PROJECT REPORT

ON

Digital Rumina

SUBMITTED TO

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)
(A Govt.Aided UGC Autonomous & NAAC Accredited Institute, Estd. 1957)

IN PARTIAL FULFILLMENT FOR THE AWARD OF DEGREE
OF
BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE & ENGINEERING

2018-2019

UNDER THE GUIDANCE OF

PROF.VIKAS SEJWAR
DEPT. OF CSE & IT

SUBMITTED BY

ABHIJEET SHUKLA (0901CS151001)
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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)
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DECLARATION

The Project report Titled "**Digital Rumina**" which is being submitted in the partial fulfillment of the requirement of award of Bachelor of Engineering in Computer Science & Engineering, is a record of own work carried by me under the supervision of **Prof. Vikas Sejwar sir**.

To the best of my knowledge, the presented project report has not been submitted for the award of any other diploma or degree certificate.

ABHIJEET SHUKLA(0901CS151001)
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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)
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CERTIFICATE

This is to certify that **Abhijeet Shukla and Aditya Kanade** students of Bachelor of Engineering, Computer Science & Engineering, of Madhav Institute of Technology & Science, Gwalior have completed their Final Semester project entitled "**Digital Rumina**". They have submitted a satisfactory project report for the award of Degree of Bachelor of Engineering in Computer Science & Engineering.
To the best of my knowledge, the presented project report has not been submitted for the award of any other diploma or degree certificate.

Under the Guidance of:

(PROF. VIKAS SEJWAR SIR)
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DEPT.OF CSE & IT

Approved By:

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ACKNOWLEDGEMENT

Preparing any project requires views of many people but we suspect that technical projects are more different than others. A great many people are involved in various stages of the project preparation who shared their knowledge and experience.

Before we get into thick of thing we would like to add a few heartfelt words for the people who are part of this project in numerous ways people who gave un-ending support right from the stage idea was conceived.

It is our proud privilege to express a deep sense of gratitude and regard to our Project Guide Prof.Vikas Sejwar (Dept.Of CSE & IT) for the opportunity, He has given us for carrying out the project. His initiative, keen interest expert guidance at every step provided a constant source of inspiration and encouragement to us for intense studies in the subject. We are deeply indebted to his.

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Our sincere thanks to all those who directly or indirectly helped us in the development and evolution of thoughts.

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ABSTRACT / सार

एक छात्र या एक शैक्षिक प्रणाली का हिस्सा होने के नाते स्वयं एक जिम्मेदारी का काम है, और खुद को मुख्य रूप से सही दिशा में एक छात्र के रूप में व्यक्त करना किसी भी अन्य तरह की जिम्मेदारी से महत्वपूर्ण है क्योंकि यह आपको अपनी महत्वाकांक्षा के करीब एक कदम की ओर ले जाता है।

अपनी महत्वाकांक्षा की दिशा में शुरू करने के लिए यह मुश्किल होगा बिना किसी उचित मार्गदर्शन और टूलसेट के और मुख्य समस्या तब उत्पन्न होती है जब हम किसी छात्र या किसी अन्य व्यक्ति को शैक्षिक प्रणाली में उपकरण और अन्य आवश्यक चीजों को प्राप्त करने की पारंपरिक प्रक्रिया के बारे में सोचते हैं क्योंकि चीजों को मैन्युअल रूप से प्राप्त करना बहुत अधिक समय और ऊर्जा की खपत प्रक्रिया है।

आपके घर पर स्थापित एक एप्लिकेशन इस बीच सभी समस्याओं को हल कर सकता है, बिना किसी शैक्षिक प्रणाली में छात्र या किसी अन्य व्यक्ति के मूल्यवान समय और ऊर्जा तक पहुंच के बिना, कुछ क्लिक के माध्यम से अपने व्यक्तिगत डिवाइस तक पहुंचने के लिए दिशा में पहुंच सकता है। मूल रूप से अपने घर के बाहर एक कदम सही चीजों के बिना।

