American International University – Bangladesh (AIUB)

Faculty of Engineering

Department of CSE, EEE, and CoE

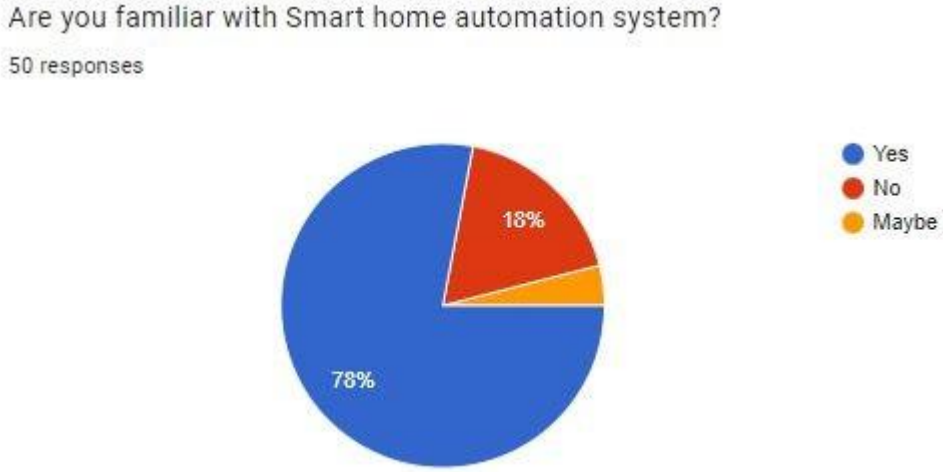
EEE4103 MICROPROCESSOR AND EMBEDDED SYSTEM

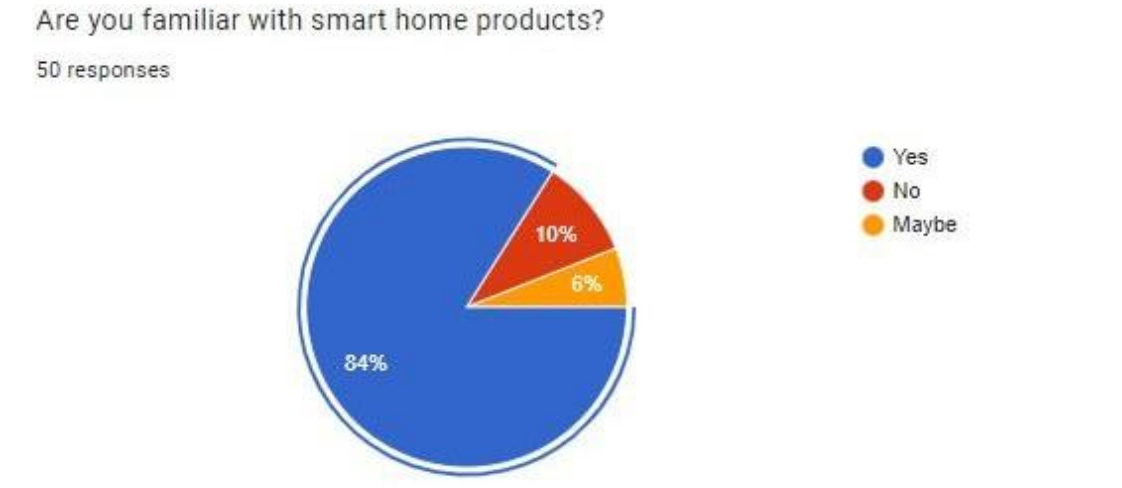
COURSE PROJECT PROPOSAL FORM

SEMESTER: SPRING 2022-2023

PROJECT TITLE: Arduino Uno-Based Smart Home Automation System

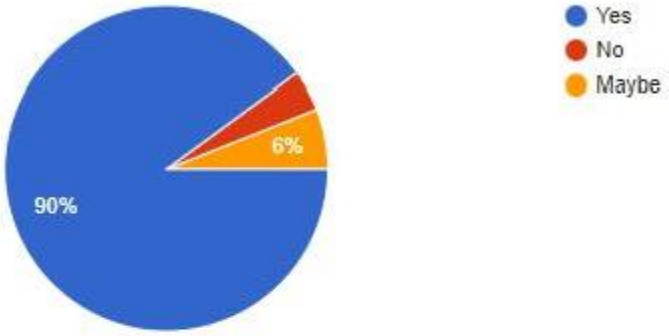
Survey to develop a process for complex engineering problems considering cultural and societal factors (use pie chart):





