

Store & Forward Based Health Monitoring System for Old Age Home



Inspiring Excellence

**A Thesis Project Submitted to the Department of Electrical & Electronic
Engineering, BRAC University**

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Declaration

We are the students of Electrical and Electronics Engineering Department of BRAC University representing our thesis titled “**Store and Forward based health monitoring system for Old Age homes**” as a partial fulfillment requirement of completion of bachelor degree. This thesis research was performed under supervision of Dr.A.K.M Abdul Malek Azad, Professor, Department of Electrical and Electronic Engineering, BRAC University, Dhaka, Bangladesh.

This thesis is based on the results found by us. No part of this work has been submitted before partially for any other degree any other publication. Materials of work that found from Internet and Books were mentioned at references.

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Acknowledgement

The traditional concept of Old Age Home is not very popular in Bangladesh due to the concern of proper health monitoring system. As days are passing by the demand of old age homes are increasing rapidly, therefore a proper health monitoring system in old age homes is now a necessity. Thus the purpose of our paper is to analyze the basic health reading of aged people and make a serial record of the data, for providing urgent medication to the patient when needed and thus reducing the life risk.

We will take this opportunity to express our gratitude to all those who helped and supported us throughout this thesis project. We are dedicatedly grateful and thankful to our supervisor Dr. A.K.M Abdul Malek Azad, Professor, BRAC University to allow and encourage us to work with this project. It would not have been achievable for us to complete this project without his constant encouragements, valuable insight, motivations, guideline and thanks for his belief which made us complete this project successfully.

Abstract

The traditional concept of Old Age Home is not very popular in Bangladesh due to the concern of proper health monitoring system. As days are passing by the demand of old age homes are increasing rapidly, therefore a proper health monitoring system in old age homes is now a necessity. Thus the purpose of our project is to analyze the basic health reading of aged people and make a serial record of the data, for providing urgent medication to the patient when needed and thus reducing the life risk. The paper gives an analysis of how to build up a system collaborating software and hardware to obtain basic health readings like body temperature, blood-pressure, and saturation of oxygen in blood and pulse rate. The project will also contain video footage using webcam by which the station nurse can monitor 24 hours and also can save video footage. We have used the software Graphical User Interface (GUI) which will contain all the patient's details and an alarm system for medication reminder and doctor's visit. The target of the project is to store and forward the data to the specialized ones through high speed internet in order to improve the monitoring system and to minimize the cost of the system. The project also promotes the mass number of people to get the advantages of such monitoring system.

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Chapter 1

Introduction

1.1 Motivation:

Bangladesh is one of the over populated country among the world and the rate of people is over 60 is not a minimum number. Bangladesh is right now experiencing a demographic move and the extent of the population over 60 years and more seasoned is quickly expanding. Bangladesh's elderly population is one of the biggest on the planet as far as supreme numbers [1]. The project we have made is for the old people who are living in our country and they do not have their houses to live on their elder age .For Bangladesh 60+ aged people are considered as senior citizen although people here in Bangladesh getting aged before the age 60 as a result of poverty, malnutrition, huge working load and some other factors. Those people serve a lot for the country as well as for their family throughout their whole live. If their quality of life (QOL) is not improved at least on this late stage of life, then there is a possibility that they might die early.[1] As life has become busier their children are not able to provide enough time or nursing for their parents at home adequately. Setting up a proper old age home with a better heath monitoring system will be a step to able to take care to those aged population. Sometimes, this is not possible due to the lack and limitation of expert staff and also inefficient medication facility.

Hence, the purpose of our project is to develop a monitoring system that can be handled with minimum number of expert staffs and less obstruction, thus reducing the life risk. Though the concept of telemedicine which is a technology-based service, serves as an alternative to traditional health care system, is not very popular in our country. Next to the social norms, the concept of Old Age Home is not very popular in Bangladesh due to the concern of health monitoring system. For our thesis purpose we have used Microsoft Visual Studio. In which we have developed a GUI (graphical user interface). [2] We are using Webcam to monitor the Old Age patients which is one of the main components of our project. The existing telemedicine System of our country is the main motivation for our project. In existing Telemedicine system people have to travel a minimum distance for their treatment. Whereas, in our project for medication purpose elder age people can avoid distance travelling. The monitoring system we have developed is cost efficient as we need only Laptop and webcam as hard ware parts. It is also a very convenient monitoring system.

1.2 Goals Accomplishment:

Our goal for this project is to make a cost efficient and convenient monitoring System for the Old Age center of Bangladesh in order to improve their facility for providing proper health care to the elder ones. To serve our purpose we have made the project collaborating hardware and software. In the existing Telemedicine System of our country experts prescribe medicines over the phone. But in our Telemedicine System experts can give suggestions or medicine after going through the overview of the patients data. The data will contain the basic health readings into the GUI. Besides, this sometimes elder people need to travel to get emergency medication from the doctors. However, in our project people do not need to travel because she/he will get medication into the old age center. Furthermore, each and every patient is in close observation for 24 hours via webcam. Thus the project is to store the data and pass the data to the specialized doctors through high speed internet in order to improve the monitoring system and to minimize the cost of the system. The project also promotes the mass number of advantages of such monitoring system.

1.3 Project Outline:

The project gives an analysis of how to build up a system collaborating software and hardware to obtain basic health readings like body temperature, blood-pressure, and saturation of oxygen in blood and pulse rate. The project will also contain video footage using webcam through networking. From the beginning a trained medical observer or nurse, who will have the basic health readings of the patient and enter the readings into the GUI developed specifically developed to serve for such monitoring system. The data obtained by the nurse will be stored into the GUI. The GUI for the nurse will contain name and id of the patient along with the tabs of datasheet and alarm system. The specialist nurse who is a part of our project can view patient's data from her computer. She will observe the data with the help of a sharing software name Team Viewer. The GUI has to be accessed by a login page. The GUI contains a Video Footage Box and a Data details tab for each patient, a single page of GUI can accommodate up to 12 video footage boxes and data details tabs. Each GUI also contains an Alarm system for the patients. This Alarm system works as a reminder. For example as there will be more than one patient it will be difficult for the nurse to remember the timing of medicine for each patient as required. In that case Alarm System will be helpful for the nurse. The video footage of the webcam can be saved by using software named WebCam Monitor 6. The number of blocks that has been made in GUI can be increased or decreased according to the requirement. Both of the GUI will be available in the nurse's pc/laptop in old age home.

In the figure below, this is the block diagram of the whole project. Using a vital signs machine the nurse will obtain the basic health readings which she will enter into the access database. This data can be accessed through high speed internet from the specialist computer.

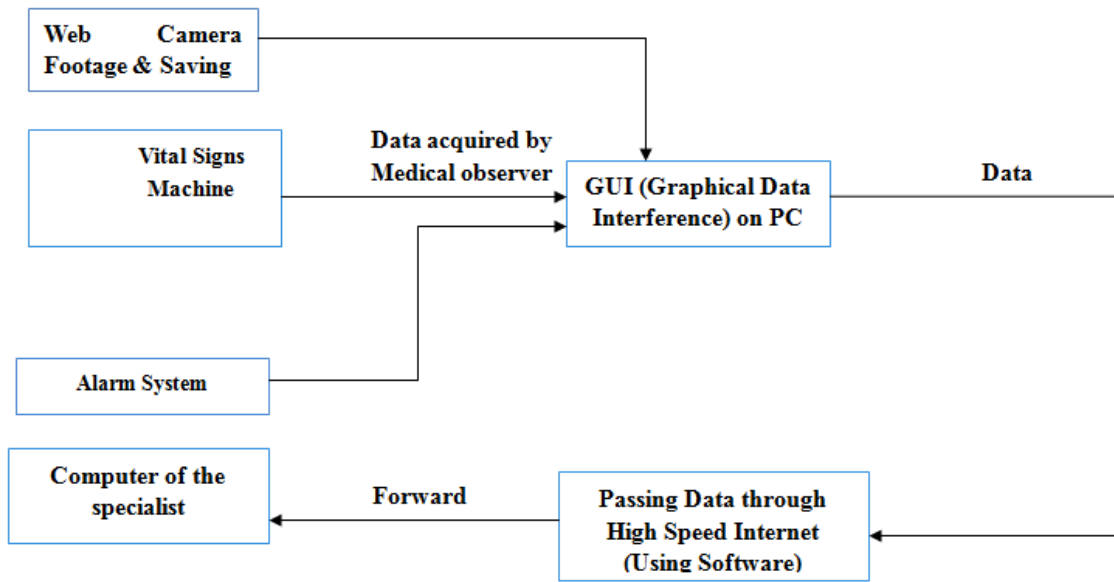


Fig 1.1: block diagram of the project

Chapter 2

Planning and Design

2.1 Overview of Project:

The Project gives an analysis of how to build up a system collaborating software and hardware to obtain the basic health readings, such as, body temperature, blood pressure, and saturation of oxygen in blood and pulse rate. The Project will also contain video footage using Web camera through networking. From the beginning a trained medical observer or nurse, who will have the basic health readings from the patient and enter the readings into the GUI developed specifically for this project. This project also contains another Central Nurse Station which will monitor continuously the patients of old age home. The GUI is being developed in Microsoft Visual Studio version 2012 with the help of C# coding. The GUI shall be accessed with a username and password with the help of a login page so that the data can only be entered by a trained person, which serves as a data security purpose of the patient. The system will include separate GUI files for both the nurses (central nurse and station nurse). The GUI for the nurse will contain name and id of the patient along with the tabs of patient's data details and alarm system. The GUI contains 12 video footage boxes and data details tabs. And also an Alarm system has been added to the same page where the basic health readings can be added by the nurse. This Alarm system is like a reminder. As there will be more than one patient it will be difficult for the nurse to remember the timing for each medicine for each patient as required. In that case Alarm System will be

helpful for the nurse. When the system will be in progress at first, Login Page will be shown. Then the next tab is the tab where 12 video footages of 12 individual patients will be shown. Video footage will be shown in smaller size. If nurse wants to see any of the footage she can maximize the video footage. There is another button which contains patient detail and Alarm system. In patient detail, the database has some parameters which contains patient name, age, Time and Date of data entry, Body Temperature, Blood Pressure (systolic and diastolic pressure), Saturation of Oxygen and Pulse Rate. Every day after a certain period of time nurse will visit the patient with her laptop. She will take readings according to the database parameters and enter the data manually in her laptop so that central nurse station can see all the patients' daily health condition at a glance. The central nurse station can have right of entry to the nurse laptop by using a software and on the basis of daily health checkup they can give necessary medication and even can take the patient to the nearby hospital if needed. The video footage from the webcam can be recorded with the help of recording software.

2.2 Requirement of Hardware Components:

Requirement of the hardware components for this project is not very complicated. For the health reading purpose a vital signs machine is needed. For monitoring purpose web cams are needed. And to enter the data a laptop/notebook is required. Laptop can be connected with one or more web cams, depending on the availability of port that a laptop has. To increase the number of cameras connected to the laptop by using a single port we are using USB hub and to increase the webcam length we using USB extension cable.

