

## Smart Water Dispenser Monitoring System

Syed Hazwan Hafiz Bin Syed Haidzir<sup>1</sup>, Mohamad Aziq Haiqal Bin Hisham<sup>2</sup>, and Mastura Binti Omar<sup>3</sup>

Faculty of Electrical Engineering, UiTM Johor Branch, Pasir Gudang Campus,  
*Malaysia.* syhazwanhafiz@gmail.com<sup>1</sup>, aziqhaiqalhisham@gmail.com<sup>2</sup>,  
 masturaomar.uitmpg@gmail.com<sup>3</sup>.

### ABSTRACT

People become dehydrated if they do not drink enough water. To solve this problem, it is essential to monitor how much water that consumed every day. So, objective of this product is to develop smart monitoring water dispenser using Arduino Mega 2560 as microcontroller that controlled the amount of water dispensed by this water dispenser. For this product, button system is used to determine the volume of water to drink. Every button has their own amount of water that they will dispense. The amount of water will then be being recorded and display to LCD and app Blynk in your smartphone.

## 1 INTRODUCTION

Water is important for our body whether to keep ourselves clean or keep our body healthy. Human need to drink 2.5 litres of water every day. Not drinking water for just a few days can have serious consequences on our health like dehydrated. There are many way people get their drink water. One of the main way they can get water is from dispenser water. A water dispenser, known as water cooler is a machine that cools and dispenses water with a refrigeration unit. It is commonly located near the restroom due to closer access to plumbing. A drain line is also provided from the water cooler into the sewer system. There also many types of dispenser water like Wall-mounted, Table top water dispenser, direct-piping water dispenser or freestanding. This water dispenser may have different sources, but are often classified into two major categories, namely natural mineral and purified water [1].

Many inventions were made to control the water disparities in order to make the whole system automatic. To achieve this a lot of product had come up with different design and model, yet there is still no product that focusing on how much the water had been use. Thus a monitoring device for this particular problem need to be address and develop to allow this idea become bigger and real.

## 2 OBJECTIVE

Nowadays, people always forget about drink the water. They always busy with their work until they forget to drink water. Water is most important resources that need by every living thing. Without water, we all going to die because of get dehydrated. One day in future, the resources might have gone sooner or later for some reason contamination happen. Plus, few of people did not really know how to save and appreciate the water resource. Somehow they used water for their own properties rather than necessary things in their life [2].

Based on these problem statements, the objective of this project is to develop smart monitoring water dispenser using Arduino as microcontroller. Next, the objective of this project is also to monitor water dispenser system using Wi- Fi Module (ESP8266) through smartphne Blynk apps.

## 3 PROJECT CONTRIBUTION

The purpose of this project is to remind people how important to drink enough water in our daily life. By using our features in this product, a little improvement in our products can monitor enough water in our body. Our product is suitable for all generation, any kind of culture background, this might help them from these problems. In addition, our product is very useful for patients in hospitals who needs this product especially to decrease their sugar in body.

## 4 METHODOLOGY

a) Block Diagram and Schematic Diagram of the project

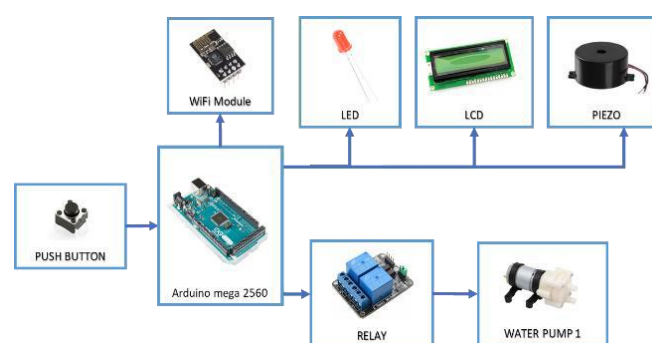


Fig. 1: Block Diagram

Fig. 1 above shows the project block diagram. With the help of block diagram, the flow and process work of project can be easily organizing. This block diagram here shows how many input and output will be used in this project and the sub unit that need to make sure this project work as an expected. For this project the only input that is used is push button, while for the outputs the components that used are LED's, LCD and water pump. As additional, we also added a wireless feature into this project.

## b) Flowchart of the project

Based on Fig. 2, it shows step by step on how the project work and operate. This flowchart is use to guide us on how to make the program for this project. The program started with by displaying the user a “Press any button” which means that the user would have to pick any one button out of three button that been provided and each button had their own volume of water that they will pour. The three choice are 150mL, 250mL and 500mL. If any of this button is press, the pump will pump the water with correct amount. Next, every time the button is press, the microcontroller will calculate and sum how many the button being press and display it to the LCD. This flowchart is continuing with an indicator system. If the total water reach 2 litre which the average human body need water per day, than green LED will turn on but if the water does not reach 2 litre than green LED will turn on.