यह परियोजना एक अन्य शैक्षिक प्रणाली में छात्रों की मदद करने के लिए गृह सुरक्षा और होम ऑटोमेशन में एक अनैच्छिक आर्डिनो प्लेटफॉर्म आधारित हार्डवेयर सेटअप पेश करती है।

CHAPTER-1
INTROODUCTION

Security system is very much important in daily life. It is very important to keep record of the who entered in the room, activities performed by that person after entering in the room and things like that. This seems easy to implement by installing surveillance cameras. The problem that come here is that this surveillance cameras remains on continuously even when there is no need to. This not only use lot of resources but degree of efficiency is reduced to some extent here as it makes inefficient use of resources plus the cost of overall system is also very high. In our project named as Digital Rumina, we aim to elicit some of this problem with the help of Internet of Things.

This project is a simple application of IoT.This system is very easy to implement plus is cost effective as compared to traditional security system. It can be installed anywhere after performing some of the necessary tweaks. This system eliminates need of surveillance cameras to remain on deliberately instead it makes efficient use of all these resources. For this we have use IR sensor to automate the recording feature with all the necessary logic installed to count the entry of a person. Plus, user is also provided with fully controlled automation system which usually can be controlled by mobile with the help of Bluetooth. This system is a small version of working architectural model of the real security system which can easily be converted to real one by using device like relay. Future version of the project includes Face recognition of a person who has entered into the room, online access to the recorded video, restricting project to respond only an entry of a person.

CHAPTER-2
SYSTEM ANALYSIS

2.1 SystemObjectives

To automate the surveillance cameras. To record all the activities performed by an intruder. Automate the control of the system with the help of Bluetooth. Avoid recording partial entry (when entry is not done completely) of a person. Efficient utilization of resources. Alarming whenever an entry is made (which is very much useful in night).

2.2 Connection to External Environment

This venture helps in two noteworthy angles –

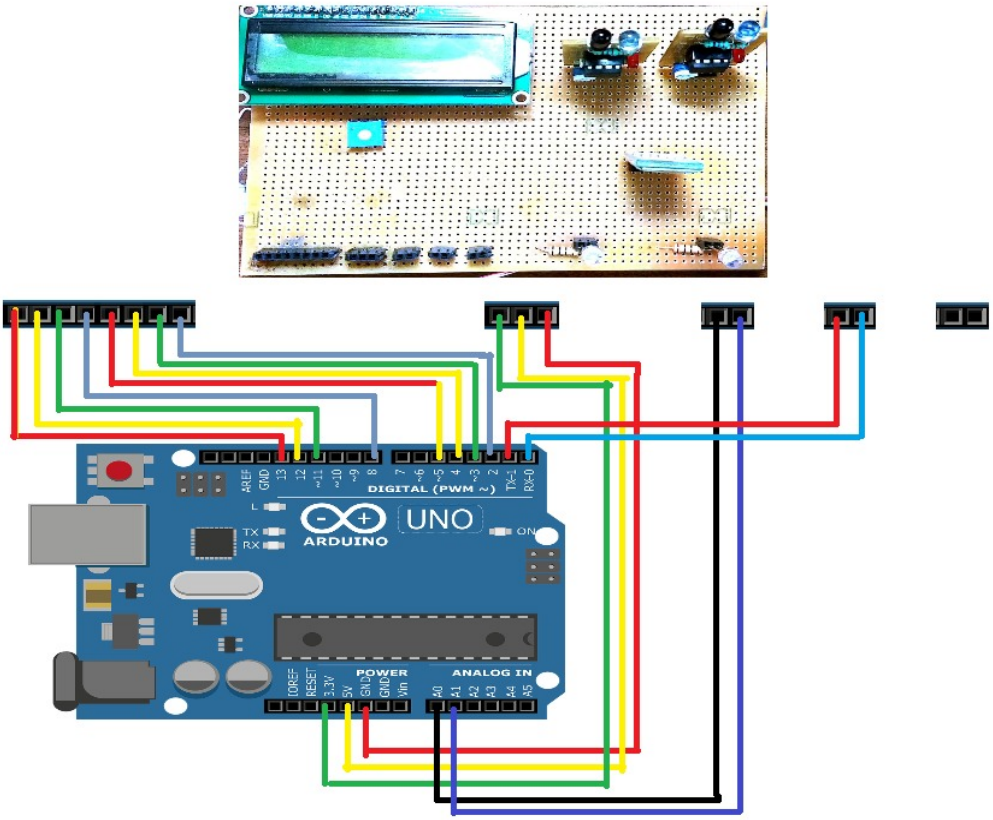
- It helps user to have knowledge of all the entries made in a room including activities performed by that particular intruder
- It also helps the Admin to control the system with the help of a Bluetooth.