2.2.1 Vital Signs Machine:

Vital signs machine is a machine which includes the basic health readings of a patient. Such as: Body Temperature, Blood Pressure, Oxygen Saturation, and Pulse Rate [3]. This basic health reading gives clues to disease and can take necessary steps for forward recovery. However

depending on the health condition of the patients more health readings can be added to the vital signs machine. These four basic health readings will vary from one person to another according to their age, weight and gender. Normal temperature of a human body should be 96°F to 98°F. When the temperature increases to 38.5°C/101.3°F and more than that it will be considered as fever [3]. In that case that patient needs some medication according to the specialist. Next parameter which is included in the database is the Blood pressure of the patient. It has divided into two boxes, Systolic Blood Pressure and Diastolic Blood Pressure. Normal blood pressure of a human being is considered as 120/80 where 120 is the systolic pressure over 80, the diastolic. If the blood pressure level is high then the normal pressure then it is consider as high pressure. On the other hand, when blood pressure is lower than normal blood pressure than it is considered as low pressure. Difference between systolic and diastolic blood pressure is called the pulse pressure. The unit of the blood pressure is mercury which is measured in millimeters. [3]

Blood pressure varies from age to age. Figure: 2.1 attached below for understanding the blood pressure of different aged people. [3]

Reference ranges for blood pressure

Stage	Approximate age	Systolic		Diastolic	
		Range	Typical example	Range	Typical example
Infants	1 to 12 months	75-100 ^[25]	85	50-70 ^[25]	60
Toddlers	1 to 4 years	80-110 ^[25]	95	50-80 ^[25]	65
Preschoolers	3 to 5 years	80-110 ^[25]	95	50-80 ^[25]	65
School age	6 to 13 years	85-120 ^[25]	100	55-80 ^[25]	65
Adolescents	13 to 18 years	95-140 ^[25]	115	60-90 ^[25]	75

Fig 2.1: blood pressure chart for different aged people. [3]

Other things which are entered in vital signs machine saturation of Oxygen is one of them. Normally 95-100% oxygen saturation is normal for the human being health. If it is goes below 90% then the condition considered as low. [4] A non-invasive method for monitoring a person's Oxygen saturation is pulse oximetry. A sensor device is placed on a thin part of the patient's

body. Usually it is attached with the human finger. For the infants it is attached across the foot.
[3]



Fig 2.2: Vital Signs machine

2.2.2 Webcam:

A webcam is a video camera by which people can see each other or even use the camera for the monitoring system. Nowadays webcam is widely used in all over the world. People can see real time images through a computer to computer network. This real time video stream can be saved, viewed many times and it also can be attached to email. [5] And then it can be send to another person. When a webcam is used in remote areas, video stream may be saved or can be sent there. A webcam only have a USB cable attached with the camera. This USB cable can be attached with computer and laptops. There is software along with the webcam by which one person can easily install the software and can see the video via webcam. Some webcam support the plug and play system. In this system laptop or computers does not required any software. USB cable is just needed to be connected with the laptop and the webcam will start automatically. A webcam can work as a CCTV camera or an IP camera. It can be used as a security purpose or monitoring

purpose. The advantages of webcam over the CCTV camera are that, it is cheap compared to CCTV camera. Webcam can be afforded by maximum number of people. Whereas, CCTV or IP camera cannot be afford by most of the people. Webcam mostly used for video conference. But nowadays it is also used for Health care system, video monitoring, and security system and for many other purposes. In our project webcam can be installed in the laptop of old age homes. We are using a single webcam for a single patient. Webcam will be setup in side of the patient's room so that central nurse station can easily view the patients via webcam footage. Figure 2.3 shows the webcam used in the system.



Fig 2.3: Webcam

2.2.3 USB Extension Cable:

For our thesis purpose we are using extended cord which is also known as USB extension cable. This will help us to increase the length of our web cam. In general a webcam wire length is 2 to 3 meters. When we setup the webcam in a patient room, that webcam should be connected with a laptop. The wire that comes with the webcam is not enough for that purpose. To serve the purpose for our project properly we need to increase the length of the webcam wire. In that case an USB extension cable is required. USB extension cable can be extended according to the

desirability of the project. In our thesis project we are using 5 meter of USB extension cable. The USB extension cable comes in different sizes and in different colors.



Fig 2.4: USB Extension Cable

2.2.4 USB Hub:

An USB hub is designed to take inputs from more than one USB cable port. An USB hub has more than one port. We are using USB hub for connecting many webcams at a time. This USB hub is a device that expands a single Universal Serial Bus (USB) port into numerous ports, so that there are more ports available to connect devices to a host system. USB hubs are built to use in computers, laptop, notebook, monitors or printers. [6] Usually laptops and computers have many USB ports. But when there will be a lot of patients in the old age homes we need to setup the webcam according to the number of patients. In that case maybe we need to setup 50 web cameras. The laptop/pc does not have 50 ports which can support 50 different web cameras. That is why we are including hub for our project. If there are 50 patients to monitor, then there will be

50 cameras. As we are using one camera for each patient, in that case we can use 5 different hubs, in which 10 ports available in each hub. And that hub will be connected to the laptop ports. So we can view all 50 web cameras footage at a time in one single laptop with the help of USB hubs. Different types of hubs are available in the market. They came in different colors, different wire length and with different number of ports.



Fig 2.5: USB Hub with 4 ports

In the figure: 2.6 it is shown that how a hub can be used for multiple web camera's.



Fig 2.6: Multiple Webcam Connected with Hub

After connecting the webcam with the hub we can use USB extension cable for increasing the wire length. The other port of the USB extension cable should be connected with the laptop.

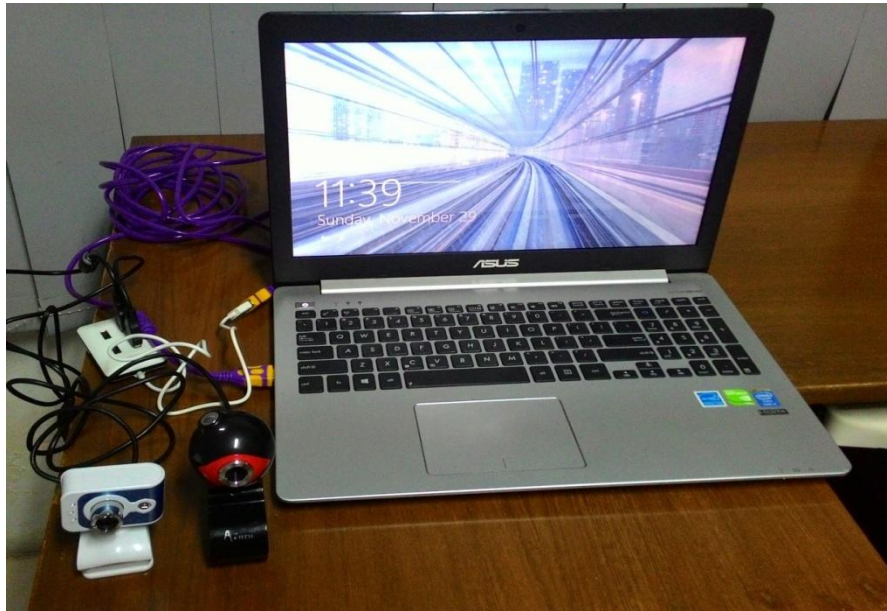


Fig 2.7: Multiple Webcam Connected with Laptop via Hub and USB Extension Cable

2.3 Software Specification:

Microsoft Visual studio version 2012 is the main software for our thesis project in which we have developed the GUI (graphical user interface). We have designed a login page, database, alarm system, video footage all these things are being developed in visual studio. The significant of that project is that it will also include a specialist. The distant specialist can access the datasheet using team viewer software. The remote doctor will be able to get your hands on into the nurse's computer and can check the database and the Webcam footage. Software will be used for the recording of the video footage. With the help of this software nurse or the specialist nurse

can easily record the video footage of the patient at any time. Recording of the video may help any other doctor to see the patient condition by which doctor can present a proper medication.

2.3.1 Visual studio 2012:

As we are utilizing visual studio 2012 version and C# for programming we have to know the explanation for picking this adaptation of visual studio. Visual Studio 2012 is for engineers who need to do application outline, advancement, and testing. [2] In Visual Studio 2012's there are some new features which have been added.



Fig 2.8: Visual Studio 2012

Features of Visual Studio 2012 [7]:

Title	Description of the new features
What's New in Visual C# 2012	Describes new features in the C# language and Code Editor. The features include Office programmability, and variance class

	designer, data designer and form designer.[7]
What's new in visual C++ 2012	It also supports the C++/CLI specification to write managed code, as well as mixed-mode code. Microsoft positions Visual C++ for development in native code or in code that contains both native as well as managed components. Visual C++ supports MFC library and also COM. [7]
What's New in the .NET Framework 4	Contains information about key features and improvements in the .NET Framework 4.it supports 2-4.5.2 [7]
Support language	New feature include support for WINrtand C++/cx(Component Extensions) and C++ . [7]
What's New in the Visual Studio 2012 Editor	Describes the new and enhanced features in the Visual Studio editor. [7]
What's New in Deployment	Portrays how you can convey applications and the most recent adaptation of the .NET Framework as an essential in your Click Once or Windows Installer sending bundles. You can likewise convey your applications by utilizing Install Shield 2012 Limited Edition. [7]
	In Visual Studio 2012, a solution is a set of code files and other resources that are used

Solution explorer	to build an application. The new Solution Explorer allows for visualization of class and file hierarchies within a solution/project. It can search for calls to functions and uses of classes. [7]
New Features for visual studio 2012	Newfeatures that is added to the visual studio version 2012 are semantic colorization, reference highlighting, new solution explorer, member list filtering, Code snippets etc. [7]

Fig 2.9: features of visual studio 2012

2.3.2 Team viewer:

Team viewer is computer software which is used in desktop sharing, remote control, online meeting, web conferencing and transferring files between computers. Team viewer versions are available for Microsoft windows, Mac and for windows phone. The main focus of the application is remote control of computers, presentation and collaboration are included. Team viewer can be installed with installation software in computers and in laptops [8]. For the connection between two computers both the computers need to have team viewer software. After installation of that software there will be a temporary password and user id which will be given by team viewer. We have to put that assigned password and user id to the computer. After that connection between two computers will be established. Anyone can access another computer from his/her computer with the establishment of connection. We are using team viewer version 5 for our project. Here is the picture of team viewer 5 as shown below (figure: 2.9).

