American International University – Bangladesh
Faculty of Engineering
Department of EEE & CoE

MICROPROCESSOR & EMBEDDED SYSTEM PROJECT PROPOSAL FORM

SEMESTER: Fall 2022-2023
PROJECT TITLE: 2 MARKS
Survey to develop a process for complex engineering problems considering cultural and societal factors (use pie chart): 5 MARKS
GOALS AND BENEFITS OF THE PROJECT: 3 MARKS
EXPERIMENTAL BLOCK DIAGRAM: 3 MARKS
PROJECT TIMELINE (GANTT CHART): 5 MARKS
REFERENCES: (only references from recent paper publications are allowed, don't use you-tube, Wikipedia, or any random website for references): 2 marks

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COMMENTS BY <u>COURSE TEACHER</u>:

COURSE TEACHER'S NAME   COURSE TEACHER'S SIGNATURE   DATE

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GROUP MEMBERS

(Maximum 8 students are permitted to carry out a single Project. However, depending on the capability of the students, 5 number of students may be allowed but not less than that)

NAME: ASFAQUR RAHMAN **ID:** 17-35876-3 **PROGRAM:** CSE **EMAIL:** 17-35876-3@aiub.edu	**NAME**: SAZZAD HOSEN **ID**: 20-43613-1 **PROGRAM:** CSE **EMAIL:** 20-43613-1@aiub.edu
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NAME: ………………………………………… **ID**…………………………… **PROGRAM:** EEE/COE/CSE **EMAIL:**	**NAME**: ………………………………………… **ID**…………………………… **PROGRAM:** EEE/COE/CSE **EMAIL:**
REMARKS (for OFFICE use only)	

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PROJECT TITLE

Water quality testing device using Arduino uno to measure temperature, O_2 level, pH level and turbidity.

Survey to develop process for complex engineering problems considering cultural and societal factors (use pie chart)
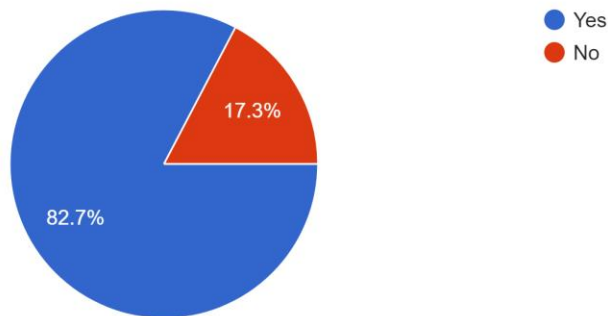
This project can be the solution of SDG goal number 6 which is **clean water and sanitation**. So, we conduct a survey from general peoples to know the positive and negative opinion about this project.

Survey responses:

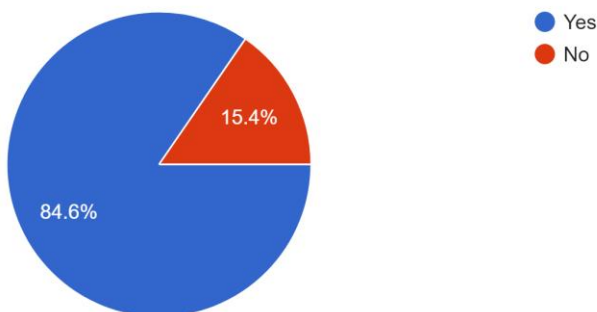In this survey using google form (online) 52 peoples respond.

Did you ever used a water quality testing device?
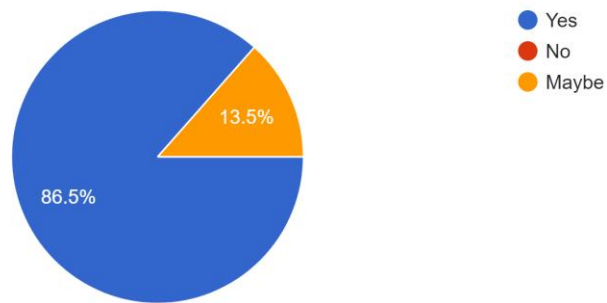52 responses

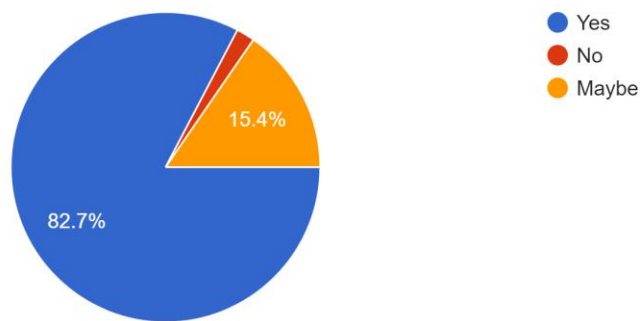Did you see anyone to use water quality testing device?
52 responses

