

PYTHON FINAL PROJECT



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# Tracking and Reporting Machine Logins and Logouts

## Abstract/Problem Statement

This project addresses the need for monitoring user activity across machines in a network by tracking login and logout events. It aims to provide an overview of currently logged-in users for each machine and generate a report summarizing the active users at any given time.

## Introduction

### Black Box Running:

- Inputs: A list of events where each event includes details such as date, type (login/logout), machine name, and user.  
- Generated Output: A report summarizing the machines and their currently logged-in users.

### Scope:

- Boundaries: Tracks only login and logout events.  
- Limitations:  
 - Assumes the event data is pre-sorted by time.  
 - Does not handle incorrect or missing event data.

## Methodology

### Tools and Technologies Used:

- Software: Python  
- Frameworks: Standard Python libraries such as string formatting and dictionary operations.

### Design Approach:

- Classes and Functions:  
 - `Event`: Represents an event with attributes for date, type, machine, and user.  
 - `current\_users`: Processes events to determine the currently active users on each machine.  
 - `generate\_report`: Formats and displays the active user report.  
- Algorithm:  
 - Sort events by date.  
 - Maintain a dictionary to track users logged into each machine.  
 - Add or remove users based on event type (login/logout).

## Results

### Findings:

The script successfully processes event data and generates a summary of active users for each machine.

### Data Representation:

Example Output:  
{'myworkstation.local': set(), 'webserver.local': {'lane'}, 'mailserver.local': set()}  
webserver.local: lane  
  
The output includes a dictionary of current users and a formatted report listing active users per machine.