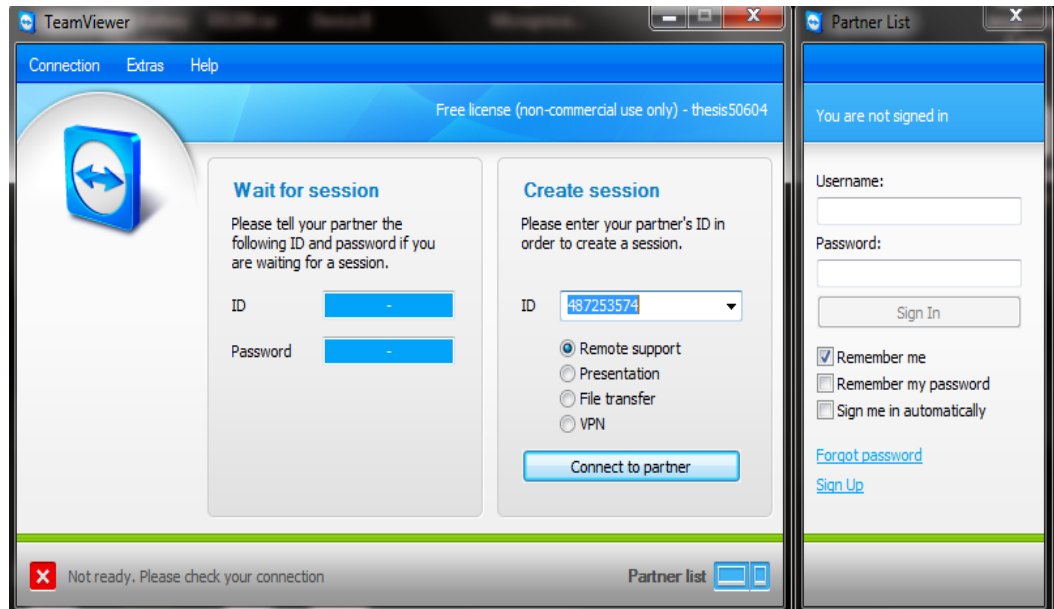


Fig 2.10: Team Viewer Software

This connection needs internet. Without internet the team viewer software will not work. In the default design, Team Viewer utilizes one of the servers of TeamViewer.com to begin the association and the directing of movement between the neighborhood customer and the remote host machine. The product then decides how to build up an association. In 70% of the cases, after the handshake an immediate association by means of UDP (User Datagram Protocol) or TCP (Transmission Control Protocol) is built up. Team viewer has six different versions available from December 2009 to December 2014. Session handover starting with one master then onto the next, remark on sessions for charging documentation, offer chose bunches with other Team Viewer accounts, simple remote imprinting in your home office, plan online gatherings effortlessly in Microsoft Outlook, session recording, including sound and video for flawless documentation, remote sound and video, remote record logout, consequently bolt of the PC after remote access, Team Viewer Management. [8]

2.3.3 Video recorder:

For the recording of the video footage of webcam we are using software which is WebCam Monitor 6. This webcam recorder can record multiple webcam footages simultaneously. The recorded video footages will be saved in a different folder in the laptop. The recorder is shown in figure:3.11 Video Saving.

Chapter 3

Introduction of GUI:

Today's major operating systems provides graphical user interface (GUI). With the help of GUI any of the institution or company can make their own operating system or one person can make his her own website or own database which can help his/her studies. A GUI contains many features. Elements of a GUI include such things: windows, pull-down menus, mouse, scroll bars, pointer, pointing device, desktop, icons, menu etc. [2] Graphical user interface is essential to represent the patient's basic health readings. The GUI will contain a database of each patient along with an alarm system. Alarm system is also made in graphical user interface with the help of a C# coding. A login page and front page is also added to the system. The complete system is made in Visual studio version 2012 with the help of C# coding.

3.1 GUI (Graphical User Interface):

The primary GUI has multiple GUIs programmed under it. The GUI has been programmed to show 12 different webcam footage along with the data details and an alarm system. The database will carry the information of individual patients. When we open the Microsoft visual studio 2012 then, at first we have to choose "New project" then "windows form Application" in C#. After

that a page will appear where we started our design of GUI. Usually this form is form 1. But in the properties we can change the name of form1.

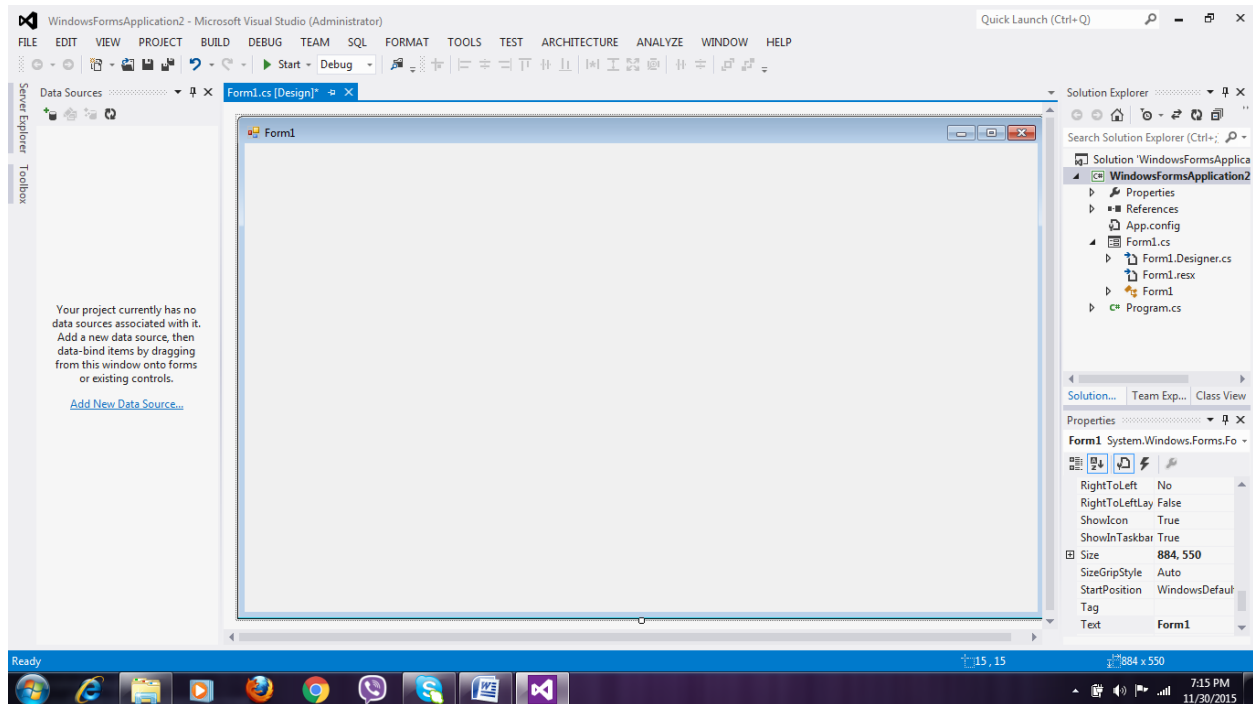


Fig 3.1: Visual Studio Form

The graphical user interface (GUI) we have contains more than one form. We have created a login page, front page of webcam footage, data details and alarm system into the GUI.

3.2 Login Page:

At first when our project will be opened by a nurse or specialist a login page will appear. The login page will be asking for a correct user name and correct password. Login page is maintained for the security of this project so that only authorized people can have the access of patient's

health readings. If any unauthorized person wants to access the patient's footage or health readings, that person will not be able access the data. As to view the project one person must need to know the accurate username and the accurate password. If these two things miss matches then login page will not work. We have set a particular user name and a password for our project. The user name is "user10" and password is "pass10". The user name and password can be changed in the C# coding. When the login page was created then this username and password has been set for this project. Code for Log in page is given in Appendix A.

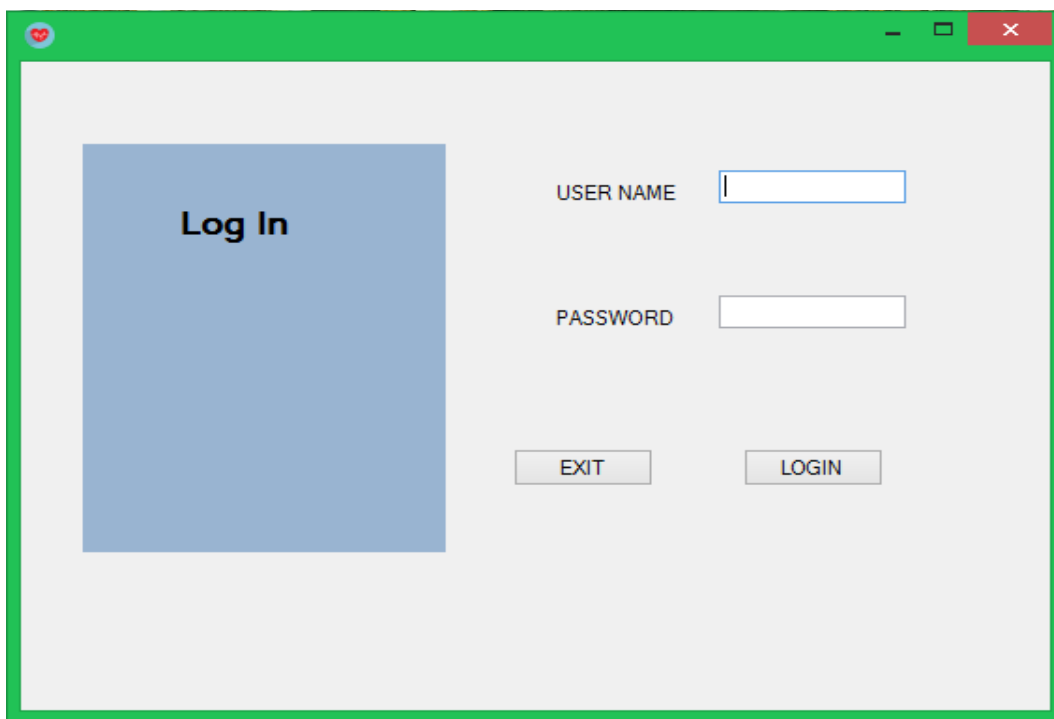


Fig 3.2: Login Page

The user name and pass word have to put in to the correct boxes.

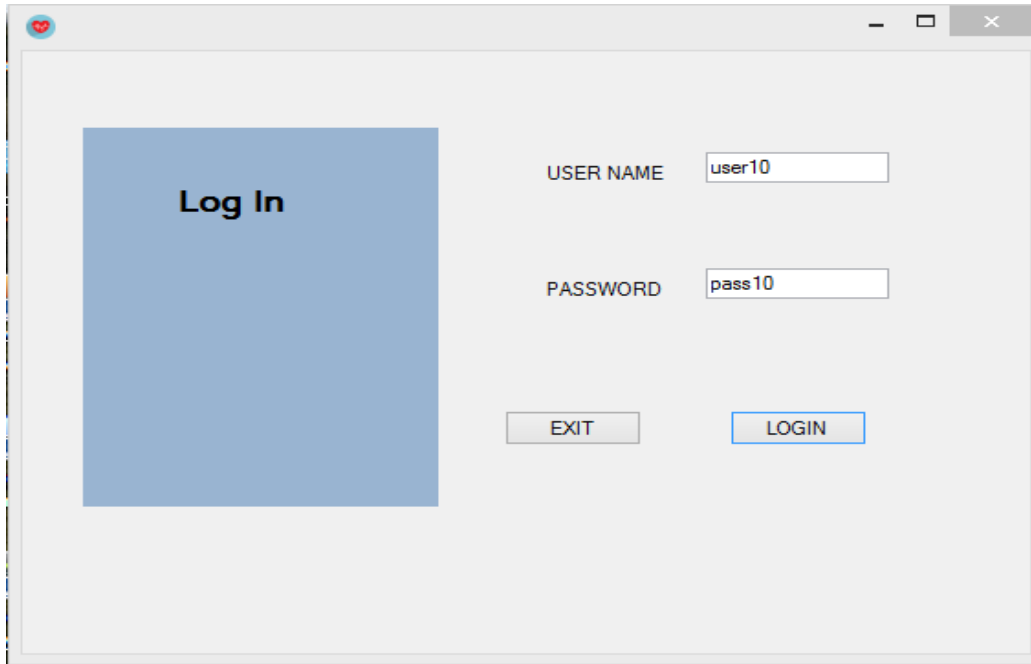


Fig 3.3: Login Page Username and Password

If the username and password is correct then a message will come up with “Login Successful”. And the nurse will have the access of patients tab and video footage. If the password is incorrect then a message will be shown in the screen written “Password Incorrect”. Therefore, login is unsuccessful.