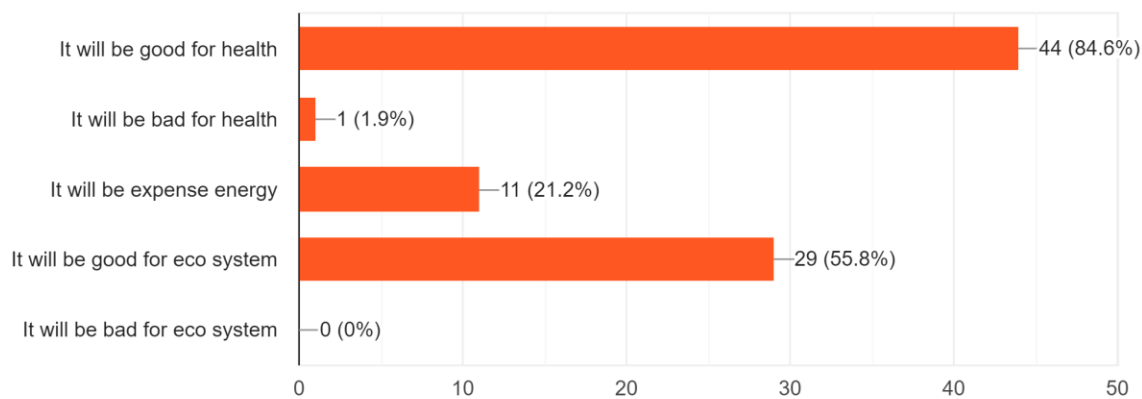## Should we use water quality testing device for our dailyhood works?
52 responses

- Yes
- No
- Maybe

86.5%

13.5%

Will water quality testing device impact our society positively?
52 responses

- Yes
- No
- Maybe

82.7%

15.4%

What will be the impacts of using water quality testing device?
52 responses

Impact	Count
It will be good for health	44 (84.6%)
It will be bad for health	1 (1.9%)
It will be expense energy	11 (21.2%)
It will be good for eco system	29 (55.8%)
It will be bad for eco system	0 (0%)

What is the most important feature of water quality testing device?
52 responses

- determining pH level
- determining temperature
- determining oxigen level
- determining turbidity
- its a very innovative idea

30.8%
11.5%
7.7%
48.1%
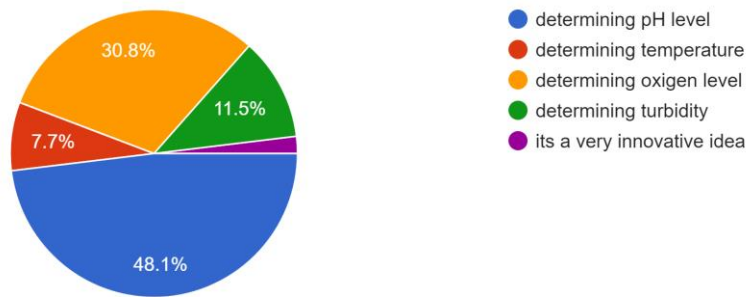
Is water qualitity testing device cost efficiency?
52 responses

- Yes
- No
- Maybe

13.5%
11.5%
75%
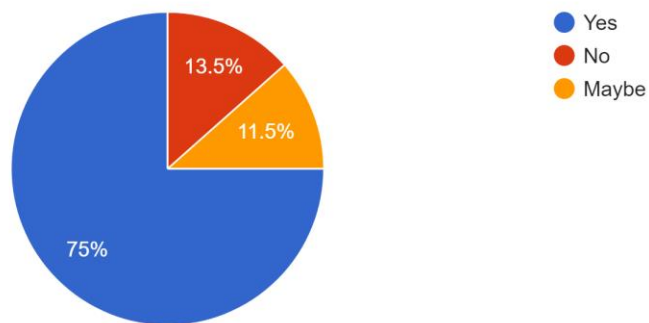
Do you feel any security risk in water quality testing device?
52 responses

- Yes
- No

38.5%
61.5%
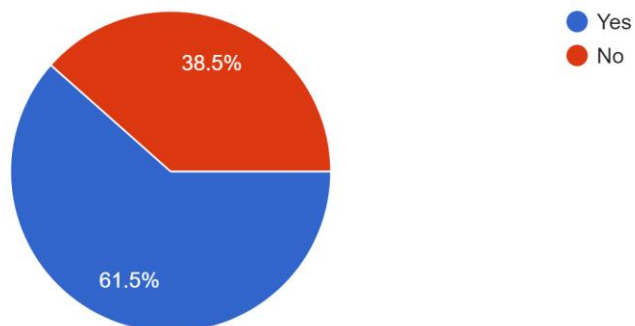
Would you like to use water qualiity testing device personally?

