Computer Lab Maintenance and Utilization System

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Abstract

In this paper we presented the computer lab management and maintenance is very difficult. In this challenges are fixed by the data science and IOT concepts. Data Science are the data is generated from different sources like financial logs, text files, multimedia forms, sensors, and instruments. We need more complex and advanced analytical tools and algorithms for processing, analyzing and drawing meaningful conclusions and results. So the data science concepts are used to maintain the logs, because the huge amount of dataare collected in various system.

Internet of Things is the concept of connecting any device (so long as it has an on/off switch) to the Internet and to other connected devices. The IOT is a giant network of connected things and people, so the IOT concepts are used to controlling the electronic appliances using Raspberry pi. A computer lab is a space which provides computer services to a defined community. This generally consists of the user not engaging in illegal activities or attempting to any security or content-control software while using the computers. Above the illegal activities are controlled by generating random password because of security purpose.

Keyword: *IOT-Internet of Things, LabAutomation, Data Science, Raspberry Pi.*

1.INTRODUCTION

1. Overview

The Lab Automation using IOT and Data Analytics for user log maintenance, control the illegal activities. To generate the random password from the entering system to maintain the security and Automatically system will be shutdown. Controlling the appliances using Raspberry pi.

2. Advantages

1. User log management :

Log management is the collective processes and policies used to administer and facilitate the generation, transmission, analysis, storage, archiving and ultimate disposal of the large volumes of log data created with in an information system.

A log in a computing context, is the automatically produced and time – stamped documentation of events relevant to the particular system.

2. Generate the random password:

With growing technology, everything has relied on data and securing these data is the main concern. Passwords are meant to keep the data safe that we upload on the internet.

An easy password can be hacked easily and all person information can be misused. In order to prevent such think and keep the data safe, it is quite necessary to keep our very strong.

3. Control illegal activities:

Uploading or downloading copyrighted material, violating the intellectual property rights of other or illegal sharing trade secrets.

Knowingly replicating or transmitting computer viruses or otherwise deliberately damaging the systems or

files of other people. Buying or selling weapons or illegal substances via computer network. accessing or printing out articles solely foreducational and research purposes.

4. Controlling appliances usingRaspberry Pi:

IOT is to develop an electronic device that can facilitate automatic switching ON/OFF of appliances. We will then program the system to automatically.

II. ANALYSIS OF SYSTEM

Problem Definition: Computer Lab Management and Maintenance System using IOT and Data science concept which is referred here, face three main challenges, these are high cost of ownership, inflexibility, poor manageability and difficulty in achieving security. The main objective of this work is to implemented a existing [1],[2], User log management is the generation, transmission, analysis, storage, archiving and ultimate disposal of the large volumes of log data created and create a simple application which can randomly generate strong password using python. This application can generate random password, with the combination of letters, numeric and special character. Mention random length of password based on requirement and can also select the strength of the password.

IOT implemented system Feature:

Server controls and monitors the various system and appliances can be easily configured to handle more hardware interface such as Raspberry Pi, LED, Resistor, Breadboard, Male-Female jumper wires

III. SYSTEM DESIGN ANDIMPLEMENTATION

The referred model of the Computer lab management and maintenance system is asshown in figure [1],[2]

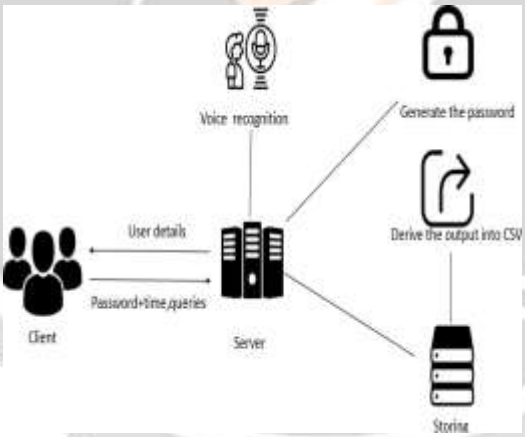

FIG 1:BLOCK DIAGRAM FOR SERVER SIDE

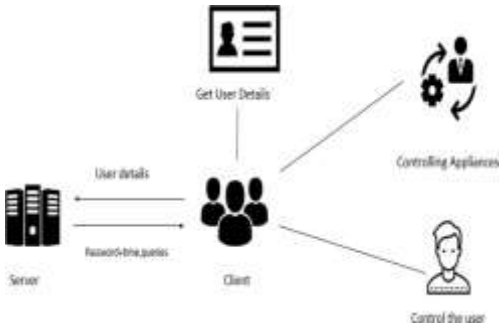

FIG 2: BLOCK DIAGRAM FOR CLIENT SIDE

Lab management and Maintenance System use client/server architecture that is a computing model in which the server hosts, delivers and manages most of the resources and services to be consumed by the client. This type of architecture has one or more client computers connected to a central server over a network or internetconnection.

Client/server architecture is used in many way

A. User log maintenance:

The benefits of good lab maintenance is students are login use the student name and staff name that is used to find the how manysystem can be use and its details .

