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## Students monitoring system in lab

Anagha Chaudhari

[anaghachaudharish@gmail.com](mailto:anaghachaudharish@gmail.com)

Usha Mittal Institute of Technology, Mumbai, Maharashtra

### ABSTRACT

*In most of the organizations, they connect multiple numbers of systems to form a network to share files or to keep a track on the work of the users. While connecting to monitor the network system activities for security purposes. Client and Server are the two methodologies in this system. In the proposed system we will be introducing the current session option to monitor the network systems and at the same time, the accessed folder option shows the username and user accessed folders. While the client logs in to the server, the Clients IP address and system names are added to the server. The server will display all the user names, and from the server, we can monitor the particular Client screen activities like the currently opened screens, the files created, modified and deleted. Five modules that we have developed are Admin module for username and password, Remote Desktop Services, IP Subnet Calculator for hiding the complexity of the IP subnet process for only class C type IP address, Network Remote Monitoring System for monitoring, and E-mail Client. Protocols that we will be using are SNMP, FTP, SMTP, RDP etc.*

**Keywords**— IP subnet calculator, Network remote, Monitoring, SNMP, FTP SMTP, RDP

### 1. INTRODUCTION

Most of the organizations, they connect a greater number of systems to form a network to make their work easier to share their files and folders. In colleges and institutions while performing practical's students misuse college internet. In practical's students perform their given tasks by their respective faculty and they also do some other work which is not related to their given task. This is the main issue of the current lab management system. Other issues of the current existing lab management system are that the faculty cannot supervise the student's activities during their practicals. While connecting, we want to monitor the network system activities for security purposes. This paper deals with the monitoring of the network screen activities. Client and Server are the methodologies in this system. Current session option to monitor the network systems activities and at the same time the access folder option shows the username and user accessed folders in the proposed system is introduced by us. While Client logs in to the Server, the Client's IP address and system names are added to the server. The server will display all the user names. From server we can monitor the

particular Client screen activities like the currently opened screens, all the files created, updates, deleted. Remote Desktop Service is one of the Microsoft Windows components to access a remote computer through the network. Only the user interface of the application is presented at the client side. Any input is redirected over the network over to the remote computer. It allows us to log in to a remote desktop to perform health checkups, deploy applications, troubleshoots problems, etc. remoted desktop is often used for WFH (work from home). This paper is an effort to develop a simple IP Subnet Calculator tool only for class C IP addresses, the IP Subnet Calculator is used to give the user quick and interactive method to calculate available subnets and hosts. Due to the repetitiveness of such calculations, tools such as an IP Subnet Calculator were developed to eliminate common mathematical problems. These tools also provide a means for the user to do calculations without actually understanding the details behind calculating IP subnets. You have several choices for your email client applications, including a range of web email services. However, many people prefer to use a stand-alone application designed especially for emails since they sometimes have a better focus and features.

### 1.1 Aim

The paper's aim is to monitor the activities of students by the faculty:

- To provide remote access in various labs of computer engineering colleges.
- To provide various tools to the students for learning through video lectures, practical performance, etc. with rules and regulations in a complete learning management system.

### 2. LITERATURE SURVEY

**Design and implementation of the lab remote monitoring and controlling system based on embedded web technology.**[1]: It is stated by the authors that the proposed lab remoted monitoring system makes use of embedded board which makes use of less power consumptive and advanced micro controller like S3C2440 similar to ARM 920T. The programs which are required to work with MINI 2440 like Boot Loader, Embedded Linux related Kernel, root file system will be loaded into the NOR flash which is present on the MINI 2440 board. The program related to the application will be loaded into the NAND flash, which is present on the MINI 2440 board. By using the bootstrap switch, which is present on the MINI 2440, it will help the user to select either

the NOR or NAND flash. After that by using DNW tool we can load the Boot loader, Embedded Linux neither related kernel and Root File System into the NOR flash using USB cable and the application related programs into the NAND flash. Once loading everything into the MINI2440 board is done, it starts working based on the application program that we have loaded into the remote data that is coming from the remote location.

**Research of intelligent home security surveillance system based on ZigBee.[2]:** The focus was on the modular design of the system. The system is built on the Embedded system and it can monitor the important positions through the CMOS cameras. ZigBee module connects to the household appliances, the system's motherboard with smoke, temperature, gas sensors, forming a wireless network. The system's motherboard core controller is S3C44B0X-32, microcontroller and mainly responsible for dealing with data. Through MMS modules and ZigBee module, you can send data and instructions and explore access plate to smoke, infrared, gas and other domestic security state sensors. MMS module makes the system controller and sends the family security status information on the mobile phone. Users send and receive text messages of instructions: ZigBee module is responsible for the system's motherboard with the expansion of household appliances between the board and cross-linking of the data.