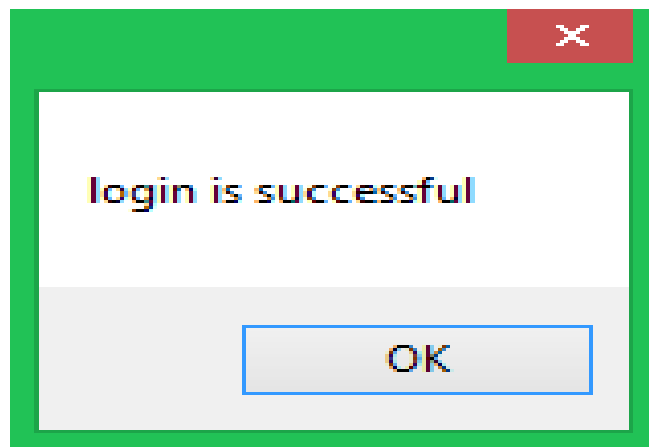


Fig 3.4: Successful Login

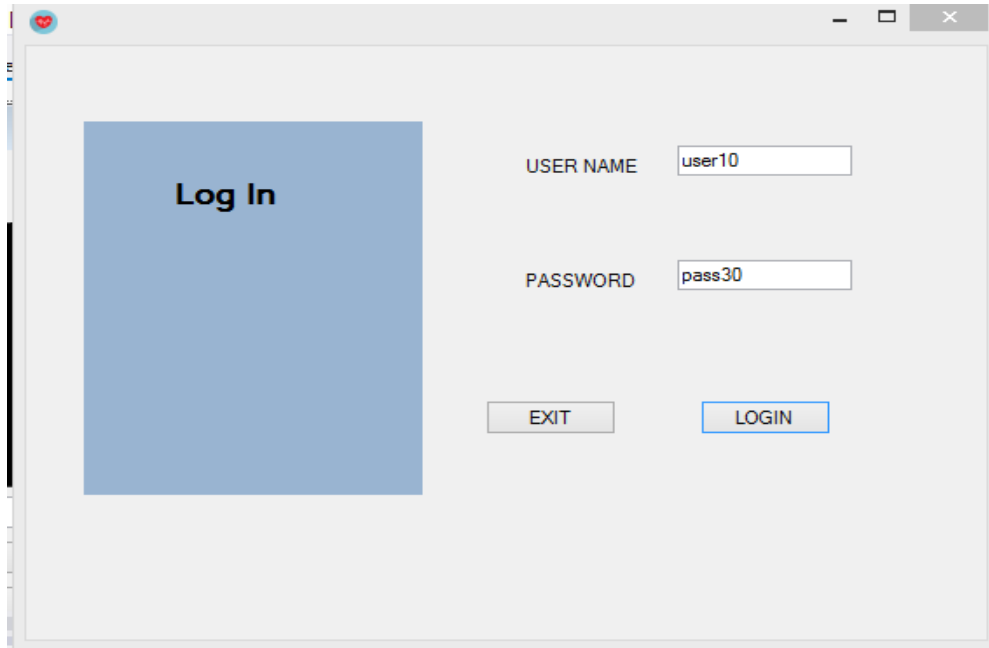


Fig 3.5: Incorrect Password inserted

For the incorrect password Login page will give this message as shown in the fig: 3.6.

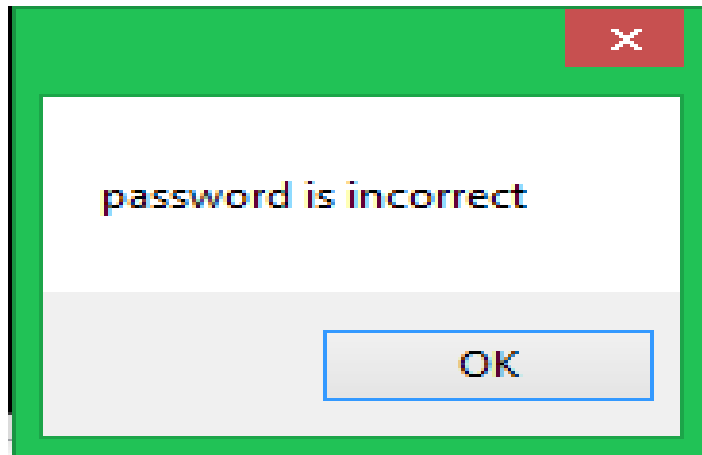


Fig 3.6: Unsuccessful Login

3.3 Patient Tab and Webcam footage:

After successful login then comes the patient tab with the webcam footage. In this page there are 12 different webcam footage which will be continuously showing the video footage of the patient. These 12 different video footages will be coming from 12 different webcam. Each webcam will be installed in front of each patient. There are three different buttons below the webcam footage box. These are Start, Stop and Patient details. When we press the start button all the videos of different web cameras will be started at a time. If we press stop button then footage will be stopped for that particular patient. After clicking the patient tab button, patients' data sheet and alarm system will come up. When this tab comes up we have to choose each webcam for each patient. There will be a webcam name choosing option below of each video footage box of the webcam. The source code provided in appendix B shows that how the design for video footage box is executed. This tab is specially designed for the central nurse station so that central nurse station can monitor the patients simultaneously. As the nurse is visiting the patients by herself so she does not need the patient's video footage. Her GUI will contain patient details, alarm system, Patient name and ID. So, there will be two different files for nurse and central nurse station. Codes for webcam footage and patient tab are given in Appendix B and Appendix C.

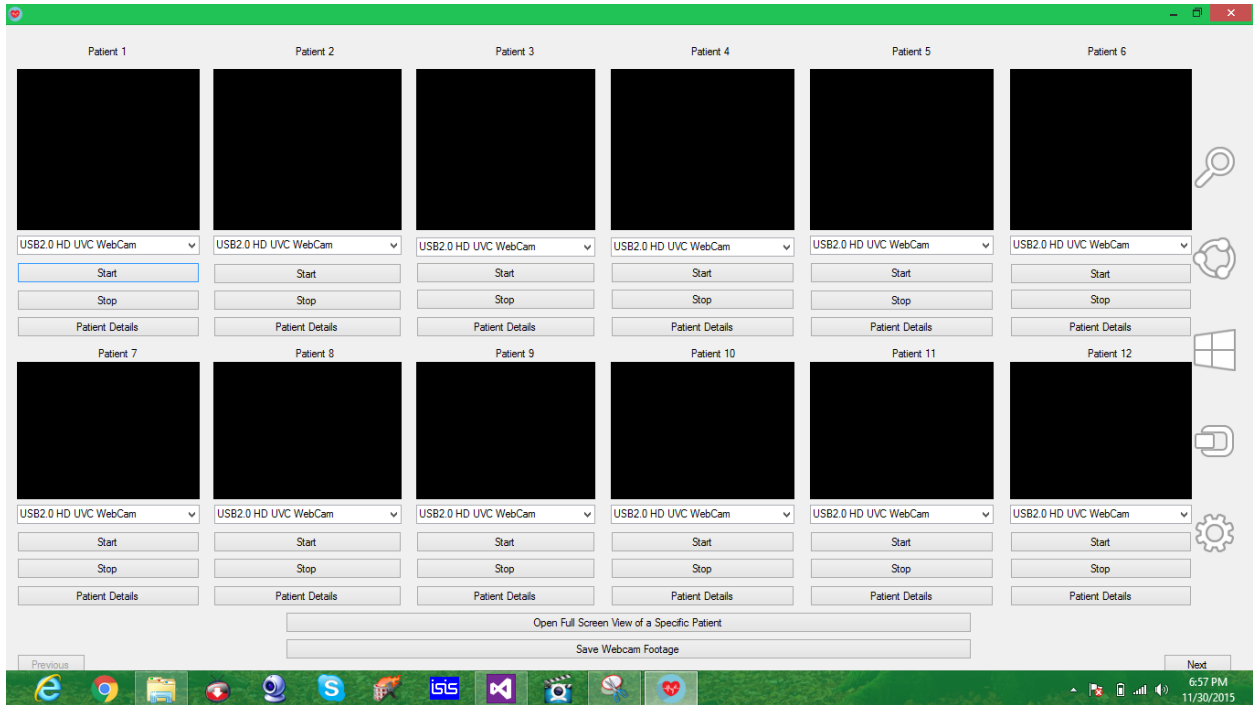


Fig 3.7: Patient Tab carrying 12 web cameras

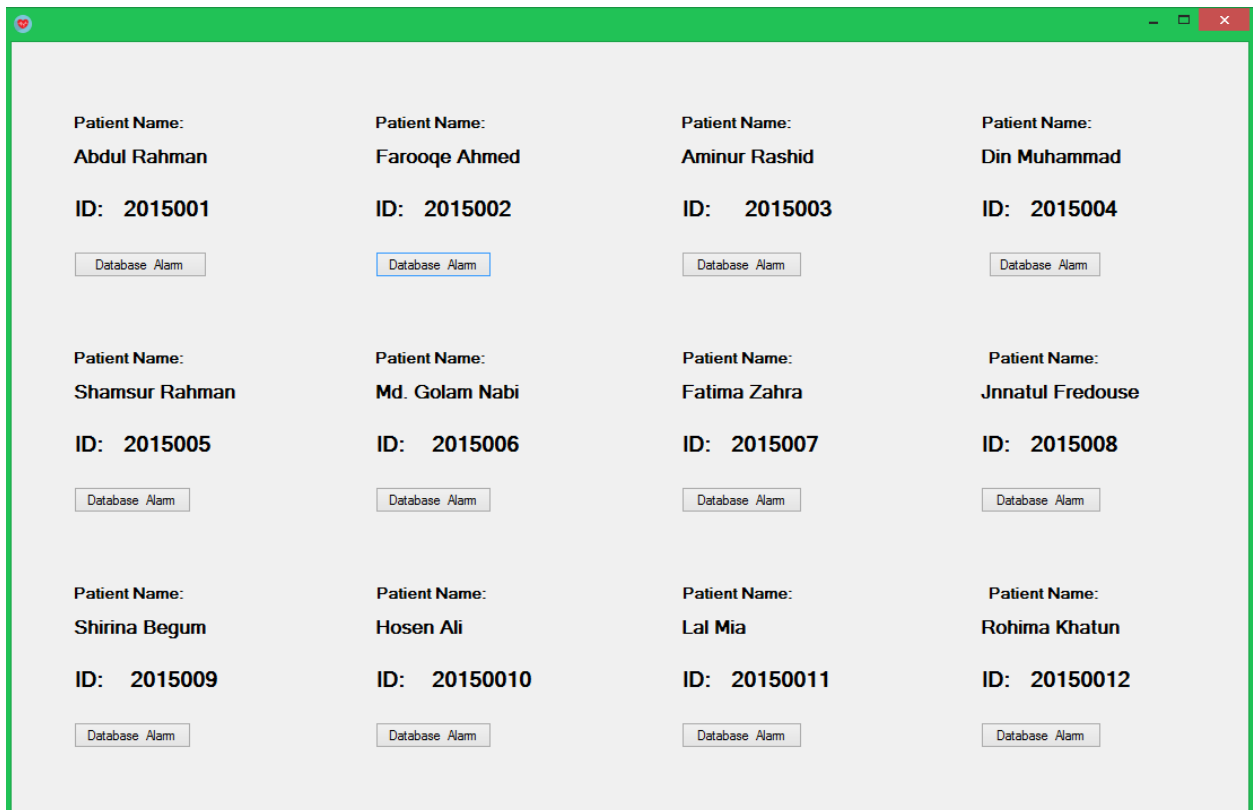


Fig 3.8: Nurse GUI

In this picture below there is showing three different video footages of three different web cameras at a time. We have only three webcam available for this project. So here we are able to show three video footages of three cameras.

