Implementing SMART LAB-A Desktop App

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Abstract:

Functions such as websites, web-based applications, a centralized computing system, mobile apps, e-commerce applications or even cloud computing are subsidized with the client-server concept in the modern information technology environment. The client-server relationship plays very significant role in the development of IT. The client-server system components divided into two major sections of physical and logical components. Physical components are servers, devices for the clients, devices for input / output, networking and power supply. Web pages, info, programming scripts and protocols are logical components. A specific problem arises of manually checking the connected devices which consumes a lot of time when there are numerous machines across a LAN. In this paper we proposed a secure implemented solution that would automatically check the connectivity of peripheral devices as soon as the system starts. This project is implemented through python files that are installed at server as well as client machine.

1. Introduction:

Taking a scenario into consideration, we need to go on every computer and check that manually to check the connectivity of any I / O devices. It has been found that in the case of laboratories in colleges or different organisations, this process consumes a lot of time. Until now, the laboratories have not uncovered the solution for this time consuming contentment matter. Henceforth, this project's main idea is to automatically check peripheral device connectivity as soon as the system starts. This project is implemented by means of python files installed on client and server.

This setup basically contains two different implementing parts. The first part takes into account the python files to identify which devices are connected to the current machine and to send this information to the server, and for that purpose we have used Microsoft's USBTREEVIEW code library to interact with Microsoft Operating System devices. The second part deals with the PHP code, which collects all the data from different systems and displays all the connected devices as regards specific devices. Now, nobody going to run the code right on every system? Thus, the code will run on every start-up to avoid that. Particularly as the system starts it will automatically run the python code and send the resulting updated list to the server. After installing these files on both client and server, from now on, all devices (connected to the machines in the same network in the LAN) can be reported directly on the server and can go directly to the machine on which the user finds a fault.

2. Related work and studies:

A case study at the School of Mathematical Sciences, University of Kebangsaan Malaysia, Faculty of Science and Technology:

The main purpose of the study is to measure the levels of importance and satisfaction on the services according to the students ' perspectives. The analysis shows that the mean satisfaction scores are lower than the mean significance scores for all the factors considered. That implies that the computer lab facilities should be upgraded for items with low satisfaction scores. The results and the responses recorded are important in planning and carrying out immediate improvement of the facilities provided to facilitate teaching and learning in the computer labs for the management of the labs.

Study of Computer Room Network Monitoring Management System:

Major dissertation research is how to make use of the existing conditions to implement effective management of computer room problems. The system's main functions are: how to authorize students who can use the computer, monitor the computer's running processes, monitor the remote desktop

computer, remote control computer, send a remote message, log monitoring, and data base management. System features: Integrated authentication, extended process to identify ways, achieve algorithms for RLE image coding, automatically poll remote desktop.

Computer Laboratory Management With Mobile Application (Clmma):
The purpose of this study is to develop a LAN-based remote control system capable of monitoring terminal activities at any computer lab. In addition, to have a power control function that can shut down, log off, restart the terminals and have a file transfer feature for the files and documents that automatically save on the computer. The developed system offers a high degree of flexibility and functionality which will help the user to ease computer laboratory management. It has a set of software quality features such as functionality , reliability , usability, efficiency, maintainability and portability with the overall score of 4.5 with "Severely Acceptable" remarks. The developed system will elevate through additional features, recommended to provide more functions that will improve the system and help the beneficiaries on a continuous basis.

Smart things application by Samsung Electronics co. Ltd.:
This app checks the status of devices that are registered via Wi-Fi, groups multiple devices into a mode and operates them simultaneously, faster and easier to control multiple devices. You can control and monitor smart devices or home appliances no matter where you are.

3.   Experimental Set-up:

The proposed system is implemented as follows:

1.   The python files installed inside it will have to be executed as soon as you start your client machine. To avoid running the code on each startup, it will automatically run the python code and send the updated list to the server as the system starts. The python files will also send the updated information to server in every 10 seconds.

2. Go to the Xampp window on the server and it'll be like:
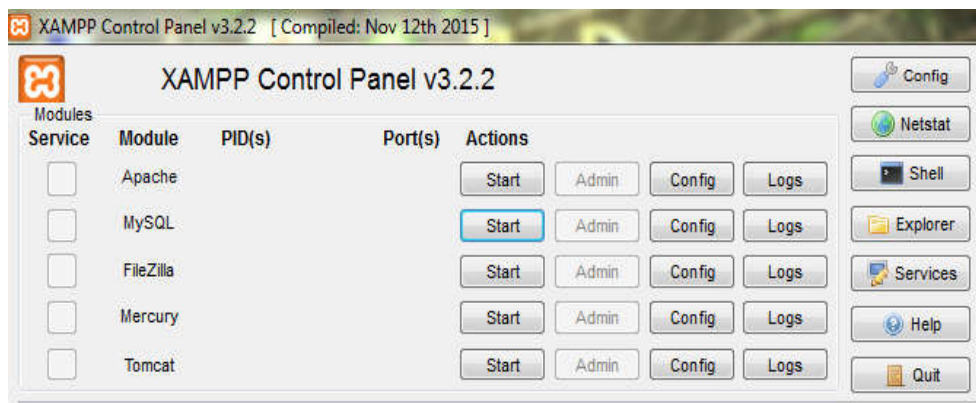
3. Now, click the module "Apache" and "MySql" start action and the window will be shown as:

4. Open that URL in your Google Chrome browser, http:/localhost / pythonAPI/. Assuming no devices are connected to any port, they are shown as:


Let's say one client with IP 192.168.43.21 successfully executes the Python code and sends the information to the server. Now one entry for this system should be created on this URL. Thus one file with the name 192.168.43.21.txt should be created. Let check that the file is being created as expected. To check this, go to My Computer>local disk (where you store your xampp folder)> Xampp > htdocs > pythonAPI.
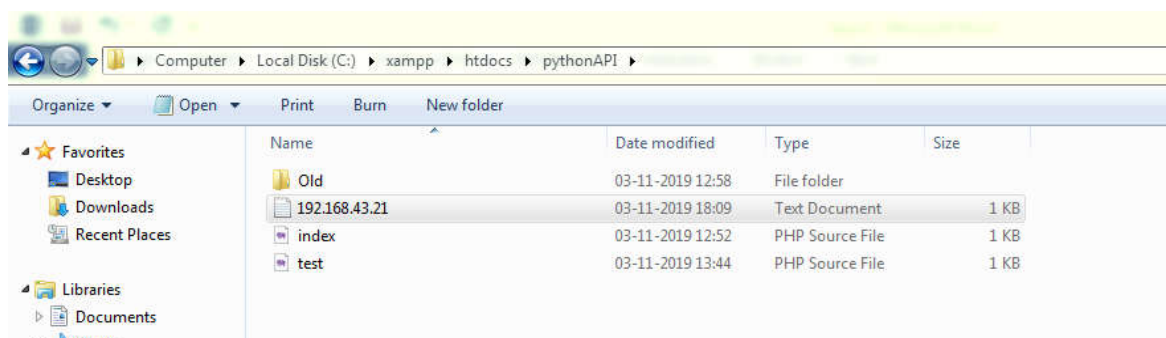
The text file named 192.168.43.21 was created with successful results.

Lets connect some devices to the client machine, such as a cell phone and a mouse, considering here. The Device Client runs the code again as the client updated. Here you can find updated device list as expected. The server also displays a list of devices of different machines (two of them are shown here, i.e. 192.168.43.21 and 192.168.43.39). In addition, the server also displays a list of applications installed on each machine.
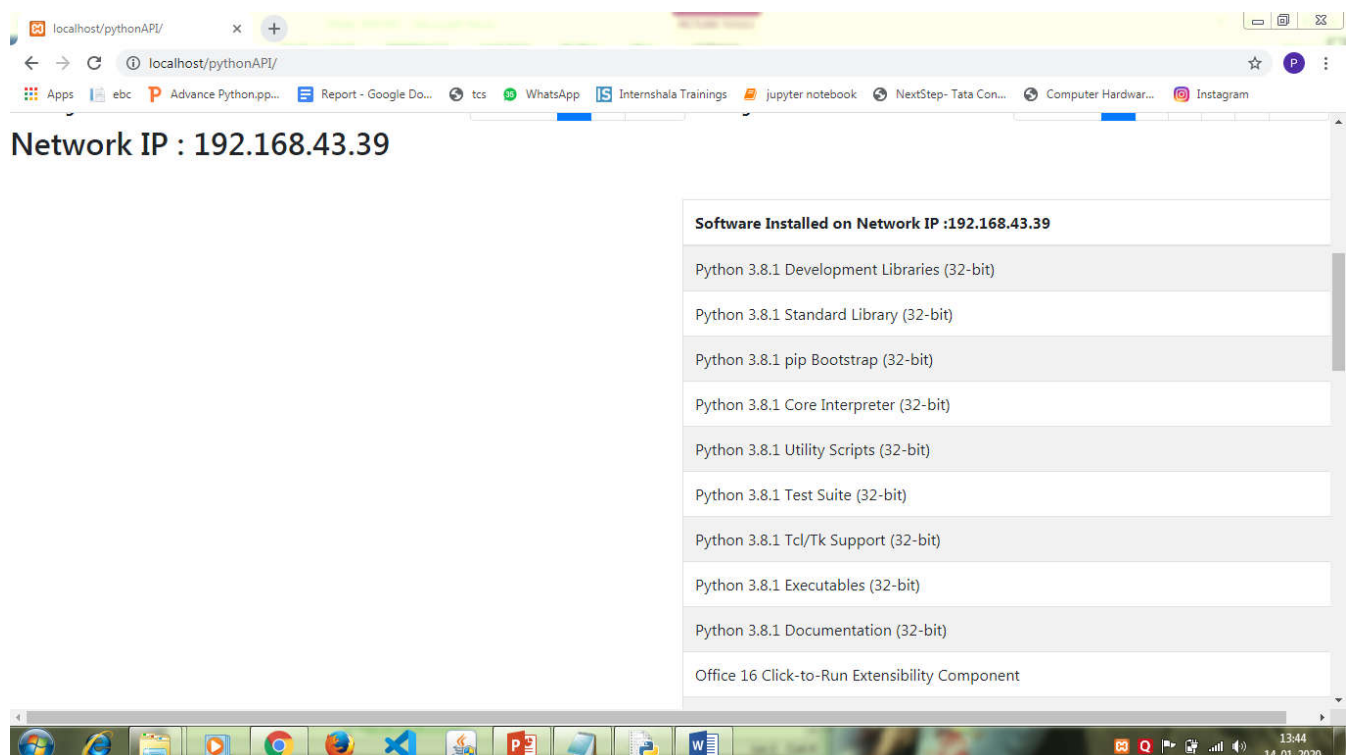
4. Results:

Using the latest technology this system has proposed a secure network and system design in windows environment. The design shows how numerous devices connected to the client can be communicated and indexed by the user (client) and server. Smart Lab's main objective was to provide the workforce of computer laboratories with ease and to perform the manual tasks automatically via an easy code.

So all the mechanisms discussed thoroughly in this project proved to work well together and provide the mechanized facilities needed. The system proposed successfully displayed on the server a list of devices and software applications. The figure below illustrates an image of how the proposed idea will show the user the list.

5. References:

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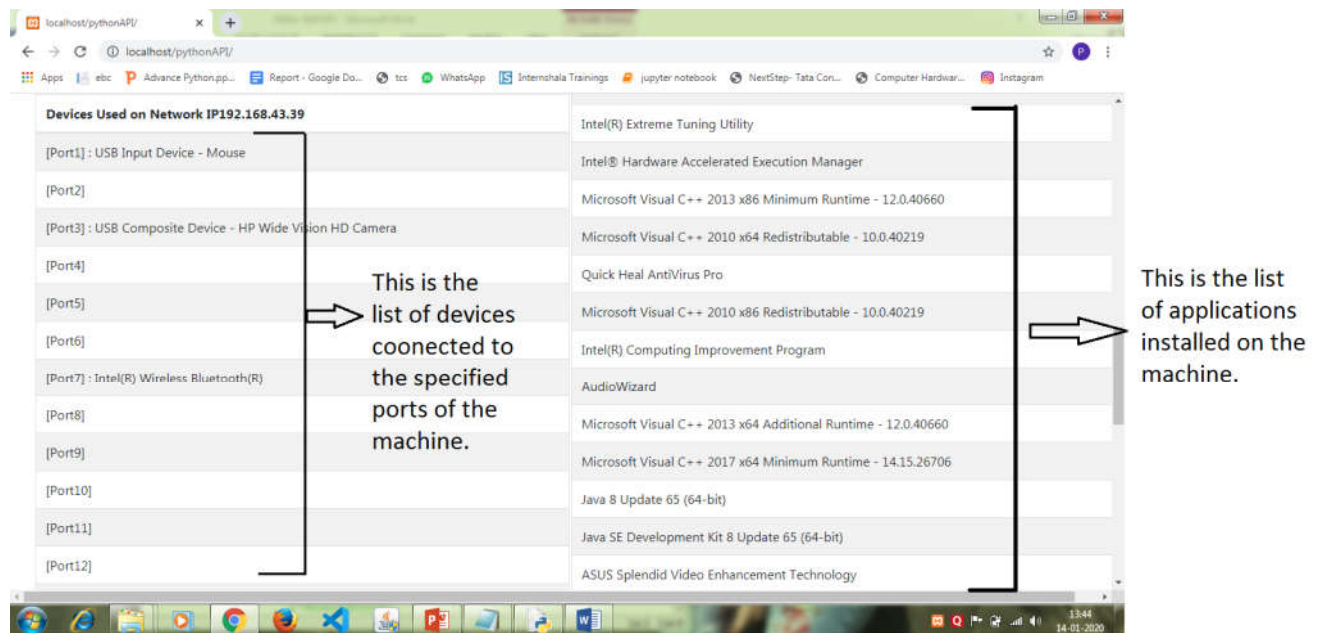
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