**Monitoring local area network using Remote Method Invocation.[3]:** The main aim of the author was, the project should control and monitor the LAN network where the technique used to do so is RMI. Remote Method Invocation (RMI) allows a Java object to execute on one machine and invoke a method of a Java object that will execute on another machine. This allows us to build distributed applications. The necessary Stub is generated before the use of client and server. Generation of a skeleton may be required. In the context of RMI, a stub is a java object that resides on the client machine. Its function is to present the same interfaces as a remote server. Remote method calls which are initiated by the client are actually directed to a stub. The stub works with other parts of the RMI system to formulate a request that is sent to the remote machine. A remote method may accept arguments that are of simple types or of simple objects. In the latter case, the object may have references to the other objects. An object passed as an argument to the remote method call must be serialized and sent to a remote machine, all this information must be sent to the remote machine. Hence the administrator can view the static snapshots of user's desktop and then he could send warning messages to the user to stop that operation immediately. There are three processes that participate in supporting the remote method invocation: 1] The Client is the process that is invoking a method on the Remote object. 2] The Server is a process that owns the Remote object. In the address space of the server process, a remote object is an ordinary object. 3] The Object Registry is a server name that relates objects with the names. Objects are registered with the Object Registry. Once an object has been registered, one can use the Object Registry to obtain access to the remote object using the name of the object.

**A network-based home surveillance/monitoring system. [4]:** The author developed a system useful for a home monitoring system. The router assigns an IP address to each camera and other network attached to the device using the Dynamic Host Configuration Protocol (DHCP) when the device is connected to the Gaudio local area network. These routers and cameras are located at the homes of the users. A web interface is used as a control panel to control the cameras and the other devices via home monitor application that is deployed on the router.

Therefore, users can control the functions of Gaudio system in their home via any web browser. The home router is connected to the internet or intranet and suitable security mechanisms are used so that only authorized users can access any of the devices inside the home. Additionally, the application can send specific data to remote servers, for example, to enable the remote alarm monitoring service.

**Table 1: Literature survey**

Authors	Title	Technology used
M. Manoj Kumar, G. Srinivasan Raju	Design and implementation of the lab remote monitoring and controlling system based on embedded web technology	Embedded board which makes use of less power consumptive and advanced microcontrollers like S3C2440 and MINI 2440.
Jun Hou, Chengdong Wu, Zhongjia Yuan, Jiyuan Tan	Research of intelligent home security surveillance system based on ZigBee	Monitoring using CMOS cameras. ZigBee module connects to the household appliances.
Harsh Mittal, Manoj Jain, Latha Banda	Monitoring local area network using Remote Method Invocation	In this paper, the author has used Remote Method Invocation (RMI) RMI sends a request to the remote machine.
Royal Institute of Technology (KTH) Stockholm, Sweden Examiner and Academic Supervisor: Prof. Derald Q.	A network-based home surveillance/monitoring system	Camera's attached to the device using the dynamic host configuration protocol.

**3. PROBLEM STATEMENT**

Technology has become the key to every problem in our day to day life, similarly in our case also technology plays an important role as the institution needs a client-server system where the server controls the data (information, files and computer program) needed to do the required work. It is helpful to the faculties in the school and colleges to monitor the student's activities and also keep a track on the task given to them. The aim is to develop a client-server system for computing which is important since it helps in centralizing the control of data. Usually, in schools and colleges, the faculty cannot keep a track of the tasks assigned to the students nor can they have access to every computer in the lab at the same time to see if the students are performing given tasks properly. This new system will have a Windows-based desktop interface where the server monitors the client's connected by a network. For reasons of security, clients can only access area pertained to them. The server will retain information of all clients in the system network. The existing database supports the necessities of the clients. The server will access, but not update information stored in the client database. The faculty does his work and checks the activities of the students over the network.

**4. PROPOSED SYSTEM**

We have proposed this system of student monitoring in computer labs using C sharp language and VB.net. The paper will mainly be functioning in visual studio and its back end is MySQL. The user has to connect to the client's PC. As the user enters the login details, and those details along with the IP address of the client's PC is then passed on to the IP subnet calculator which then calculates the type of network and its class. Then the person handling the server PC enters his login details and will get visual access to the client PC.