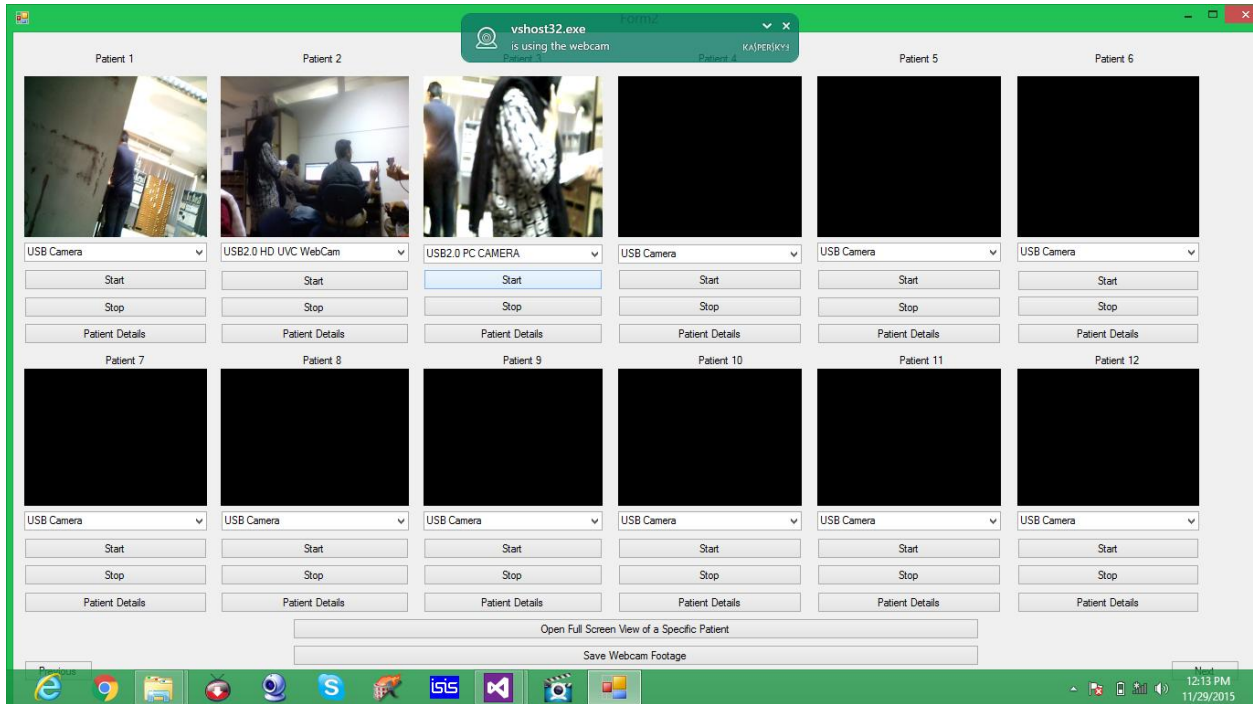


Fig 3.9: Showing different Video Footages

When the central nurse station will be monitoring the patients, sometimes she need to view a particular patient in a big screen, so that she can observe the patient more closely and more properly. For this case, we have created a button which can maximize the videos. The button we are using for this purpose is named as “open full screen view of a specific patient”.

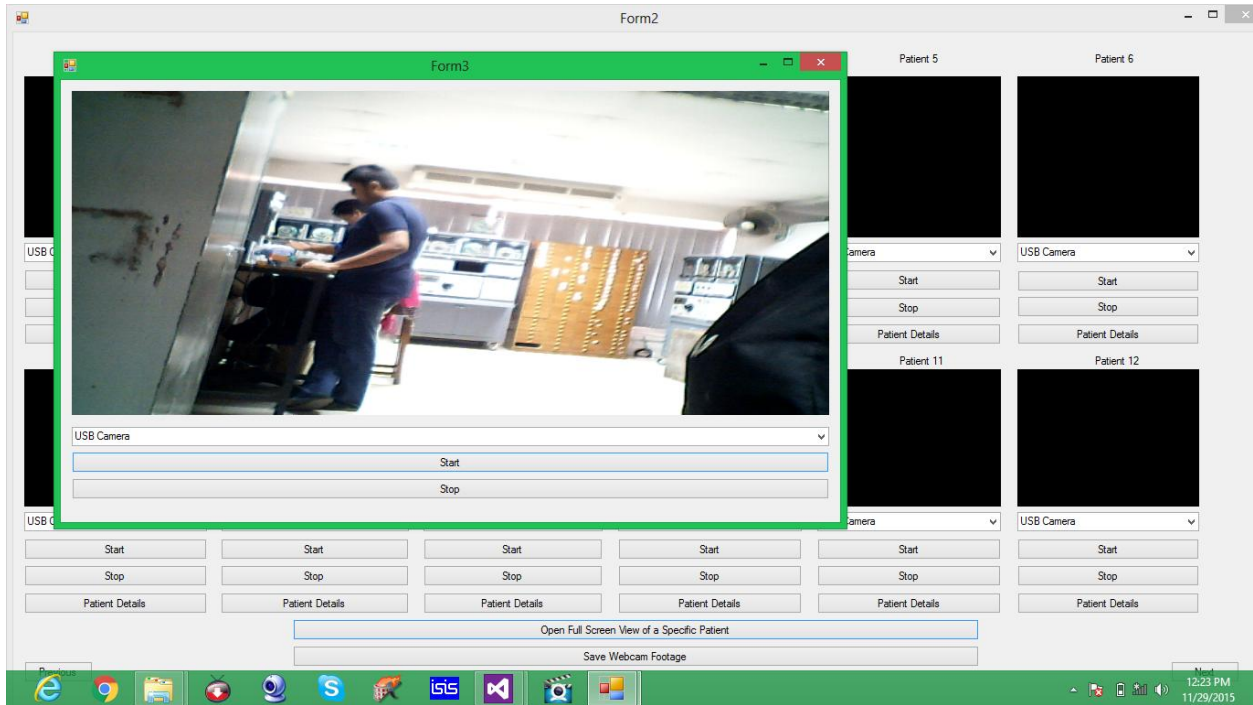


Fig 3.10: Full Screen View of a Particular Webcam

Sometimes nurse needs to save the video footages of a patient. So that she can consult with a doctor about the patient condition with the help of saved video footages. We have created a button named as “Save Webcam Footage”. By clicking this button a different window will appear where we can save video footage. For saving video footage we are using different video recorder software. We can save one webcam footage or multiple webcam footages at a time. These saved videos will be saved in a different folder into the using laptop for this project. We can save many videos at a single time. That depends on the recorder software.

In the figure below, video is saving. On the right side of the picture there are three different boxes of videos where Red mark is indicating that these three video footages are saving.

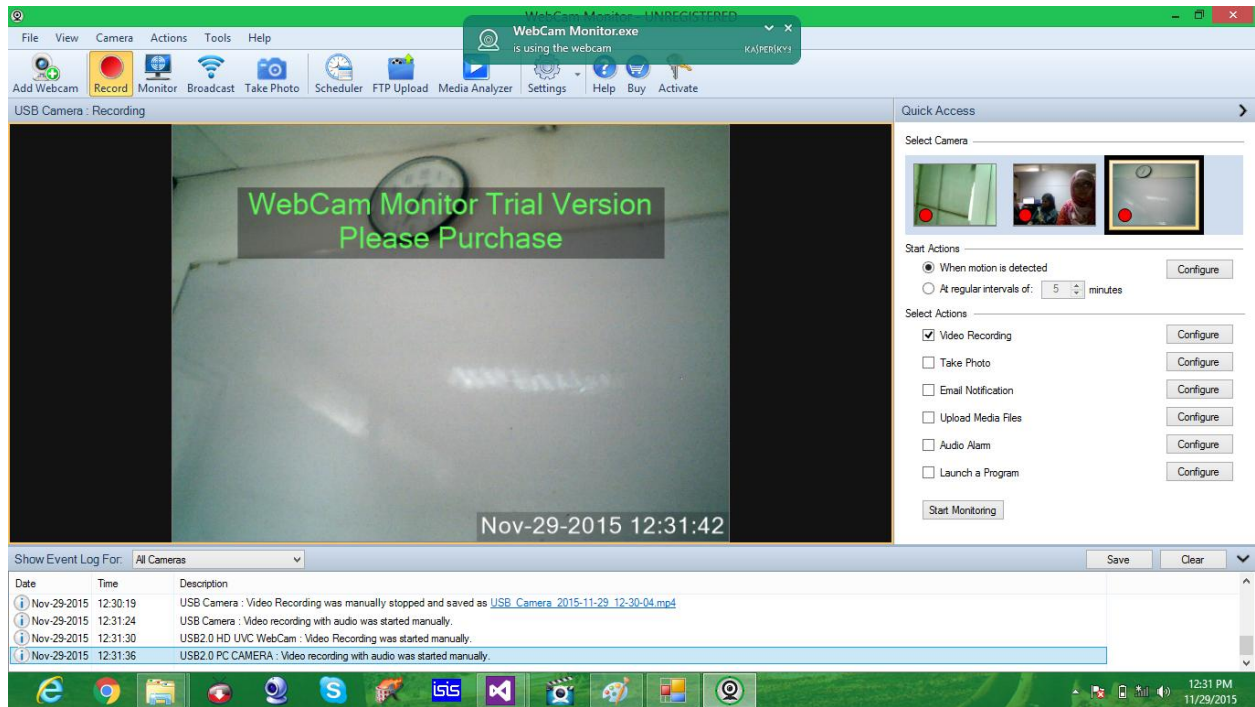


Fig 3.11: Video Saving

The other button which is named as Patient Details in the front page will be carrying the patient data sheet and alarm system. There will be a brief explanation of the data sheet and the alarm system into the next sections. Data sheet will be carrying the basic health readings of the patients and Alarm system will help the nurse about patient’s proper medication time.

3.4 Data sheet:

Data sheet of the patients will be containing the common basic health readings. The data sheet we have designed for the old age people will be added to the nurse laptop. And central nurse station can see the datasheet from their computer. The nurse will enter the data in an access file which will be saved. And the data will be retrieved in GUI we have made. The data sheet contains edit, add, save and remove options which can be done in the access file. We are using Microsoft access 2007 for entering and saving the data in the datasheet. Data sheet will be

containing the vital signs machine parameters. Such as: temperature, pressure, blood pressure, oxygen saturation and pulse rate. For each patient there will be individual data sheet in access file. And that access file will be linked with the GUI. Code for the data sheet is provided on Appendix E.

A picture of data sheet containing basic health readings is given below.