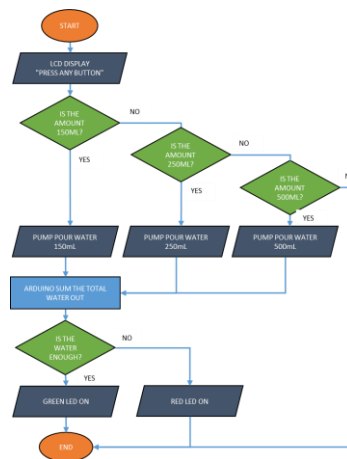


Fig. 2: Project Flowchart

## 5 RESULT

This section will show the demonstration of the prototype of this project.

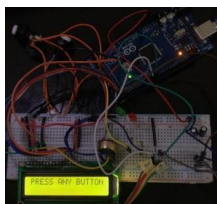


Fig. 3: User need to press any button



Fig. 4 :Volume of water dispenser

Fig. 3 shows that the consumer can choose whether they want to pour how much water while Fig. 4 shows after they choose one of the button, the LCD will display how much water is dispensing through the pump.

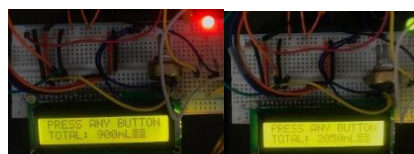


Fig. 5 :Total amount of water dispense

Fig. 5 shows if the amount of water is below than 2000ML, the red LED will on to

indicate the consumer need to pour more water to get 2000ML and above, green LED will on to indicate the consumer has enough water.

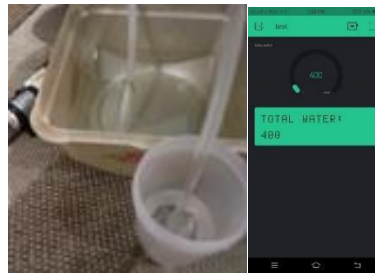


Fig. 6 :Water flow through hose and total water also display in the Blynk Apps

Fig. 6 shows that how the water flow through hose and how the display on their smartphone by using Blynk apps.

## 6 CONCLUSION

To sum up, this project has successful achieve all the objectives for the simulation and prototype. Based on this project, using Wi-Fi compare Bluetooth or Global System for Mobile communication (GSM) is easier for specific user to get the information to see their total amount of water drinks. To make an efficient running program, two LED's is placed in front of the prototype as an indicator to drink more water.

## REFERENCES

- [1] UNDP (2003). Human Development Report 2003. Water for People, Water for Life, The United Nations Development Programmed.
- [2] Reid, Robert (2004). Water Quality and Systems: A Guide for Facility Managers (2nd ed.). Georgia, USA: The Fairmont Press.p.187.ISBN 0-88173-332-6.[https://en.wikipedia.org/wiki/Water\\_dispenser](https://en.wikipedia.org/wiki/Water_dispenser)
- [3] Enzo Calogero, Osirium, (2019). United Kingdom. "Dynamic and Interactive Fountain in a Bottle" [https://create.arduino.cc/projecthub/enzo2/dynamic-and-interactive-fountain-in-a-bottle-b11cd7?ref=tag&ref\\_id=3d%20printing&offset=2](https://create.arduino.cc/projecthub/enzo2/dynamic-and-interactive-fountain-in-a-bottle-b11cd7?ref=tag&ref_id=3d%20printing&offset=2)
- [4] Raptor Demon, NC (2014). United State of America. "Arduino Compatible Bathtub Controller" <https://www.instructables.com/id/Arduino-Compatible-Bathtub-controller/>
- [5] Aswinth Raj, New Delhi (2018). India. "Automatic Water Dispenser using Arduino" <https://circuitdigest.com/microcontroller-projects/arduino-automatic-water-dispenser>
- [6] Emmanuel Ani (2016). "Water Quality Monitoring and Notification System" <https://create.arduino.cc/projecthub/eani/water-quality-monitoring-and-notification-system-f85d23>
- [7] Thrustmaster (2000). "Automatic Arduino Water Dispenser" <https://www.instructables.com/id/Automatic-Arduino-Water-Dispenser/>
- [8] Hackster.Io (2016). "Project Gallon Smart Drinking Water Monitoring Platform" <https://www.hackster.io/dycodex/project-gallon-smart-drinking-water-monitoring-platform-54b70b>
- [9] Hackster.Io (2019). "Flash Firmware on 8266(ESP-01) Module" <https://www.hackster.io/pratikdesai/flash-firmware-on-esp8266-esp-01-module-e1f758>