Department of Computer Science and Engineering

PES University, Bangalore, India

Python for Computational Problem Solving (UE24CS151A)

Problem Statement: Level-1(Banana)

Theory Anchor: Prof. Sindhu R Pai **Date: 5th November, 2024**

Dept. of CSE, PESU **Timing: 1:45PM to 4:00PM**

Problem: Conference Speaker Schedule

Given the details of a conference schedule in a file containing three columns – Session Title, Speaker Name, and Session Time, find the solution for the following questions:

1. Find the total number of sessions and print the number of unique speakers.
2. Insert a new session titled "Advanced Data Science" by the speaker "Dr. A. Smith" at the time slot "2:00 PM". Ignore any clash with existing session timings.
3. Find the total number of sessions each speaker is presenting.
4. If the speaker is unavailable due to emergency reasons, remove the details of all sessions by that speaker. Take the name of the speaker from the user to remove the details.
5. Find the number of sessions scheduled at each time slot.
6. Find the list of sessions and their corresponding time slots for each speaker.
7. Due to an unforeseen emergency, delete all the sessions for the day.
8. Sort the sessions based on the names of the speakers from the file and display them.

Optional tasks:

1. Update the timing of particular speaker to post lunch session. Assume lunch to be at 1:00 PM
2. Sort the details as per the session time and write the sorted data to a new file.

Dataset: Conference Speaker Schedule (sessions.txt)

Keynote: The Future of AI, Dr. Jane Smith, 09:00 AM
Panel: Ethics in AI, Dr. John Doe, 10:00 AM
Workshop: Machine Learning Basics, Prof. Alice Johnson, 11:00 AM
Talk: AI in Healthcare, Dr. Emily Davis, 12:00 PM
Panel: AI and Society, Dr. Jane Smith, 01:00 PM
Talk: AI for Good, Prof. Bob Brown, 02:00 PM
Workshop: Advanced Neural Networks, Prof. Alice Johnson, 03:00 PM
Keynote: AI and the Future Workforce, Dr. John Doe, 04:00 PM
Talk: AI in Education, Dr. Emily Davis, 05:00 PM

Methodology:

Load the Dataset- Load the dataset from a file into to a variable for easier manipulation.
Data Exploration- Explore the dataset.
Detailed Analysis- Make sure you know the significance of each column and a row in a given dataset.

Implementation:

Language: Python 3.10 or above.

- Use data structures such as lists, sets and dicts to store and organize the data.
- Use/write appropriate functions – Specific to Data structures and also user defined functions for each functionality.
- Make use of operators, loops and conditionals

Expected output for all sub-problems:

Subproblem 1

```
Number of sessions: 9
Unique speakers: 5
```

Subproblem 2

```
Enter the name of the speaker: Dr. A. Smith
Enter the title of the talk: Talk: Advanced Data Science
Enter the time (hh:mm): 02:00 PM
Record inserted.
```

sessions1.txt

```
1   Keynote: The Future of AI, Dr. Jane Smith, 09:00 AM
2   Panel: Ethics in AI, Dr. John Doe, 10:00 AM
3   Workshop: Machine Learning Basics, Prof. Alice Johnson, 11:00 AM
4   Talk: AI in Healthcare, Dr. Emily Davis, 12:00 PM
5   Panel: AI and Society, Dr. Jane Smith, 01:00 PM
6   Talk: AI for Good, Prof. Bob Brown, 02:00 PM
7   Workshop: Advanced Neural Networks, Prof. Alice Johnson, 03:00 PM
8   Keynote: AI and the Future Workforce, Dr. John Doe, 04:00 PM
9   Talk: AI in Education, Dr. Emily Davis, 05:00 PM
10  Talk: Advanced Data Science, Dr. A. Smith, 02:00 PM
```

Subproblem 3

```
Dr. Jane Smith - 2
Dr. John Doe - 2
Prof. Alice Johnson - 2
Dr. Emily Davis - 2
Prof. Bob Brown - 1
Dr. A. Smith - 1
```

Subproblem 4

```
Enter the name of the unavailable speaker: Dr. Jane Smith
Sessions by Dr. Jane Smith removed.
```

sessions1.txt

```
Panel: Ethics in AI, Dr. John Doe, 10:00 AM
Workshop: Machine Learning Basics, Prof. Alice Johnson, 11:00 AM
Talk: AI in Healthcare, Dr. Emily Davis, 12:00 PM
Talk: AI for Good, Prof. Bob Brown, 02:00 PM
Workshop: Advanced Neural Networks, Prof. Alice Johnson, 03:00 PM
Keynote: AI and the Future Workforce, Dr. John Doe, 04:00 PM
Talk: AI in Education, Dr. Emily Davis, 05:00 PM
Talk: Advanced Data Science, Dr. A. Smith, 02:00 PM
```

Subproblem 5

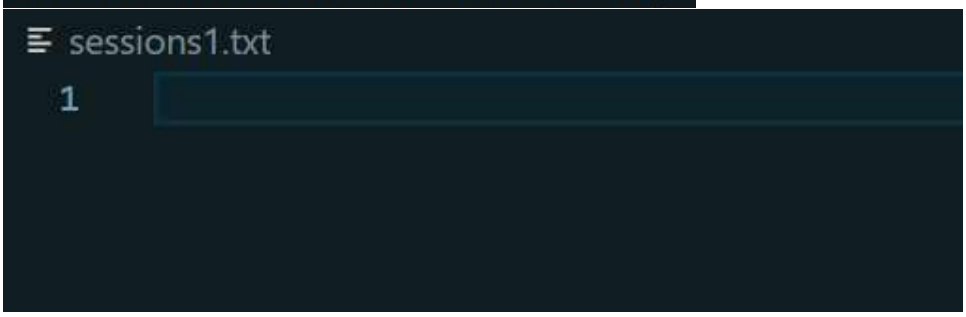
```
10:00 AM - 1 session(s)
11:00 AM - 1 session(s)
12:00 PM - 1 session(s)
02:00 PM - 2 session(s)
03:00 PM - 1 session(s)
04:00 PM - 1 session(s)
05:00 PM - 1 session(s)
```

Subproblem 6

```
Speaker: Dr. John Doe
    Panel: Ethics in AI - 10:00 AM
    Keynote: AI and the Future Workforce - 04:00 PM
Speaker: Prof. Alice Johnson
    Workshop: Machine Learning Basics - 11:00 AM
    Workshop: Advanced Neural Networks - 03:00 PM
Speaker: Dr. Emily Davis
    Talk: AI in Healthcare - 12:00 PM
    Talk: AI in Education - 05:00 PM
Speaker: Prof. Bob Brown
    Talk: AI for Good - 02:00 PM
Speaker: Dr. A. Smith
    Talk: Advanced Data Science - 02:00 PM
```

Subproblem 7

```
All sessions deleted for the day.
```



Subproblem 8

```
Talk: Advanced Data Science,  Dr. A. Smith,  02:00 PM

Talk: AI in Healthcare,  Dr. Emily Davis,  12:00 PM

Talk: AI in Education,  Dr. Emily Davis,  05:00 PM

Panel: Ethics in AI,  Dr. John Doe,  10:00 AM

Keynote: AI and the Future Workforce,  Dr. John Doe,  04:00 PM

Workshop: Machine Learning Basics,  Prof. Alice Johnson,  11:00 AM

Workshop: Advanced Neural Networks,  Prof. Alice Johnson,  03:00 PM

Talk: AI for Good,  Prof. Bob Brown,  02:00 PM
```

Submission Mode:

Link is shared by Faculty member for set of students in each venue. Choose the correct section you belong to in the current semester.

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