52 responses

Legend:
- Yes
- No
- Maybe

94.2%
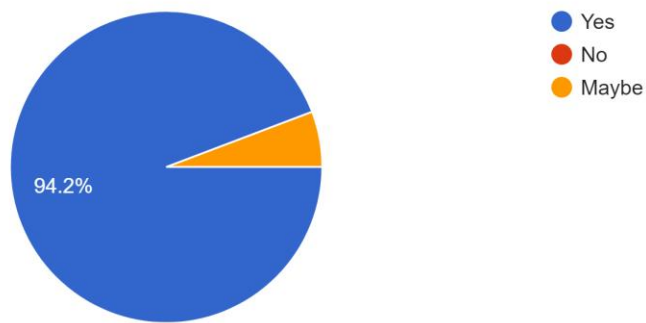
GOALS AND BENEFITS OF PROJECT

The main goal of this project is from testing water, we can measure temperature, O_2 level, pH level, and turbidity. We aim to implement sensors remotely to monitors and control water quality parameters. Our objectives also range from detecting violations of water quality standards to determining the state of the ecosystem and analyzing temporal water quality trends. Our suggested system is prepared as a low-cost, real-time water quality testing device that can be used in remote rivers, lakes, coastal areas, and other bodies of water.
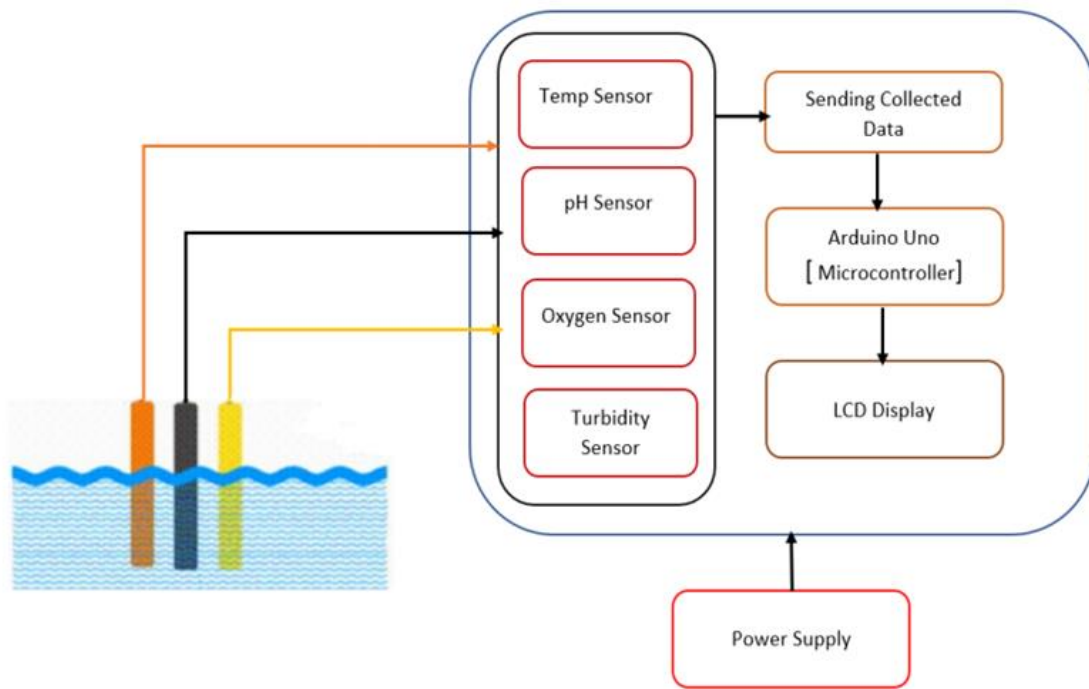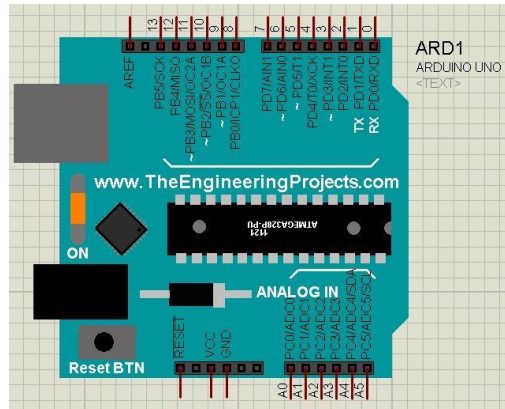
Figure: Block Diagram