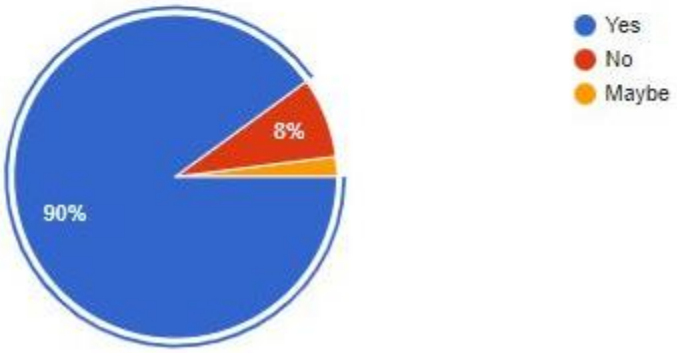
Have you ever faced any incident of forget to turn off the electronic items in you house?

50 responses



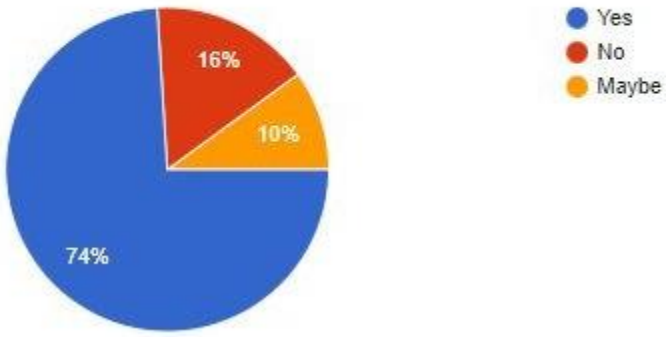
Do you want to use such a system which will detect the turn on condition of the electronic devices ?

50 responses



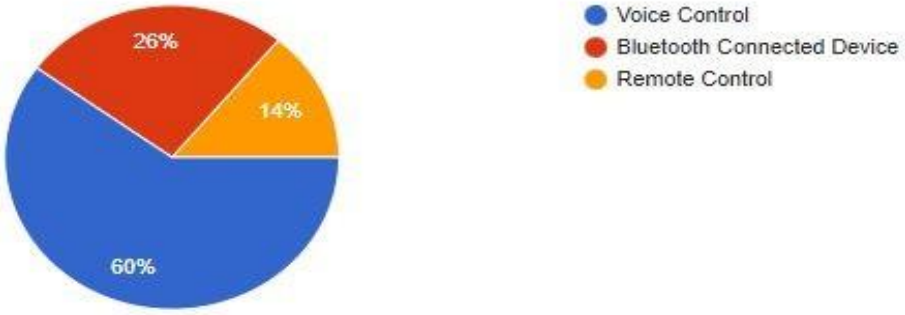
Have you faced the incident of overflow of water?

50 responses



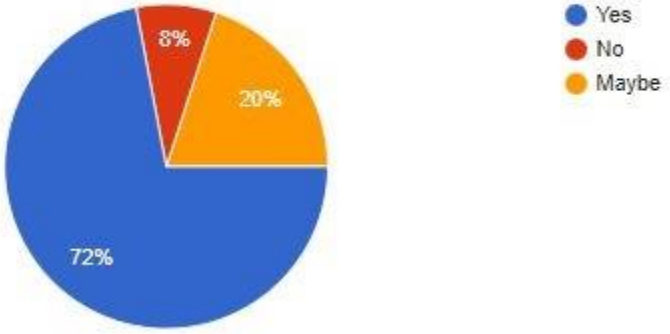
How do you want to control your home automation system ?