This details are send the central server , server receive data's from all system .The details are date and time, system name, student name and staff name . Server create the dataframe that are help to derive some results[3]

	IP	name	staff
0	192.168.113.1	rajesh	xxxx
1	192.168.113.2	chandru	xxxx
2	192.168.113.3	karthi	xxxx
3	192.168.113.3	karthi	xxxx
4	192.168.113.1	rajesh	xxxx

FIG 3:Dataframe of Student details

The implementation of Data Science concepts in this place to derive results like,

1. Calculate the Overall usage of each system [4].
2. How many times the particular system used by each student[5].

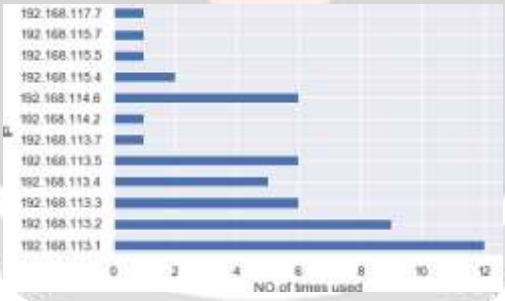

FIG 4:Overall usage of each system

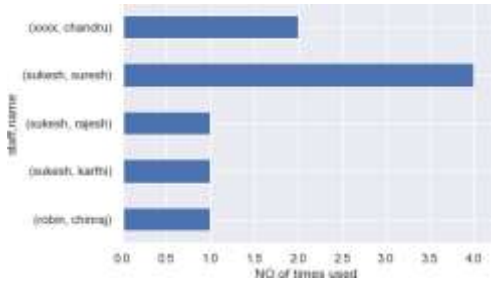

FIG 5: Usage details of each system

3. Calculate the staff use the lab[6].

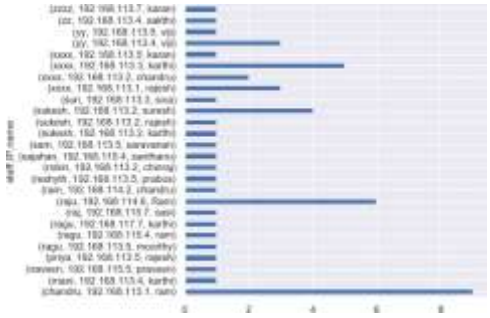

FIG 6 : Staff use the lab

4. How many times the particular systemused by each student in the staff. [7].
5. Calculate the Overall usage of eachsystem in all students[8].

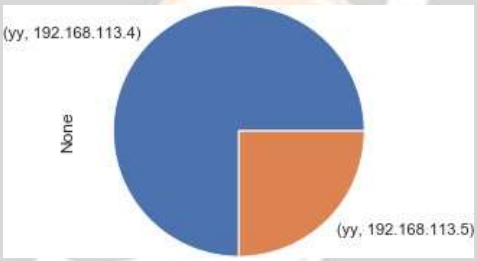

Fig 7: particular system used by eachstudent in the staff

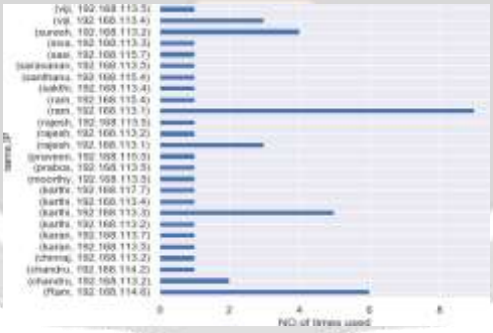

Fig 8: Overall usage of each system in allstudents

6. How many times the particular studentused the system[9].

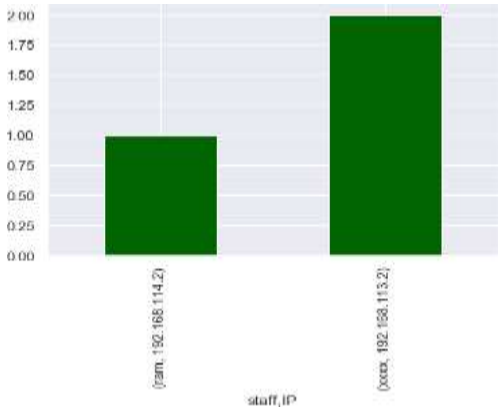

FIG 9: Particular student used the system

B. Control illegal activities:

A good laboratory security system should, among other things, increase overall safety for laboratory personnel and the public, improve emergency preparedness by assisting with preplanning, and lower the organization's liability.

Electronic security that is access control systems, password protection procedures, background checks, delay criminal activity by imposing multiple layered barriers of increasing stringency or "hardening" in the form of personnel and access controls.

Password protection procedures are use the random password generator method. Having a weak password is not good for a system which demands high confidentiality and security of user credentials. It turns out that people find it difficult making up a strong password which is strong enough to prevent unauthorized users frommemorizing it.

This paper use a mixture of numbers, alphabets and other symbols found on the computer keyboard to form a random character password which is unpredictable and cannot easily be memorized and its change in every day that are no repeated inhere life time.

Closing programs running in the background on the computer students use the third-party software that's running on your system. I have a predefined program that requires background python tasks to run on a periodic basis for cleanup, maintenance, updates, etc. They can eitherbe kicked off at a scheduled time.

CONCLUSION

The Computer Lab Management and Maintenance System using IOT & Data Science Concept has been experiments proven to work satisfactorily by manage the log and connecting simple appliances are controlled through Raspberry Pi. The designedsystem not only monitors the sensor data ,butit maintenance the User log and Controlling the illegal activities and appliances in the computer lab. This will help the staff analyzethe condition of data analyze and variousparameters in the lab anytime.

Future work

Using this system as framework, the system can be expanded to include various otheroptions which could include lab securityfeature like capturing the photo of a personmoving around the lab and storing it . This willreduce the data storage than using the CCTVcamera which will record all the time andstores it . The system can be expanded forcapturing photo students can do any illegalactivities in the lab .

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