2.3 DesignConsiderations

Approach:

The programming language used in the project is **PYTHON,OpenCV**and microcontroller used for the project is **Arduino Uno**. It is a microcontroller board made by Arduino.cc and subject to Atmega328.Webcam of laptop is used for recording the activities and all the recordings are stored in the laptop itself.

2.4 SystemArchitecture



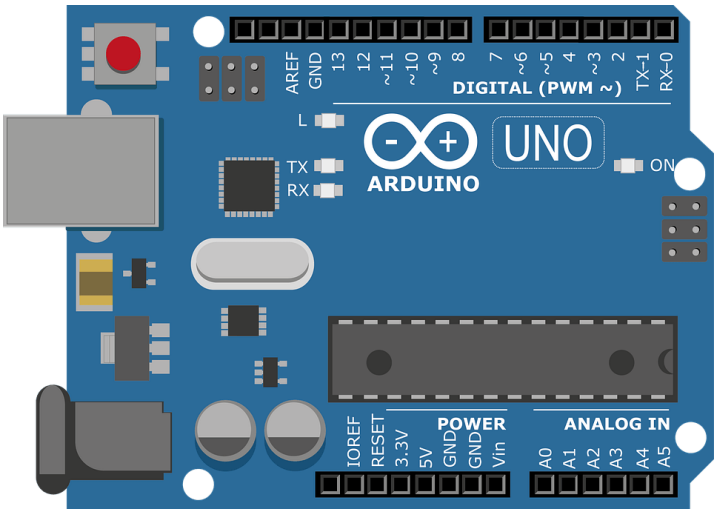
CHAPTER-3

SYSTEM SPECIFICATION

3.1 Hardware requirements

1. **Arduino Uno:**

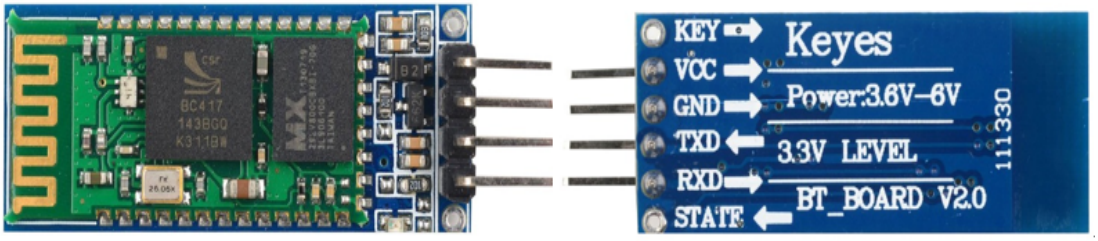
   It is a microcontroller board made by Arduino.cc and subject to Atmega328. This heap up goes with the majority of the places of interest necessary to launch the controller and be able to be really linked by Personal computer with the help of USB interface which is used to replace code to controller utilizing IDE coding, transcendently made to line up Arduino. Integrated Development Environment is likewise faultless regarding Linux Systems, MAC or Windows, whatever happens or may have happened., Windows is likable in most of the cases. Coding tongues



   genrally C and C++ , they used in IDE.