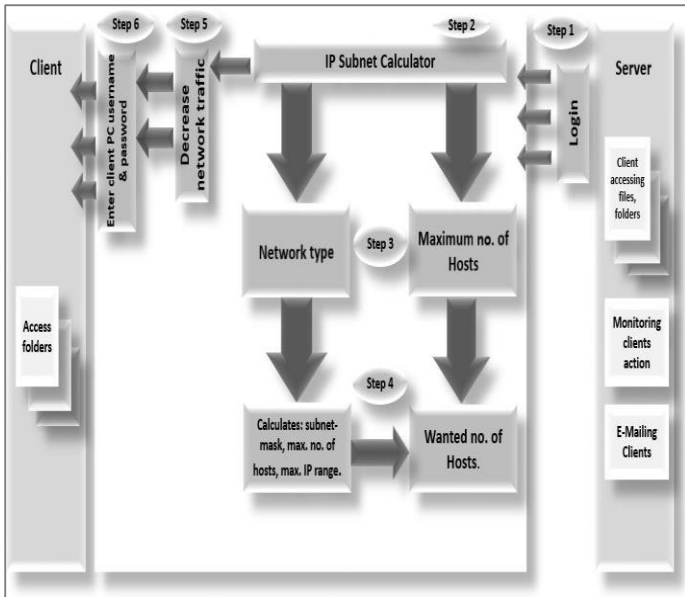


Fig. 1: Proposed system architecture

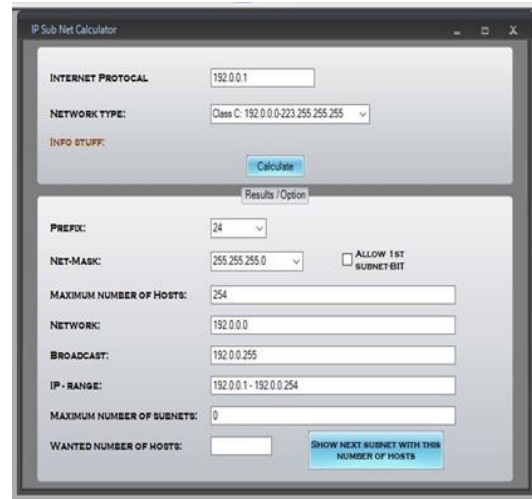


Fig. 3: IP Subnet Calculator

### 6.3 Remote Desktop Monitoring

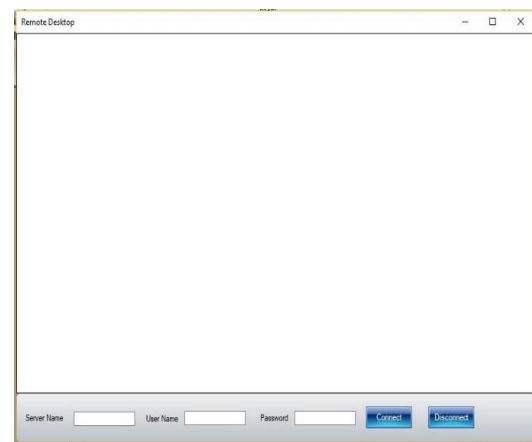


Fig. 4: Remote Desktop Monitoring

This module shows the client PC's screen on the server PC through which the user of the server can monitor the actions of the client/student.

### 6.4 E-Mail Client

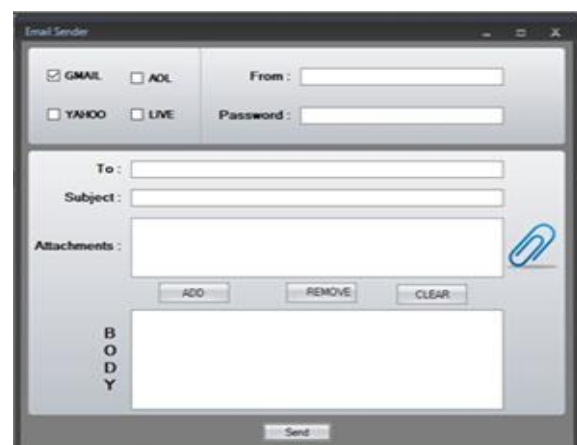


Fig. 5: E-Mail Client

Using this module, the server can send an attachment, any message or any instruction to the client/student.

## 5. FEATURES AND ADVANTAGES

### 5.1 Features of the proposed system

- In this system, we can monitor who all are accessing the folders or files in the network at the same time.
- We can monitor the connected system in the network, and we can also monitor what files are being modified and deleted from the system.
- To provide remote access to labs of computer engineering.
- To monitor the activities of students by the lecturer and to maintain control over students while performing practical.

