HAPPYMONK AI LABS
Think Simple, Think Beyond

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Assignment

INSTRUCTIONS:

- Task total duration - 3 hrs
- Share the solutions as a colab link/notebook file

1. Write a program in Python to find the sum of digits of a number using recursion?

2. Write a program in Python to swap two numbers without using a third variable?

3. Python Program to count occurrences of a character in below string and create a dictionary with keys as letters and values as count of occurrences of that letter.

"fhdflshbfslkhfbslkfbhslfjhbsdvsJKBEFWEGWUYRTWGRUWOFWGEUIFBWDFWDBFHWJDVFHJ Kasdwtuknfiitngjt75378595hf75hr74h"

4. Write a python program to find the transpose of an image without any inbuilt functions or packages.

5. https://www.hackerrank.com/challenges/list-comprehensions/problem?isFullScreen=true

6. variable=["Bus", "car", {"Bus":["car", "bus", {"car":"bus", "Car":["bus", "car", ["BMW"]], },"Bus"]},"Bus"]

print BMW as a string output

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PROBLEM STATEMENT 1

Results.json contains information about videos.

Each video contains many frames(with consecutive order

Each frame contains information like

1. Person count
2. Vehicle count
3. Frame time
4. id
5. Face data

Face data in each frame explains the information about persons who got detected.

Each person belongs to a category.

QUESTIONS

Read and load the results.json using python scripts.

Write a script encode and decode the json

Find the total number of videos in json.

Find how many frames are there for each video and Find the missing frame in each video(if any).

Find the maximum number of vehicles in each video.

Find the maximum number of people in each video.

Find the number of categories of people and list the categories.

Find the people belonging to each category

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PROBLEM STATEMENT 2

https://jsonplaceholder.typicode.com/todos

From the above API URL, you have to request and load the JSON data.

The json contains
1. User id - which indicates one user
2. ID - task id
3. Title - task title
4. Completed - completed or not completed

QUESTIONS

Write a script encode and decode the json

Find the number of users

Find number of tasks for each users

Find the number of completed and incomplete tasks for each users and rank them

PROBLEM STATEMENT 3

Connect your mobile phone as your webcam and fetch frames from it

QUESTIONS:
A. Calculate the frame timestamp, fps and their latency.
B. Write a code that reconnects automatically when the camera goes down. (Print a log info stating the amount of time the camera went offline. The no. of attempts happened for reconnection)
C. Write an event based programming that triggers an alert message whenever a camera goes offline.