2. **Bluetooth Module HC-06:**

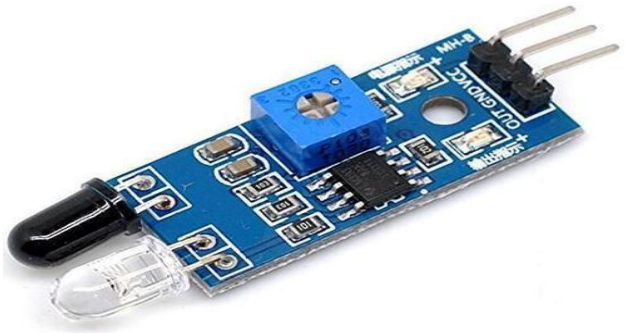
   This Bluetooth module can without a lot of a stretch achieve successive remote data communication. Its working repeat is between the nearly all notable 2.4GHz ISM repeat band (for instance Mechanical, consistent and therapeutic). It grasps Bluetooth 2.0+EDR standard. The 2.0 version of Blutooth, banner broadcast instant of poles apart contraptions stays at a 0.5 seconds between time with the objective that the extraordinary weight of bluetooth chip can be diminished altogether and all the all the more resting time can be set something aside regarding the bluetooth. Its 2.0 version is position through successive interface, that is definitely user friendly also improves general structure/advancementcycle.



Front Back

3. **Infrared (IR) sensor:**

IR,that is called as Infrared Sensor which is an electronic contraption, which transmits used to identify a few pieces of our earth. Infrared sensor , quantify shine of article also sees development. Sensors like these, detect the ir radiation, in its place of oozing it which is termed a disengaged Infrared sensing device. In the range of IR, major part ooze a some sort of radiations that are warm. Radiation like these are not visible by our naked eyes but can be detected by IR sensors. Its process is in a general sense an Infrared Light Emitting Diode after that marker is essentially Infrared photodiode that is subtle to Infrared light of an equivalent wavelength as which gets discharged with Infrared Light Emitting Diode. Precisely as photodiode comes in contact with Infrared light, securities and which results in in voltage difference, vary in the range of Infrared light.



4. **Breadboard:**

The breadboard a solderless equipement which is short lived model with equipment and test circuit plans. The majority electronic portions in electronic circuits can be interconnected by embeddings their leads or terminals into the holes and a while later construction relationship through wires where reasonable. The breadboard has bits of metal base the board and partner the opening on most astounding purpose of board. The metal strips are extend out as showed up pursues. Noting that top , base sections of openings related on dimension plane and split in inside while remainder of holes related vertically.

5. **LED's:**

Driven (Light Emitting Diode) is a two terminal semiconductor device. The handiness

of LED is as same as would be normal diode anyway it transmits light when current experiences it. It is used in most of the electronic circuits as a sign or visual depiction to the regular human to understand that circuit is working suitably. We have some portion of employments using LEDs. They are used in business putting away, Electronic contraptions, appears, night lights, etc.

6. **16x2 LCD:**

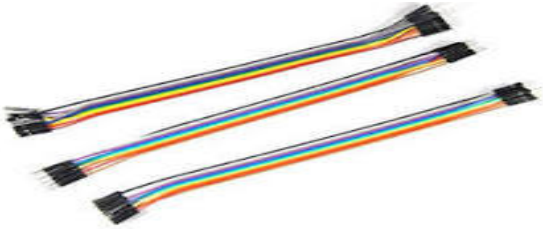
Liquid Crystal Display that is generally called as LED Screen a presentation module which is electronic, locates broad degree in uses. The 16x2 Liquid Crystal Display demonstrate is extraordinarily key component and is all around reliably utilized in different gadgets and circuits. All the components are bolstered extra with respect to 7 sections, additional multi territory Liquid Crystal Display. The 16x2 Liquid Crystal Display induces Liquid Crystal Display demonstrate certain characters which are in the range of 16 in horizontal and 2 in vertical. Liquid Crystal Display's every character have pixel of 5*7 cross segment. There are 2 registers in Liquid Crystal Display, data and command. Bearing guidelines are stored in the solicitation register that is given to the Liquid Crystal Display . A course is demeanor provided to Liquid Crystal Display regarding completing task which is predetermined like seting up in position, screen clearing, managing the position of cursor, management, etc. There is an another register that information register and those all of its stored information get presented on Liquid Crystal Display. ASCII evaluation are the source of information, that LCD display. Capture for getting interior structure of a LCD.

