Case Study:

You are a IT specialist working in a medium sized company, your manager wants to create a daily report that tracks the use of machines, specifically she wants to know which users are currently connected to which machine, your job is to collect the report.

Diagram

Description automatically generated

We want to write a script which generates a report of which users are logged into which machines at that time.

We need to know:

INPUT and OUTPUT before processing:

INPUT: is a list of events, and each event is an instance of the event class. An event class contains the date when the event happened, the name of the machine where it happened, the user involved, and the event type.

Names of the attributes: Date, User, Machine and Type

Event types are strings, and we care about Login and Logout

REPORT: which looks like this:

And should be printed on the screen. We have been tasked with generating a report and we can decide exactly on how we want that report to look.

Option1: Name of the machine at the beginning of the line, list the current users on separate lines and indented to the right.

Option2: Name of the machine at the beginning of the line, and the list of users separated by users on the same line.

Formatting can be done anyway, more important is the problem we solve.

**Problem Statement:**

We need to process a list of event objects, using the date, type, machine, and user attributes to generate a report that list all users currently logged into the machine.

**Research:**

How to sort list? Say alphabetically

Calling sort method by: **listname.sort()**

Print the output of the sorted function**: print(sorted(listnames))**

**Difference here is that sorted returns a new list, while sort returns the same list reorganized.**

What if want a different criterion in sorting instead of alphabetically?

We can make use of parameters, and we can sort in a different way like by the length of each string.

We can use len function as the key here.

print (sorted(listname, key =len))

Whenever a user logs in we want to have the user in the report as logged and whenever they log out, we want to remove them form the list of users logged out from the list of machines.

Two separate functions for processing the data and printing on the screen as it can give a better control when we want to fix a bug. Separating functions is helpful when debugging or making other changes, as it keeps functions from getting ‘tangled’. It also makes it easier to adapt functions for other uses.