50 responses



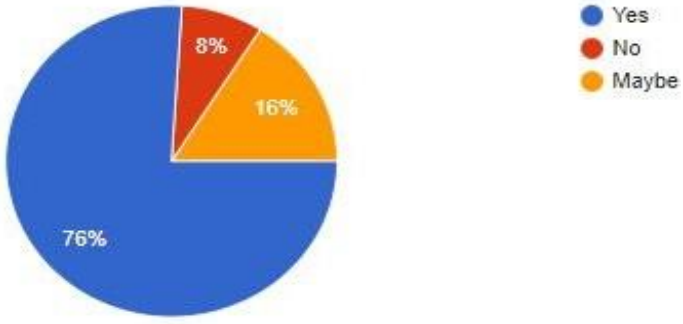
Do you think this feature can save electricity?

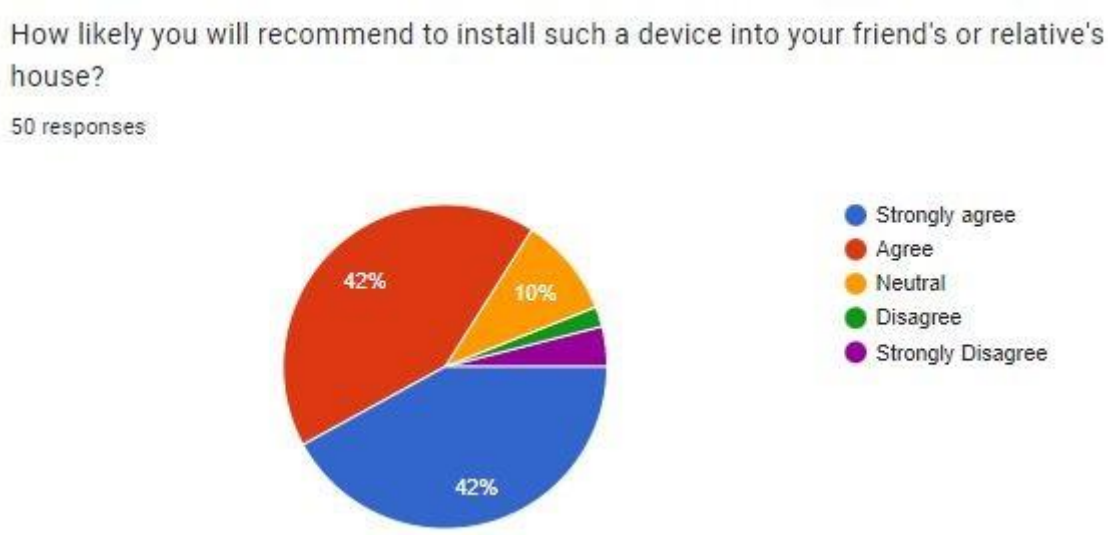
50 responses



Would you like to buy a Smart home automation System?

50 responses





AIMS AND OBJECTIVES OF THE PROJECT:

- The main objective of this project is to develop a home automation system using an Arduino board with Bluetooth to be remotely controlled by any Android smartphone. From controlling the room lights, fan & Door with your smartphone to scheduling events to occur automatically, home automation has taken convenience to a whole new level.

- As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control systems, involving remote-controlled switches. Presently, conventional wall switches located in different parts of the house make it difficult for the user to go near them to operate. Even more, it becomes more difficult for the elderly or physically handicapped people to do so.