7. **Resistors:**

Resistors oppose the progression of power and the higher the estimation of the resistor, the more it opposes and the less electrical flow will move through it. We are going to utilize this to control how much power courses through the LED and hence how brilliantly it sparkles.

8. **Jumper Wires:**

The main teature of jumper wires is that they have a connecting pins on thir ends,with the help of it they interface with other devices and in this process there is no need to attachment . Now thet are genrally used with breadboard , it is why because, it easy to use it and remove it.Really major. In all honesty, it do not obtain by and large additional focal with respect to jumper wires. There are basically 3 types



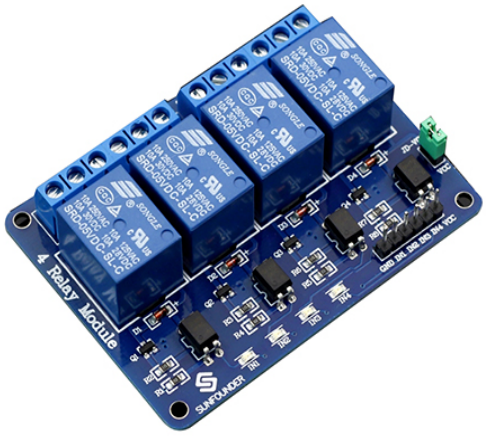
of jumper wire: male-to-female, female-to-female ,male-to-male, .Now complexity among each is finally reason for wire. In this, male terminations contain stick anticipating which interface with stuff, on the other side female completions do not which used to associate stuff to. Specifically Male-to-male jumper wires are the the majority perceived. In connecting jumper wires to breadboard there is only 2 breadboards ports come in the use.

9. **Potentiometer:**

A 3-terminal resistor, in which we can regulate the voltage by turning or sliding is a potentiometer.The two terminals are connected to +ve and –ve terminal and the third one is a variable resirtor. Such a deviceis known as potentiometer. A potensiometer used as per calculating voltage; region is utilization of an essentially indistinguishable rule, in this way its name.

10. **5V relay with 4 Channel:**

It is of 5V and having 4 channels a board used for interface, the requirement of channels is 15-20mA driver rehashing plan. This device is used for dealing with machines that have current in wide range. Relay is designed to be used in 10A or 250V alternating current. Here microcontroller controls it easily because its interface is standard.



3.2 Software requirements

Programming's can be characterized as projects which keep running on our PC. it go about as oil in the vehicle.

It gives the connection between the human and a PC. It is essential to run programming to work the PC. Different programming's are required in this undertaking for its advancement.

Following are the software or programming languages used in the project—

Operating system — Windows 7, 8, 10.
Others — Arduino IDE, Python 3.6, OpenCV.

CHAPTER-4

TESTING

Glen Myers expresses various guidelines that can work well for as testing goals. Testing is process to execute a program with the belief of discovery of fault. We can test our undertaking utilizing different strategies however the primary target is that when:-

1. The Search Engine page should render legitimately.

2. On looking through the one of a kind id the Script should bring the comparing information.

3. Profile ought to showed effectively with right information.

4. Professional or Admin board ought to have the capacity to refresh criminal status information according to the interesting ID.