Arduino Uno

The Arduino UNO is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the UNO is the most robust board you can start playing with. The UNO is the most used and documented board of the whole Arduino family.

3WATT10K

Metal oxide resistors are constructed by placing an oxide of metal (such as tin) to form a coating on the surface. Metal oxide resistors generally have very accurate tolerances. Metal oxide power type resistors can be utilized for both general and surge applications in the automotive, industrial and consumer industries.

CAPACITOR

Capacitor is a device for storing electrical energy, consisting of two conductors in close proximity and insulated from each other. A simple example of such a storage device is the parallel-plate capacitor.

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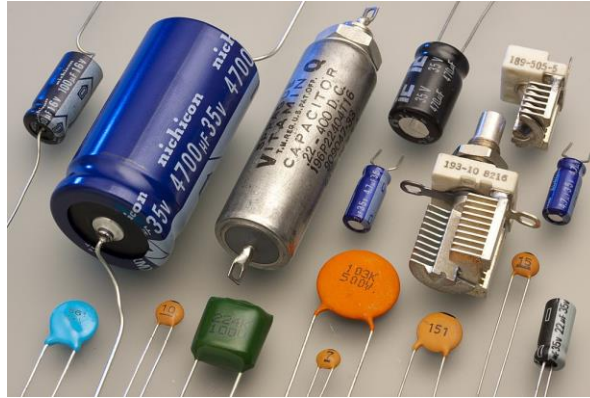
INDUCTOR

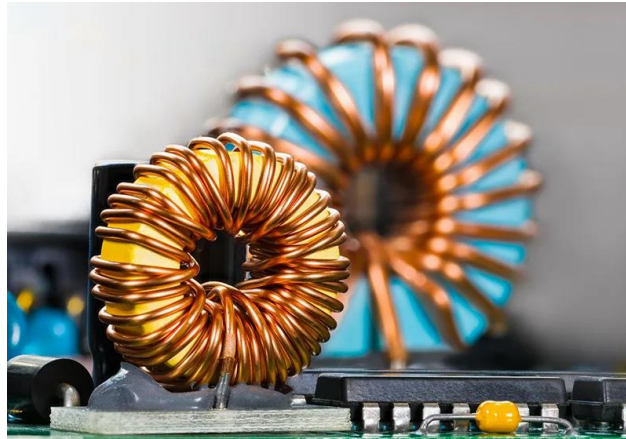An inductor, also called a coil, choke, or reactor, is a passive two-terminal electrical component that stores energy in a magnetic field when electric current flows through it. An inductor typically consists of an insulated wire wound into a coil.

lM016l

The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. we will discuss about character-based LCDs, their interfacing with various microcontrollers, various interfaces (8-bit/4-bit), programming, special stuff and tricks you can do with these simple looking LCDs which can give a new look to your application.

LM35

The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly proportional to the Centigrade temperature. The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling.

lM044l

LM044L LCD display memory map from publication.