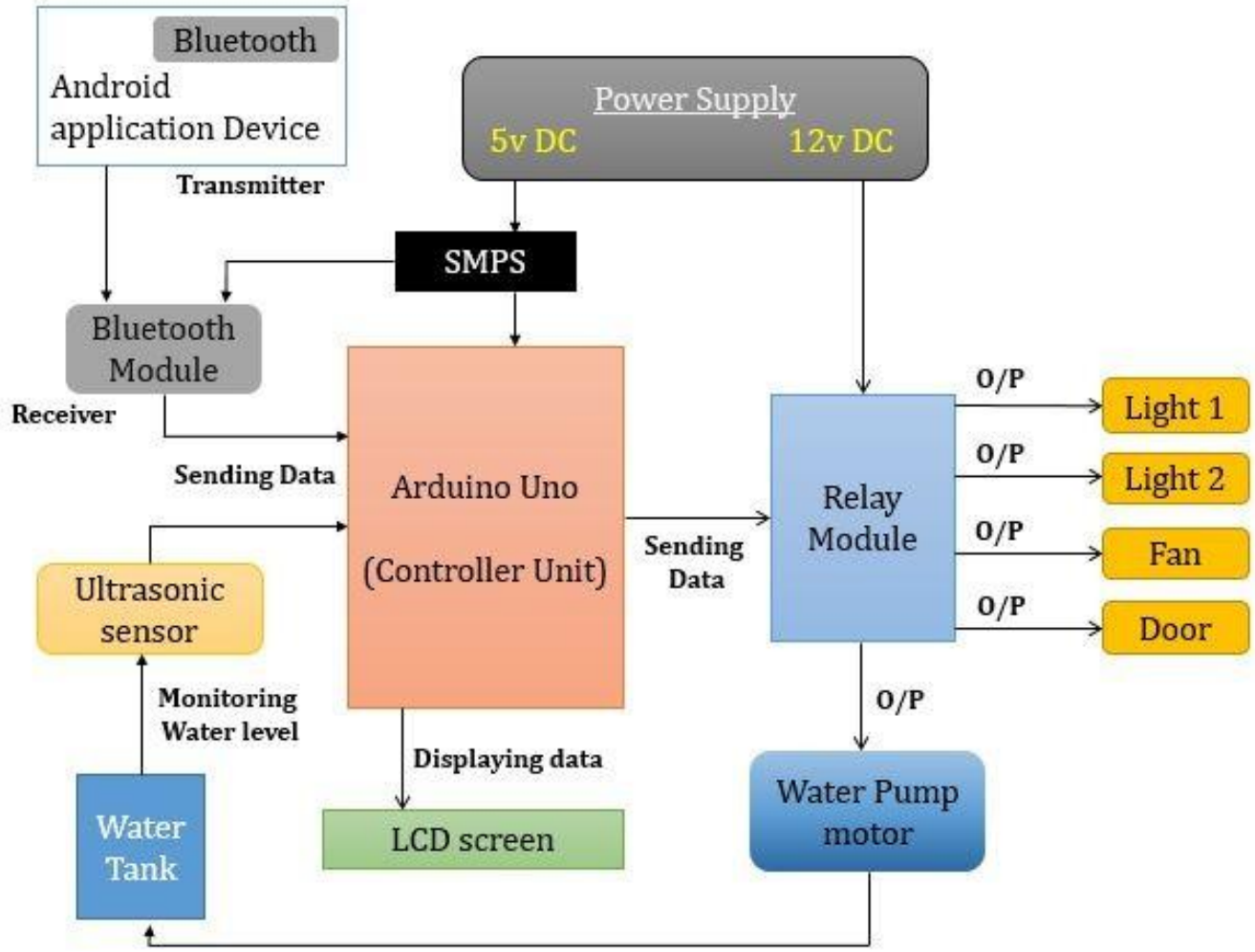
- In this project we will also make a water level indicator to monitor and manage water levels in a water tank.The control panel can also be programmed to automatically turn on a water pump once levels get too low and refill the water back to the adequate level which will also solve the water overflowing problem.

- The core hardware is rather simple and only consists of an Arduino Uno microcontroller kit, a Bluetooth wireless module, and Relay Module.