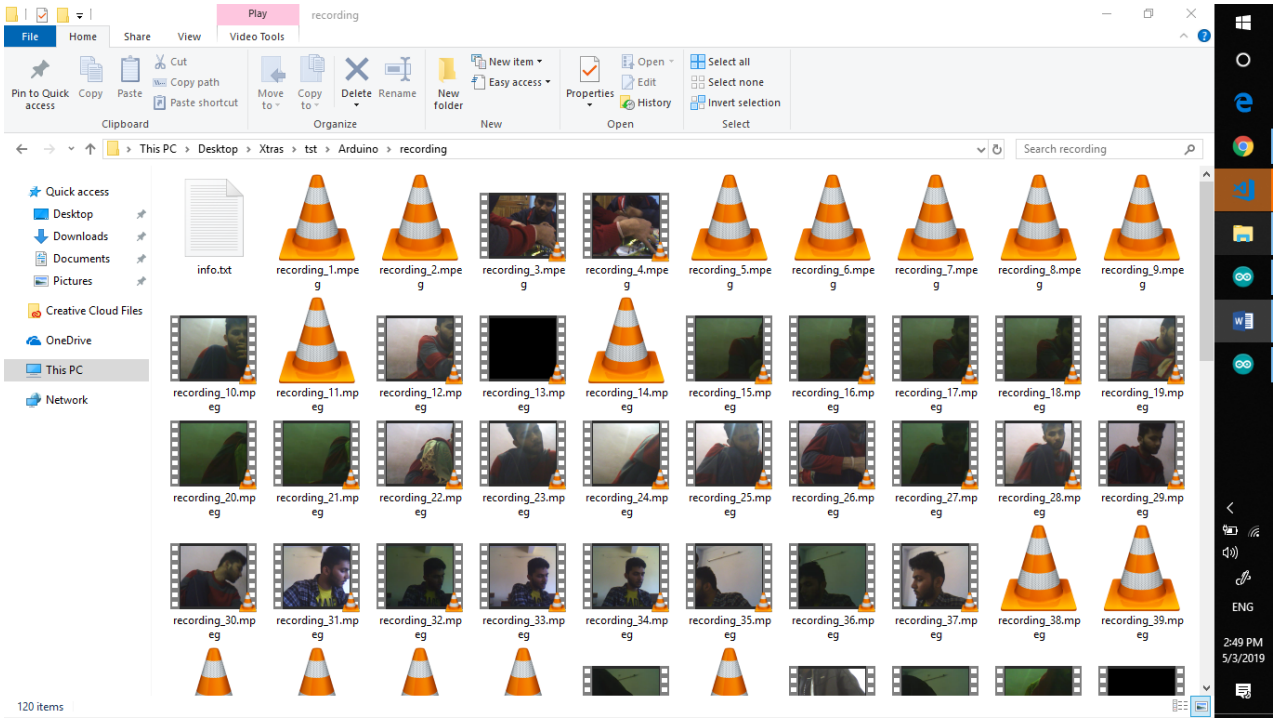


Figure 1 Testing whether the recorded video is being recorded at the specified place and is correct with respect to frame rate etc