ID	Date of	Time (hour)	Temperature (F)	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)	Oxygen Saturation (%)	Pulse Rate (bpm)
1	12/8/2015	1100	99	135	70	95	75
2	12/8/2015	1600	100	130	70	95	75
3	12/9/2015	1100	99	134	73	97	78
4	12/9/2015	1600	99	136	76	97	78
5	12/14/2015	1100	98	135	75	97	78
6	12/14/2015	1600	98	135	75	97	78
7	12/14/2015	1200	98	140	80	96	80
8	12/14/2015	1700	99	138	77	96	85
*(New)							

Fig 3.12: Data Sheet

3.5 Alarm System:

The alarm system works as a reminder for the nurse. As in old age home all are aged people, so for providing them time to time medication this system will be very useful. The individual alarm

system will be available in each patients tab. The alarm system can be set for a particular time period after which a message will pop-up. Nurse can set the message by herself. If she needs to give a particular medicine to a patient she can set the medicine name into the message box. As example, suppose a patient needs NAPA tablet after 30 minutes from the current time. The nurse can set the alarm for 30 minutes and can write the medicine name “NAPA” into the message box. Nurse can add multiple medicine names in one box. The message box will appear with a specific sound or voice tape. The sound for the alarm can be set from any folder of the computer in use. In this way she will not forget the medicine timing and will also give the proper medicine on time. In the Alarm system the name of the form is changed into Reminder for Medicine. Separate boxes for Alarm time and Medicine name will be provided. We have designed two alarm systems together. One for medicine name and another for Doctor’s visit timing. Multiple alarms can be added according to the client requirement .Appendix D contains the design code of the alarm system.

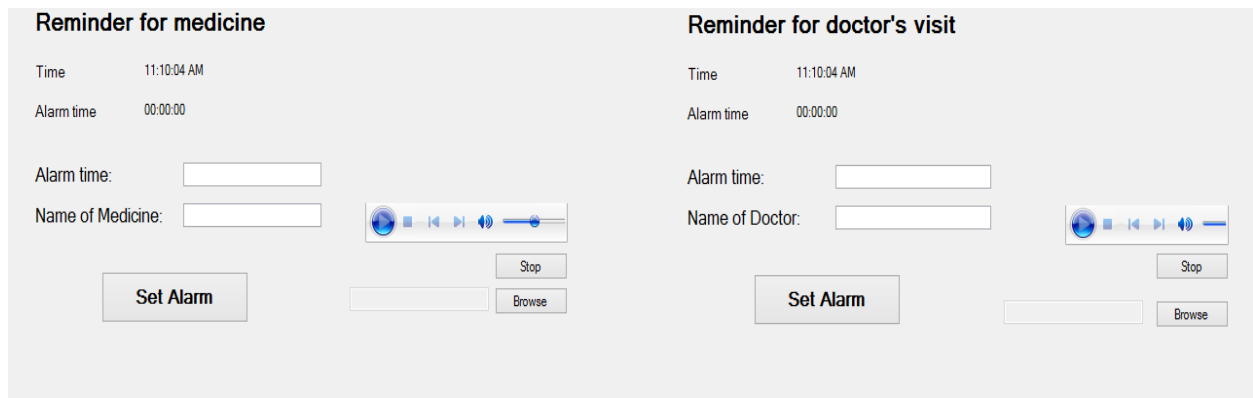


Fig 3.13: Alarm System

When nurse want to set an alarm in the alarm system she needs to put the time in the Alarm time box. And write the name of the medicine into the Name of medicine box. Then nurse have to press the SET Alarm button. Alarm will be set then.

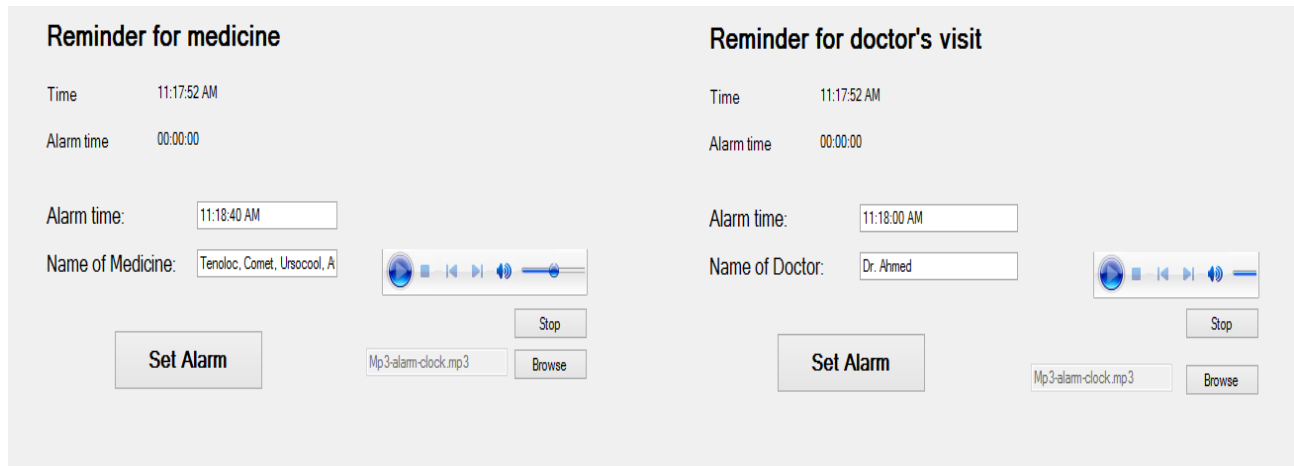


Fig 3.14: Alarm Setup

When the Alarm time and the current time will be matched then the message box will pop up and the alarm system will be successful. It will show what the nurse will write in the box. The figure: 3.15 below are showing the name of the medicine required by the patient.

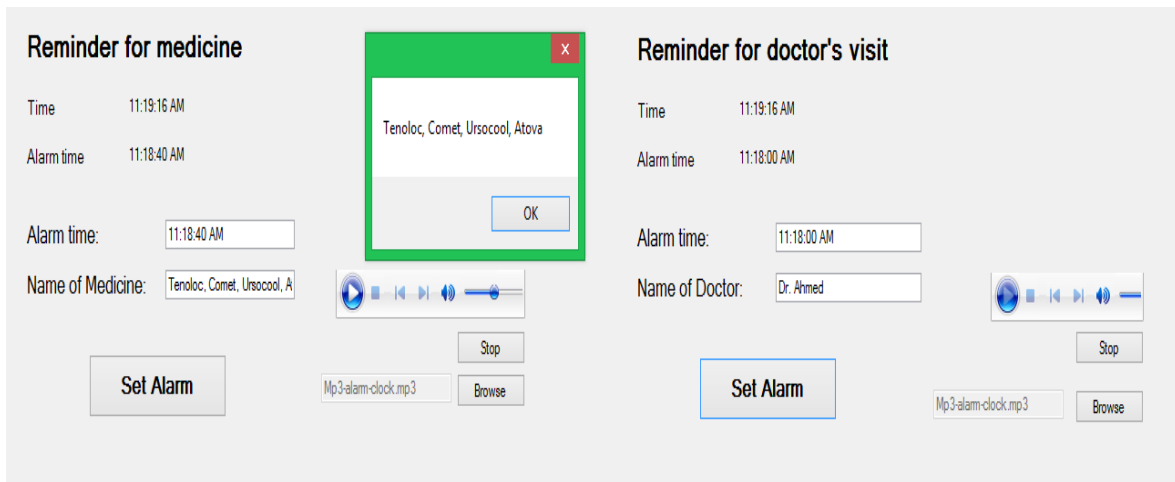


Fig 3.15: Successful Alarm System

Chapter 4:

Passing of GUI:

Passing the data and webcam footage from nurse laptop to central nurse station monitor is one of the important parts of our project. We are passing the whole graphical user interface (GUI) from one laptop to different laptops or computer. This process is done with the help of Team Viewer software. Via this software one computer can access data of another computer. In our project we are using two computers, one for station nurse and another for the central nurse station. The nurse will enter the basic health readings into the data sheet and the data will be stored in there. When the central nurse station needs to retrieve the data of patients they will access the nurse laptop with Team Viewer software. Both computers need the team viewer software to be installed beforehand. When the central nurse station wants to overview the webcam footage or the patient data she will establish a connection between nurse laptop and central nurse computer. In that case, nurse laptop will have a user id and password given by team viewer team. This password and user id will be given to central nurse station. They will put the exact password and user id to their computers team viewer software, after that the connection will be established. And central nurse station can access the file of patient's data sheet and patient tab. This is how the GUI will pass into the system.

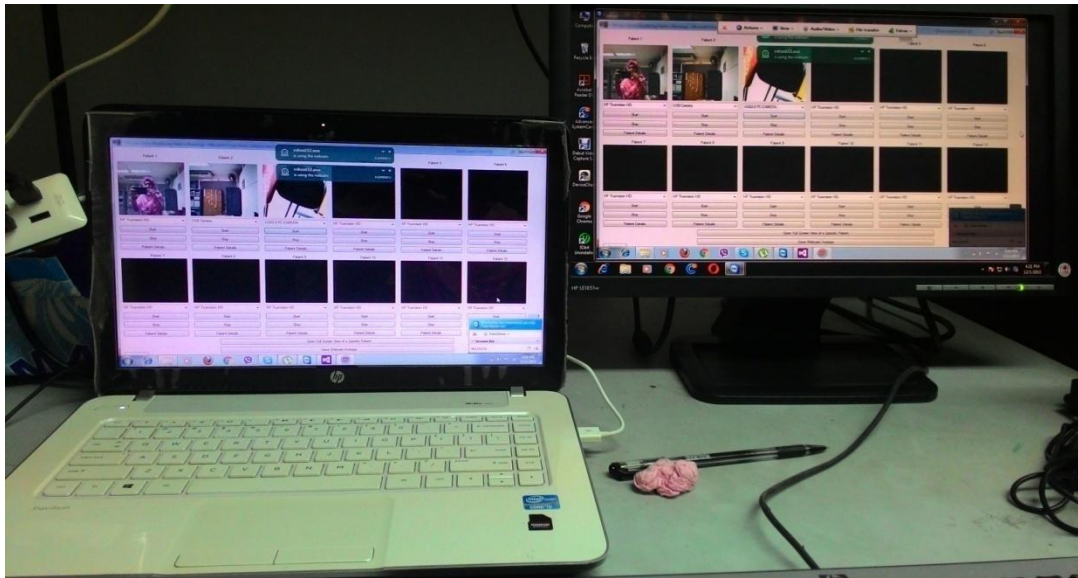


Fig 4.1: passing of GUI

Chapter 5

Result:

The basic health readings from vital signs machine are taken by the nurse will be entered in Microsoft office Access 2007. Here data will be saved. And data of the patient can be added, remove or edit if necessary. In the figure below a single patient’s data has been added in access file.

ID	Date of	Time (hour)	Temperature (F)	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)	Oxygen Saturation (%)	Pulse Rate (bpm)			
1	12/8/2015	1100	99	135	70	95	75			
2	12/8/2015	1600	100	130	70	95	75			
3	12/9/2015	1100	99	134	73	97	78			
4	12/9/2015	1600	99	136	76	97	78			
5	12/14/2015	1100	98	135	75	97	78			
6	12/14/2015	1600	98	135	75	97	78			
7	12/14/2015	1200	98	140	80	96	80			
8	12/14/2015	1700	99	138	77	96	85			
* (New)										

Fig 5.1: Access file data sheet

The data which are entered into the Access file will be saved. And data can be retrieved from the GUI we have developed. A button in the GUI named “Load Table”. After clicking the Load table button the GUI will retrieve all the data from the Access file. In the figure below data sheet retrieved pictures are given.