From our project, people will be benefited in so many ways. The benefits of this technology are mentioned below-

- Easy Installation
- Minimal maintenance
- Save money by using less electricity & water
- Monitoring and controlling remotely
- Convenience and Compact Design
- Safe & Secured

EXPERIMENTAL BLOCK DIAGRAM:



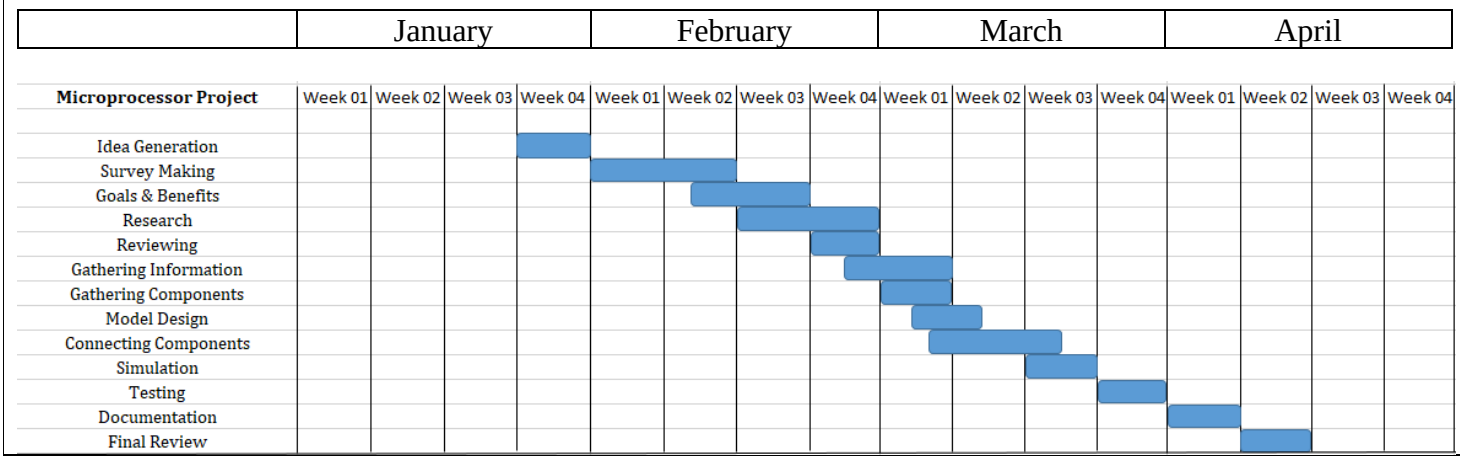
POSSIBLE OUTCOMES OF THE PROJECT:

There are several possible outcomes of our project based on an Arduino Uno-based Smart Home Automation System. Here are some examples of our outcomes of the project:

1. **Remote control of lights and appliances:** The Arduino Uno can be used to control lights, fans, and other appliances in your home remotely using your smartphone or other devices. This allows us to turn off lights or appliances that you may have forgotten to switch off before leaving your home.
2. **Temperature and humidity monitoring:** By using sensors with the Arduino Uno, we can monitor the temperature and humidity levels in our home. This information can be used to automate our air conditioning or heating systems, ensuring that our home is always at a comfortable temperature.
3. **Motion detection and security:** The Arduino Uno can also be used to detect motion in our home, triggering alerts or activating cameras for security purposes. We can also set up the system to turn on lights automatically when someone enters a room, for added convenience and security.
4. **Voice control:** By integrating our Smart Home Automation System with a voice assistant like Amazon Alexa or Google Assistant, we can control our lights and appliances using voice commands. This allows for the hands-free operation of our home automation system.
5. **Energy monitoring and management:** The Arduino Uno can be used to monitor energy usage in our home, allowing us to identify areas where we can reduce energy consumption and save money on our utility bills. We can also set up the system to automatically turn off appliances that are not in use, reducing our overall energy usage.
6. **Water monitoring and management:** By using sensors to monitor water usage in our home, we can identify leaks or other issues that may be wasting water. The system can also be set up to automatically turn off the water supply in case of a leak or other emergency.

Overall, the Arduino Uno Based Smart Home Automation System can help society by promoting energy efficiency, security, and convenience, which can improve the culture of the community by promoting a more sustainable, safe, and comfortable lifestyle.