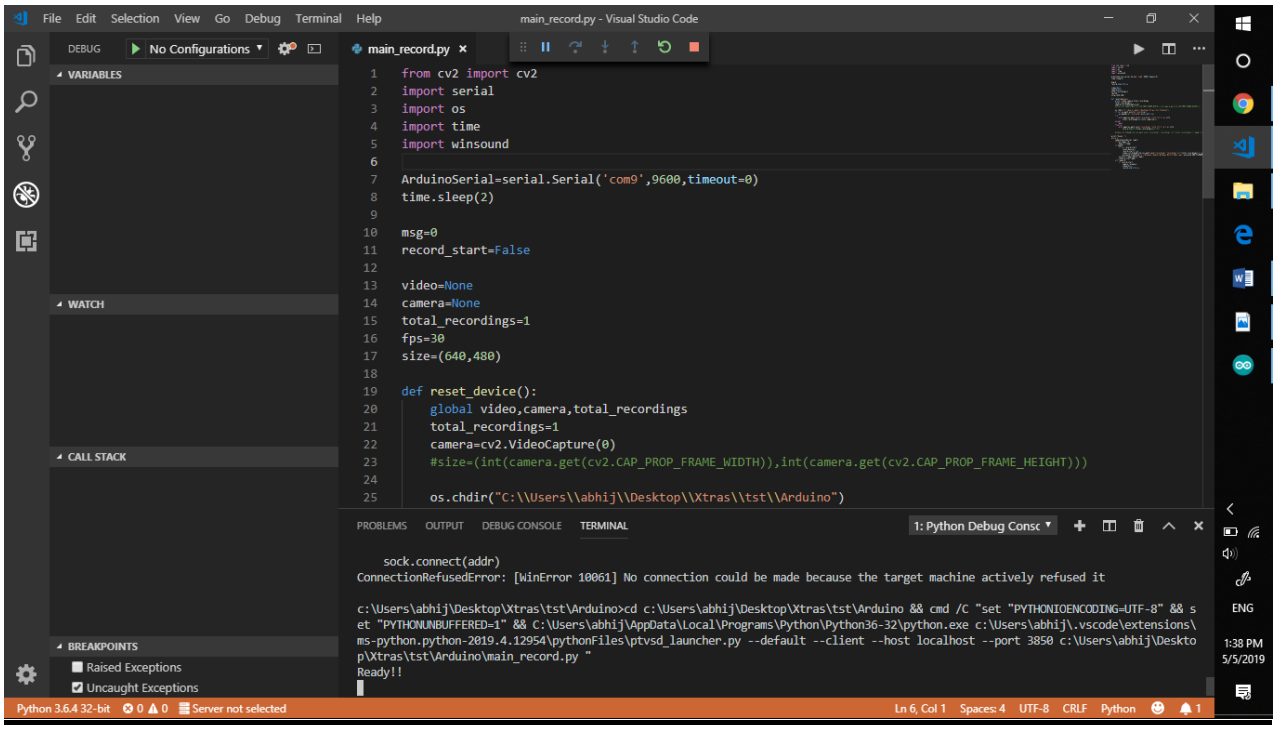


Figure 2 Using Visual Studio Code debugger for testing the code

CHAPTER-5
SYSTEM IMPLEMENTATION AND MAINTENANCE

5.1 Implementation

Usage is a crucial advance in guaranteeing the accomplishment of new framework even a very much structured framework can fizzle on the off chance that it's anything but a legitimately actualized. Execution exercises are expected to change a recently formed data framework into an operational framework for end clients.

5.2 Maintenance and Support

When a framework is completely actualized and being worked by end client and the upkeep work starts

Framework support is the checking to assessing and changing of operational data framework to make alluring or vital enhancements. For instance, the execution of another framework for the most part results in the wonder known as the expectation to absorb information. Individual who works & use the framework will commit errors essentially in light of the fact that they are curious about it despite the fact that such mistakes typically decreased experience is picked up with another framework, they do call attention to regions where framework might be improved. Upkeep is likewise important for the disappointments and issues that emerge amid the task of a framework. The support action incorporates a post usage of a framework audit procedure to guarantee that recently actualized framework meets the framework improvement objective built up for them. Mistakes in the advancement of a framework must be remedied by the support procedure. This incorporates an occasional survey or review of a framework to guarantee on working framework & meeting its goal.

After deployment we can provide following maintenance and support :-

i)We will provide support for correcting python related error in user PC.

ii) We will correct all hardware related functionality i.e. camera ports, webcametc.

iii) We will add more functionality to the software according to the user need if agreed in agreement.

iv) We will maintain the integrity of software by checking all bugs and fixing those bugs periodically.

v) We will maintain all the recorded files and will try to store it if some unpredictable crash occurs.

CHAPTER-6
CONCLUSION

Our project finally makes the tedious security system optimal and effective with the help of IoT applications.

Activities of the person are recorded and stored in the any of the storage device desired and can be looked up anytime later. Providing features like alarm makes system more effective during night. It only turns on the surveillance cameras when desired else surveillance cameras remain off which is one of the major steps in efficiently utilizing resources.

CHAPTER-7

FUTURE WORKS

Future version of the project includes:

- Face recognition of a person who has entered into the room.
- Online access to the recorded video.
- Restricting project to respond only on an entry of a person.
- Using relay to automate the electrical equipment
- Online storage of recorded video in cloud.
- Sending alert SMS to the admin regarding entry of a person in the room.
- Allowing multiple entry at the same time.

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- **RefrencedBooks:-**

[1] OpenCV: Computer Visions project with Python by Joseph Howse

THANK YOU