecimal error code, formatted as 0x followed by exactly 8 hexadecimal digits (0-9, A-F).

|  |
| --- |
| import re  def extract\_critical\_errors(log\_data: str) -> list[tuple]: *# Regex pattern to capture the necessary log information*  pattern = r'\[(\d{4}-\d{2}-\d{2} \d{2}:\d{2}:\d{2})\] \[ERROR\] \ [(\w+)\] (.\*(?:\d{1,3}\.){3}\d{1,3}.\*0x[0-9A-Fa-f]{8}.\*)'  *# Use re.findall() to find all matches that conform to the pattern*  matches = re.findall(pattern, log\_data) |

*# Return the matches as a list of tuples*  return matches

def get\_user\_input():

*# Taking 4 inputs from the user*

LOG\_1 = input("Enter the first LOG entry: ")

LOG\_2 = input("Enter the second LOG entry: ")

LOG\_3 = input("Enter the third LOG entry: ")

LOG\_4 = input("Enter the fourth LOG entry: ")

*# Combine the inputs to simulate the log data*  log\_data = f"{LOG\_1}\n{LOG\_2}\n{LOG\_3}\n{LOG\_4}"

*# Display the inputs on separate lines*  print("\nInputs:") print(LOG\_1) print(LOG\_2) print(LOG\_3) print(LOG\_4)

*# Call the extract\_critical\_errors function to process the log data*

result = extract\_critical\_errors(log\_data)

*# Display the result (output)*  print("\nOutput:") for item in result: print(item)

*# Call the function* get\_user\_input()

Enter the first LOG entry: [2025-02-10 14:23:01] [INFO] [Auth\_Module] User login successful.

Enter the second LOG entry: [2025-02-10 15:45:32] [ERROR] [Net\_Module]

Connection timeout from 192.168.1.10. Error Code: 0xAB12CD34

Enter the third LOG entry: [2025-02-10 16:01:10] [WARN] [Disk\_Module] Low disk space warning.

Enter the fourth LOG entry: [2025-02-10 17:12:05] [ERROR]

[Security\_Module] Unauthorized access detected from 10.0.0.5. Error

Code: 0xDEADBEEF

Inputs:

[2025-02-10 14:23:01] [INFO] [Auth\_Module] User login successful.

[2025-02-10 15:45:32] [ERROR] [Net\_Module] Connection timeout from

192.168.1.10. Error Code: 0xAB12CD34 [2025-02-10 16:01:10] [WARN] [Disk\_Module] Low disk space warning.

[2025-02-10 17:12:05] [ERROR] [Security\_Module] Unauthorized access

detected from 10.0.0.5. Error Code: 0xDEADBEEF

Output:

('2025-02-10 15:45:32', 'Net\_Module', 'Connection timeout from

192.168.1.10. Error Code: 0xAB12CD34')

('2025-02-10 17:12:05', 'Security\_Module', 'Unauthorized access

detected from 10.0.0.5. Error Code: 0xDEADBEEF')