### 5.2 Advantages of the proposed system

- Fully Secured
- Role-based access
- Ease in maintenance
- Notification about the modification

## 6. IMPLEMENTATION

### 6.1 Login module

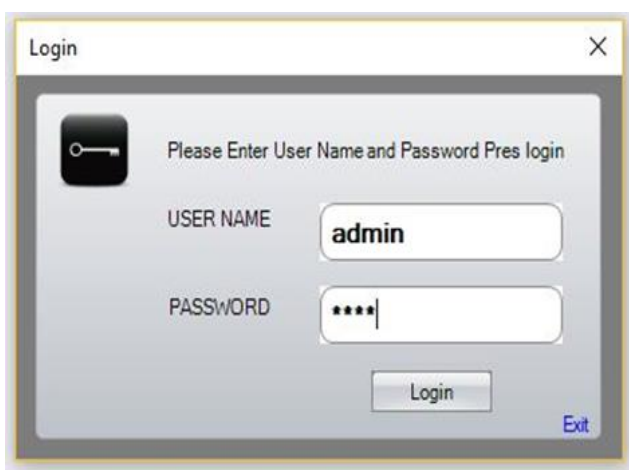


Fig. 2: Login

This module is used by the server to login to connect with this proposed system and to monitor the client PC.

### 6.2 IP Subnet Calculator

This module calculates the host address, subnet mask, IP range, maximum number of hosts you can monitor according to the type of network. IP Subnet calculator reduces the network traffic.

### 6.5 Monitor system resource

This module shows the user, resources which are accessed and modified by the client. In short, this module shows all the files and folders accessed and modified by the client.

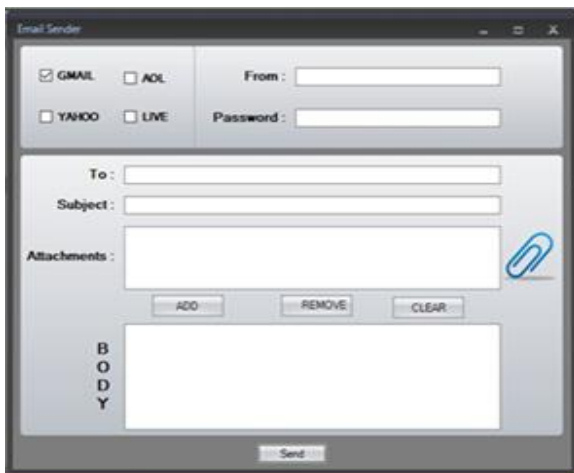


Fig. 6: Monitor system resource

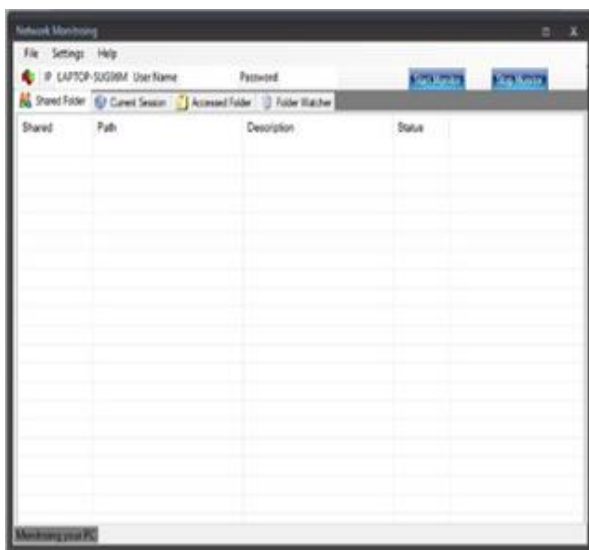


Fig. 6: Monitor system Resource

## 7. CONCLUSION

- In this paper system which can monitor the computers in the lab is proposed using different softwares such as visual studio and different languages such as C sharp and My SQL database.
- We conclude that this system will be very useful in computer laboratory systems in colleges and it can also prove to be of great use in different industries.
- Can be Very useful in multi-national companies too as the work there is divided into different departments where such

technology will make it easier for them to share data via an email on pcs and also monitor the work progress.

## 8. FUTURE SCOPE

In future with the help of further research and development more modules can be added such as the server PC can make changes in the client PC and also can retrieve data from the client PC, and can also operate wirelessly using Wi-Fi network and in case of emergency a system security shutdown option will be provided that will copy all the data on a remote file and erase it from the main file.

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