Fig 5.2: Data Sheet in GUI before loading table

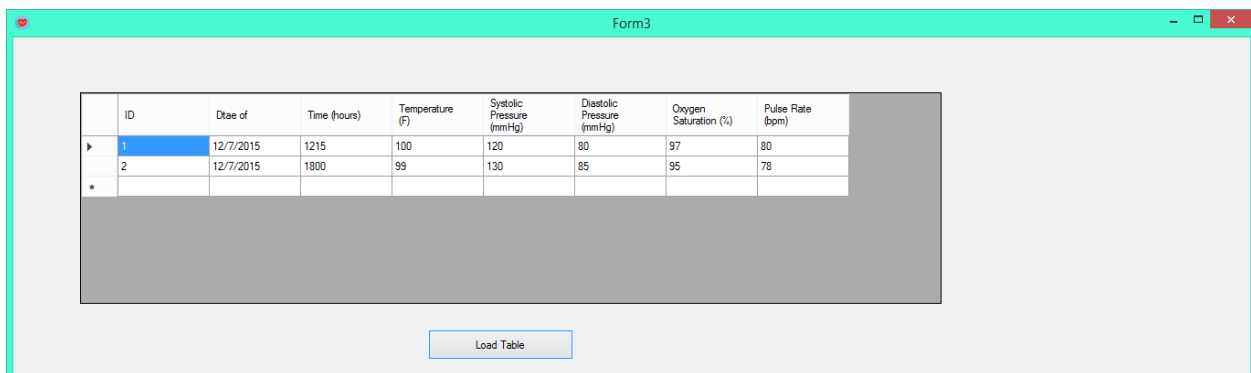


Fig 5.3: Data Retrieved

After retrieved the data we can refreshed the datasheet. In the figure below refresh of data table is added. Here we have added one more data in the access file. After that retrieving of data are successful.

The screenshot shows a web application window titled "Form3" with a table of patient data. The table has 8 columns: ID, Date, Time (hours), Temperature (F), Systolic Pressure (mmHg), Diastolic Pressure (mmHg), Oxygen Saturation (%), and Pulse Rate (bpm). The first three rows of data are visible, with the first row highlighted in blue. Below the table is a "Load Table" button.

ID	Date	Time (hours)	Temperature (F)	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)	Oxygen Saturation (%)	Pulse Rate (bpm)
1	12/7/2015	1215	100	120	80	97	80
2	12/7/2015	1800	99	130	85	95	78
3	12/10/2015	1753	98	130	80	95	80

Load Table

Fig 5.4: Data Sheet after refresh

Chapter 6:

Conclusion:

6.1 Limitation:

We managed to complete our goal successfully though it has some limitations. So, we managed to note down our limitations in this project. While doing the project we faced some problems. Firstly, Recording of video footages is one of them. When we want to record any video footage, at first we need to stop that particular webcam footage. Then we can record the video by pressing the video recording button. Without stopping the webcam footage we were not able to save the video. Furthermore, when we want to view the full screen video we also have to press the stop button. Then we are able to make it full screen.

Secondly, According to the design of our GUI we have 12 web cameras. These web cameras have their own default name. When this camera will be opened simultaneously the nurse need to choose every individual camera in the combo box. Default name of the cameras were really tough to memorize. If the camera name can be changed according to Patient number than it will be very easy to recognize. The webcam we are using for our project does not have the option to rename it, as different webcam differs with different features and production line.

Solution for the saving part is that we need a webcam which have multiple features. We need Webcam which will be open in multiple software and in multiple windows. To make the video footage full screen view without stopping it we need wired high featured webcam. And for changing the name of the webcam we need higher featured webcam.

6.2 Future work:

We have a better scope with our project. The project we have designed is for the old age homes in the Perspective of Bangladesh. In the future initially, our project can be implemented in the hospitals for the monitoring purpose of the patients. As the hospitals also required nurse and central nurse station. Moreover the basic health readings are also a part of daily health checkup of the patients.

Secondly, we want to Add ECG in the data sheet. Hospitals required ECG in their daily health checkup for the heart patients. So, ECG will be a part of our daily health base data sheet.

Lastly, we want to modify the GUI passing system. We want to create a webpage with a fixed URL and IP number. In this system our whole GUI will be set into the webpage. The nurse will be able to add the readings into the webpage. The other person who wants to view the datasheet will open the webpage and then can access the file easily. With addition to that, our will is to obtain wireless data from medical wrist band without the help of medical observer.

Reference:

[1] Tuesday, 10 April 2012, The elderly in Bangladesh: does anybody care for them?<http://syedmasudahmed.blogspot.com/2012/04/elderly-in-bangladesh-does-anybody-care.html>

[2] F. Islam, F. Chowdhury, F. Shabnam, "Software implementation of the central solar battery charging station (CSBCS)", BRAC university, EEE Dept, Summer 2012.

[3] https://en.wikipedia.org/wiki/Vital_signs

[4] <http://www.mayoclinic.org/symptoms/hypoxemia/basics/definition/sym-20050930>

[5] <https://en.wikipedia.org/wiki/Webcam>

[6] https://en.wikipedia.org/wiki/USB_hub

[7] https://en.wikipedia.org/wiki/Microsoft_Visual_Studio

[8] https://en.wikipedia.org/wiki/TeamViewer#cite_note-14

Appendix A

Codes for the software:

Built in visual studio 2012 under C# Environment

Code for Login Page:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
namespace Old_Age_Home_Monitoring_Station
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }
        private void button1_Click(object sender, EventArgs e)
        {
            this.Close();
        }
        private void button2_Click(object sender, EventArgs e)
        {
            string a = textBox1.Text;
            string b = textBox2.Text;
            if (a == "user10")
            {
                if (b == "pass10")
                {
                    MessageBox.Show("login is successful");
                    this.Hide();
                    Form2ss = new Form2();
                    ss.Show();
                }
            }
            else
            {
                MessageBox.Show(" password is incorrect ");
            }
            else
            {
                MessageBox.Show("username is inccorect");
            }
        }
    }
}
```

```
}  
}
```

Appendix B

Code for webcam footage:

```
using System;  
using System.Collections.Generic;  
using System.ComponentModel;  
using System.Data;  
using System.Drawing;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;  
using System.Windows.Forms;  
  
using AForge.Video;  
using AForge.Video.DirectShow;  
  
namespace Old_Age_Home_Monitoring_Station  
{  
  
    public partial class Form3 : Form  
    {  
  
        private FilterInfoCollection videoDevices;  
        private VideoCaptureDevice videoSource;  
        public Form3()  
        {  
  
            InitializeComponent();  
  
        }  
  
        private void Form3_Load(object sender, EventArgs e)  
        {  
  
            videoDevices = new FilterInfoCollection(FilterCategory.VideoInputDevice);  
  
            foreach (FilterInfo device in videoDevices)  
            {  
                comboBox1.Items.Add(device.Name);  
            }  
  
            comboBox1.SelectedIndex = 0;  
            videoSource = new VideoCaptureDevice();  
  
        }  
  
        private void button1_Click(object sender, EventArgs e)
```

```
{
videoSource = newVideoCaptureDevice(videoDevices[comboBox1.SelectedIndex].MonikerString);
videoSource.NewFrame += videoSource_NewFrame;
videoSource.Start();

}

voidvideoSource_NewFrame(object sender, NewFrameEventArgseventArgs)
{

Bitmap image = (Bitmap)eventArgs.Frame.Clone();
pictureBox1.Image = image;
}

privatevoid button2_Click(object sender, EventArgs e)

{

videoSource.Stop();
pictureBox1.Image = null;
pictureBox1.Invalidate();

}
}
```


Appendix C

Code for patient tab:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

using AForge.Video;
using AForge.Video.DirectShow;
using System.IO;
using System.Diagnostics;

namespace Old_Age_Home_Monitoring_Station
{
    public partial class Form2 : Form
    {
        private FilterInfoCollection videoDevices;
        private VideoCaptureDevice videoSource;
        private VideoCaptureDevice videoSource1;
        private VideoCaptureDevice videoSource2;
        private VideoCaptureDevice videoSource3;
        private VideoCaptureDevice videoSource4;
        private VideoCaptureDevice videoSource5;
        private VideoCaptureDevice videoSource6;
        private VideoCaptureDevice videoSource7;
        private VideoCaptureDevice videoSource8;
        private VideoCaptureDevice videoSource9;
        private VideoCaptureDevice videoSource10;
        private VideoCaptureDevice videoSource11;

        public Form2()
        {
            InitializeComponent();
        }

        private void Form2_Load(object sender, EventArgs e)
        {
            videoDevices = new FilterInfoCollection(FilterCategory.VideoInputDevice);

            foreach (FilterInfo device in videoDevices)
            {
                comboBox1.Items.Add(device.Name);
                comboBox2.Items.Add(device.Name);
                comboBox3.Items.Add(device.Name);
                comboBox4.Items.Add(device.Name);
            }
        }
    }
}
```

```

comboBox5.Items.Add(device.Name);
comboBox6.Items.Add(device.Name);
comboBox7.Items.Add(device.Name);
comboBox8.Items.Add(device.Name);
comboBox9.Items.Add(device.Name);
comboBox10.Items.Add(device.Name);
comboBox11.Items.Add(device.Name);
comboBox12.Items.Add(device.Name);
    }
    comboBox1.SelectedIndex = 0;
    comboBox2.SelectedIndex = 0;
    comboBox3.SelectedIndex = 0;
    comboBox4.SelectedIndex = 0;
    comboBox5.SelectedIndex = 0;
    comboBox6.SelectedIndex = 0;
    comboBox7.SelectedIndex = 0;
    comboBox8.SelectedIndex = 0;
    comboBox9.SelectedIndex = 0;
    comboBox10.SelectedIndex = 0;
    comboBox11.SelectedIndex = 0;
    comboBox12.SelectedIndex = 0;
videoSource = newVideoCaptureDevice();
videoSource1 = newVideoCaptureDevice();
videoSource2 = newVideoCaptureDevice();
videoSource3 = newVideoCaptureDevice();
videoSource4 = newVideoCaptureDevice();
videoSource5 = newVideoCaptureDevice();
videoSource6 = newVideoCaptureDevice();
videoSource7 = newVideoCaptureDevice();
videoSource8 = newVideoCaptureDevice();
videoSource9 = newVideoCaptureDevice();
videoSource10 = newVideoCaptureDevice();
videoSource11 = newVideoCaptureDevice();

}

privatevoid button1_Click(object sender, EventArgs e)
{
videoSource = newVideoCaptureDevice(videoDevices[comboBox1.SelectedIndex].MonikerString);
videoSource.NewFrame += videoSource_NewFrame;
videoSource.Start();

}

voidvideoSource_NewFrame(object sender, NewFrameEventArgseventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
pictureBox1.Image = image;

}

privatevoid button2_Click(object sender, EventArgs e)
{
videoSource.Stop();
pictureBox1.Image = null;
}