pH METER

Need to measure water quality and other parameters but haven't got any low-cost pH meter? Find it difficult to use with Arduino? Here comes an analog pH meter, specially designed for Arduino controllers and has built-in simple, convenient and practical connection and features. It has an LED which works as the Power Indicator, a BNC connector and PH2.0 sensor interface. To use it, just connect the pH sensor with BNC connector, and plug the pH 2.0 interface into the analog input port of any Arduino controller. If pre-programmed, you will get the pH value easily. Comes in compact plastic box with foams for better mobile storage.
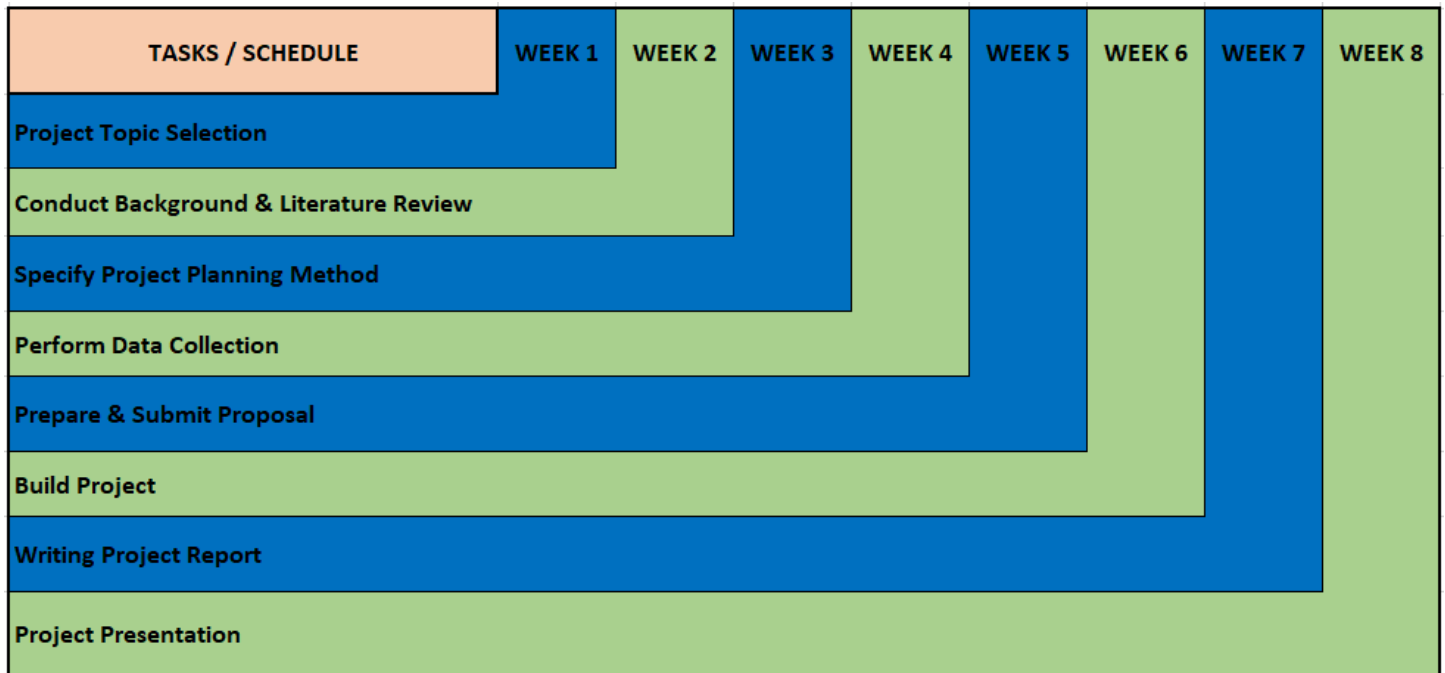

POT HG

A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an adjustable voltage divider. If only two terminals are used, one end and the wiper, it acts as a variable resistor or rheostat. The measuring instrument called a potentiometer is essentially a voltage divider used for measuring electric potential (voltage); the component is an implementation of the same principle.

PROJECT TIMELINE (GANTT CHART)

TASKS / SCHEDULE	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Project Topic Selection								
Conduct Background & Literature Review								
Specify Project Planning Method								
Perform Data Collection								
Prepare & Submit Proposal								
Build Project								
Writing Project Report								
Project Presentation								

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[1] Gokulanathan, S., Manivasagam, P., Prabu, N., & Venkatesh, T. (2019). A GSM based water quality monitoring system using Arduino. *Shanlax International Journal of Arts, Science and Humanities*, *6*(4), 22-26.

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[3] Daigavane, V. V., & Gaikwad, M. A. (2017). Water quality monitoring system based on IoT. *Advances in wireless and mobile communications*, *10*(5), 1107-1116.

[4] Jatnika, H., Rifai, M. F., Purwanto, Y. S., & Karmila, S. (2020). Smart system-based water quality measuring device for clean water availability. *vol*, *198*, 142-148.

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[6] Irawan, Y., Febriani, A., Wahyuni, R., & Devis, Y. (2021). Water Quality Measurement and Filtering Tools Using Arduino Uno, PH Sensor and TDS Meter Sensor. *Journal of Robotics and Control (JRC)*, *2*(5), 357-362.

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[8] Hakimi, I. M., & Jamil, Z. (2021, May). Development of Water Quality Monitoring Device Using Arduino UNO. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1144, No. 1, p. 012064). IOP Publishing.