PROJECT TIMELINE (GANTT CHART):



REFERENCES:

Sample For The Conference Paper:

[1] M. H. Bhuyan and Q. D. M. Khosru, "Linear Asymmetric Pocket Profile Based Pinch Off Voltage Model for Nano Scale n- MOSFET," Proceedings of the IEEE sponsored International Conference on Electrical, Computer and Communication Engineering (ICECCE2017), organized by the Chittagong University of Engineering and Technology (CUET), Cox's Bazar, Bangladesh, 16-18 February 2017, pp. 28-32.

Sample For the Journal Paper:

[1] M. H. Bhuyan and Q. D. M. Khosru, "Effects of Temperature on Reverse Short Channel Effect in Pocket Implanted Sub-100 nm n-MOSFET," Journal of Materials Science and Engineering, USA, 1934-8959, vol. 4, no, 7, July 2010, pp. 18-23, DOI:10.17265/2161-6213/2010.07.004.

FOR FACULTY USE ONLY

COMMENTS BY COURSE TEACHER:

COURSE TEACHER'S NAME **COURSE TEACHER'S SIGNATURE** **DATE**

GROUP MEMBERS

(Maximum 6 students are permitted to carry out a single Project. However, depending on the capability of the students, 4 students may be allowed but not less than that)

NAME: Sudipta Saha **ID**: 20-43587-1 **PROGRAM:** CSE **EMAIL:** sudiptasaha610@gmail.com	**NAME**: Mirza Md. Tawhid **ID**: 20-42643-1 **PROGRAM:** CSE **EMAIL:** mirza019333@gmail.com
NAME: Md Sadik Hossain Chowdhury **ID**: 20-43427-1 **PROGRAM:** CSE **EMAIL:** sadikchowdhury770@gmail.com	**NAME**: Amit Podder **ID**: 20-42273-1 **PROGRAM:** CSE **EMAIL:** aprudra001311@gmail.com
NAME: Tasnim Binta Hossain Shakal **ID**: 20-4271-1 **PROGRAM:** CSE **EMAIL:** tasnimm118@gmail.com	**NAME**: Fatin Ishtiaque Ebon **ID**: 20-43602-1 **PROGRAM:** CSE **EMAIL:** fatin43602@gmail.com
REMARKS (for OFFICE use only)	

Assessment Rubrics

Course Name:	Microprocessor and Embedded System	**Course Code:**	EEE 4103
Semester:	Spring 2022-2023	**Sec:**	N
Faculty Member:	Tahseen Asma Meem		

Capstone Project Title:	**Arduino Uno-Based Smart Home Automation System**
Project Group No.	

	Student ID #	Student Name	Obtained Marks
1.	20-43587-1	Sudipta Saha	
2.	20-42643-1	Mirza Md Tawhid	
3.	20-43427-1	Md Sadik Hossain Chowdhury	
4.	20-42711-1	Tasnim Binta Hossain Shakal	
5.	20-42273-1	Amit Podder	
6.	20-43602-1	Fatin Ishtiaque Ebon	

Assessment Materials and Marks Allocation:

COs	Assessment Materials	POIs	Marks
CO3	Proposal form	P.c.2.C6	5

COs-POIs	Excellent [5]	Proficient [4]	Good [3]	Acceptable [2]	Unacceptable [1]	No Response [0]	Secured Marks
CO3 P.c.2.C4	The survey developed as a process for complex engineering problems considering cultural and societal factors has superior variables, targets, measures, and the implementation process is clear and challenging for future project implementation with several possible outcomes having good impacts.	The survey developed as a process for complex engineering problems considering cultural and societal factors has suitable variables, targets, measures, and the implementation process is clear and challenging for future project implementation with some possible outcomes with little impact.	The survey developed as a process for complex engineering problems considering cultural and societal factors has moderate variables, targets, measures, and the implementation process is clear and challenging for future project implementation with a few possible outcomes with impacts.	The survey developed as a process for complex engineering problems considering cultural and societal factors has suitable variables, targets, measures, and the implementation process is somewhat clear for future project implementation with very few possible outcomes with little impact.	The survey developed as a process for complex engineering problems considering cultural and societal factors has poor variables, targets, measures, and the implementation process is very unclear for future project implementation with a few possible outcomes but no impacts.	No responses at all	
Comments						**Total marks (5)**	