```

```

pictureBox1.Invalidate();
    }

privatevoid button4_Click(object sender, EventArgs e)
{
    videoSource1 =
newVideoCaptureDevice(videoDevices[comboBox2.SelectedIndex].MonikerString);
    videoSource1.NewFrame += videoSource1_NewFrame;
videoSource1.Start();
}

void videoSource1_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
    Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox2.Image = image;
}

privatevoid button7_Click(object sender, EventArgs e)
{
    videoSource2 =
newVideoCaptureDevice(videoDevices[comboBox3.SelectedIndex].MonikerString);
    videoSource2.NewFrame += videoSource2_NewFrame;
videoSource2.Start();
}

void videoSource2_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
    Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox3.Image = image;
}

privatevoid button10_Click(object sender, EventArgs e)
{
    videoSource3 =
newVideoCaptureDevice(videoDevices[comboBox4.SelectedIndex].MonikerString);
    videoSource3.NewFrame += videoSource3_NewFrame;
videoSource3.Start();
}

void videoSource3_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
    Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox4.Image = image;
}

```

```

privatevoid button13_Click(object sender, EventArgs e)
{
    videoSource4 =
newVideoCaptureDevice(videoDevices[comboBox5.SelectedIndex].MonikerString);
    videoSource4.NewFrame += videoSource4_NewFrame;
videoSource4.Start();
}

void videoSource4_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox5.Image = image;
}

privatevoid button16_Click(object sender, EventArgs e)
{
    videoSource5 =
newVideoCaptureDevice(videoDevices[comboBox6.SelectedIndex].MonikerString);
    videoSource5.NewFrame += videoSource5_NewFrame;
videoSource5.Start();
}

void videoSource5_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox6.Image = image;
}

privatevoid button19_Click(object sender, EventArgs e)
{
    videoSource6 =
newVideoCaptureDevice(videoDevices[comboBox7.SelectedIndex].MonikerString);
    videoSource6.NewFrame += videoSource6_NewFrame;
videoSource6.Start();
}

void videoSource6_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox7.Image = image;
}

privatevoid button22_Click(object sender, EventArgs e)
{

```

```

        videoSource7 =
newVideoCaptureDevice(videoDevices[comboBox8.SelectedIndex].MonikerString);
        videoSource7.NewFrame += videoSource7_NewFrame;
videoSource7.Start();

    }

void videoSource7_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox8.Image = image;

}

privatevoid button25_Click(object sender, EventArgs e)
{
        videoSource8 =
newVideoCaptureDevice(videoDevices[comboBox9.SelectedIndex].MonikerString);
        videoSource8.NewFrame += videoSource8_NewFrame;
videoSource8.Start();

    }

void videoSource8_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox9.Image = image;

}

privatevoid button28_Click(object sender, EventArgs e)
{
        videoSource9 =
newVideoCaptureDevice(videoDevices[comboBox10.SelectedIndex].MonikerString);
        videoSource9.NewFrame += videoSource9_NewFrame;
videoSource9.Start();

    }

void videoSource9_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox10.Image = image;

}

Privatevoid button31_Click(object sender, EventArgs e)
{
        videoSource10 =
newVideoCaptureDevice(videoDevices[comboBox11.SelectedIndex].MonikerString);
        videoSource10.NewFrame += videoSource10_NewFrame;
videoSource10.Start();

```

```

}

void videoSource10_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
    Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox11.Image = image;
}

private void button34_Click(object sender, EventArgs e)
{
    videoSource11 =
    new VideoCaptureDevice(videoDevices[comboBox12.SelectedIndex].MonikerString);
    videoSource11.NewFrame += videoSource11_NewFrame;
    videoSource11.Start();
}

void videoSource11_NewFrame(object sender, NewFrameEventArgs eventArgs)
{
    Bitmap image = (Bitmap)eventArgs.Frame.Clone();
    pictureBox12.Image = image;
}

private void button5_Click(object sender, EventArgs e)
{
    videoSource1.Stop();
    pictureBox2.Image = null;
    pictureBox2.Invalidate();
}

private void button8_Click(object sender, EventArgs e)
{
    videoSource2.Stop();
    pictureBox3.Image = null;
    pictureBox3.Invalidate();
}

private void button11_Click(object sender, EventArgs e)
{
    videoSource3.Stop();
    pictureBox4.Image = null;
    pictureBox4.Invalidate();
}

private void button14_Click(object sender, EventArgs e)

```

```

    {
    videoSource4.Stop();
        pictureBox5.Image = null;
    pictureBox5.Invalidate();
    }

privatevoid button17_Click(object sender, EventArgs e)

    {
    videoSource5.Stop();
        pictureBox6.Image = null;
    pictureBox6.Invalidate();
    }

privatevoid button20_Click(object sender, EventArgs e)

    {
    videoSource6.Stop();
        pictureBox7.Image = null;
    pictureBox7.Invalidate();
    }

privatevoid button23_Click(object sender, EventArgs e)

    {
    videoSource7.Stop();
        pictureBox8.Image = null;
    pictureBox8.Invalidate();
    }

privatevoid button26_Click(object sender, EventArgs e)

    {
    videoSource8.Stop();
        pictureBox9.Image = null;
    pictureBox9.Invalidate();
    }

privatevoid button29_Click(object sender, EventArgs e)

    {
    videoSource9.Stop();
        pictureBox10.Image = null;
    pictureBox10.Invalidate();
    }

privatevoid button32_Click(object sender, EventArgs e)

    {
    videoSource10.Stop();
        pictureBox11.Image = null;
    pictureBox11.Invalidate();
    }

```

```

    }

privatevoid button35_Click(object sender, EventArgs e)
{
    videoSource11.Stop();
    pictureBox12.Image = null;
    pictureBox12.Invalidate();
}

privatevoid button38_Click(object sender, EventArgs e)
{
    byte[] myfile = Properties.Resources.WebCam_Monitor_6;
    File.WriteAllBytes("C:\\Users\\MehrinSikander\\Desktop\\New folder\\WebCam Monitor
6.lnk", myfile);
    MessageBox.Show("Your File isExtracted to Desktop Folder", "Information");
    Processpross = newProcess();
    pross.StartInfo.FileName = "C:\\Users\\Mehrin Sikander\\Desktop\\New folder\\WebCam
Monitor 6.lnk";
    pross.Start();
}

privatevoid button37_Click(object sender, EventArgs e)
{
    Form f1 = newForm3();
    f1.Show();
}

privatevoid button3_Click(object sender, EventArgs e)
{
    Form f1 = newForm4();
    f1.Show();
}

privatevoid button6_Click(object sender, EventArgs e)
{
    Form f1 = newForm5();
    f1.Show();
}

privatevoid button9_Click(object sender, EventArgs e)
{
    Form f1 = newForm6();
    f1.Show();
}

privatevoid button12_Click(object sender, EventArgs e)
{

```



```

Form f1 = newForm7();
f1.Show();
    }

privatevoid button15_Click(object sender, EventArgs e)
    {
Form f1 = newForm8();
f1.Show();
    }

privatevoid button18_Click(object sender, EventArgs e)
    {
Form f1 = newForm9();
f1.Show();
    }

privatevoid button21_Click(object sender, EventArgs e)
    {
Form f1 = newForm10();
f1.Show();
    }

privatevoid button24_Click(object sender, EventArgs e)
    {
Form f1 = newForm11();
f1.Show();
    }

privatevoid button27_Click(object sender, EventArgs e)
    {
Form f1 = newForm12();
f1.Show();
    }

privatevoid button30_Click(object sender, EventArgs e)
    {
Form f1 = newForm13();
f1.Show();
    }

privatevoid button33_Click(object sender, EventArgs e)
    {
Form f1 = newForm14();
f1.Show();
    }

privatevoid button36_Click(object sender, EventArgs e)
    {
Form f1 = newForm15();
f1.Show();
    }
    }
}

```

Appendix D

Code for Alarm System:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Old_Age_Home_Monitoring_Station
{
    public partial class Form4 : Form
    {
        public Form4()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            label12.Text = textBox2.Text;
        }

        private void timer1_Tick(object sender, EventArgs e)
        {
            label11.Text = DateTime.Now.ToString("HH:mm:ss tt");
            if (label11.Text == label12.Text)
            {
                MessageBox.Show(textBox8.Text);
            }
        }
    }
}
```

Appendix E

Code for patient data sheet:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
using System.Data.OleDb;

namespace Old_Age_Home_Monitoring_Station
{
    public partial class Form4 : Form
    {
        private OleDbConnection connection = new OleDbConnection();
        public Form4()
        {
            InitializeComponent();
            connection.ConnectionString = @"Provider=Microsoft.ACE.OLEDB.12.0;Data
Source=C:\Users\User\Desktop\New folder (3)\DataSheet.accdb";
        }

        private void button1_Click(object sender, EventArgs e)
        {
            label12.Text = textBox2.Text;
        }

        private void timer1_Tick(object sender, EventArgs e)
        {
            label11.Text = DateTime.Now.ToString("HH:mm:ss tt");
            if (label11.Text == label12.Text)
            {
                axWindowsMediaPlayer1.URL = music;
                MessageBox.Show(textBox8.Text);
            }
        }

        }
        string music;
        private void button6_Click(object sender, EventArgs e)
        {
            OpenFileDialog open = new OpenFileDialog();
            if (open.ShowDialog() == DialogResult.OK)
            {
                music = open.FileName;
                textBox9.Text = open.SafeFileName;
            }
        }
    }
}
```

```

}

private void button7_Click(object sender, EventArgs e)
{
    axWindowsMediaPlayer1.Ctlcontrols.stop();
    timer1.Stop();
}

private void button10_Click(object sender, EventArgs e)
{
    label18.Text = textBox12.Text;
}
string music1;
private void button9_Click(object sender, EventArgs e)
{
    OpenFileDialog open = new OpenFileDialog();
    if (open.ShowDialog() == DialogResult.OK)
    {
        music1 = open.FileName;
        textBox10.Text = open.SafeFileName;
    }
}

private void button8_Click(object sender, EventArgs e)
{
    axWindowsMediaPlayer2.Ctlcontrols.stop();
    timer2.Stop();
}

private void timer2_Tick(object sender, EventArgs e)
{
    label19.Text = DateTime.Now.ToString("HH:mm:ss tt");
    if (label19.Text == label18.Text)
    {
        axWindowsMediaPlayer2.URL = music;
        MessageBox.Show(textBox11.Text);
    }
}

private void btnLoadTable_Click(object sender, EventArgs e)
{
    try
    {
        connection.Open();
        OleDbCommand command = new OleDbCommand();
        command.Connection = connection;
        string query = "select * from Patient:";
        command.CommandText = query;
        OleDbDataAdapter da = new OleDbDataAdapter(command);
        DataTable dt = new DataTable();
        da.Fill(dt);
        dataGridView1.DataSource = dt;

        connection.Close();
    }
    catch (Exception ex)
    {

```

```
        MessageBox.Show("Error " + ex);
    }
}

private void Form4_Load(object sender, EventArgs e)
{
    try
    {
        connection.Open();
        OleDbCommand command = new OleDbCommand();
        command.Connection = connection;
        string query = "select ID from Patient:";
        command.CommandText = query;

        OleDbDataReader reader = command.ExecuteReader();
        connection.Close();

    }
    catch (Exception ex)
    {
        MessageBox.Show("Error " + ex);
    }
}
}
```