



Drink water reminder device for kidney disease patients

Authors : Miss Romtheera Thongthin, Miss Sirinakorn Runsang

Advisor : Mrs. Suwimon Tanompol ,Mr. Anek Tanompol

Abstract

Kidney disease is considered a chronic non-communicable disease that affects a large number of people. According to a report from the American Kidney Association, in 2011, there were 31 million people suffering from kidney disease, with approximately 17,500 new patients each year, and the trend is increasing annually. Among these, there are about 40,000 patients with end-stage renal disease who require renal replacement therapy, including hemodialysis, peritoneal dialysis, and kidney transplantation. The cost of medical treatment for patients requiring renal replacement therapy is 200,000 baht per person per year. The total cost for all patients nationwide is estimated to be 4-6 billion baht. Patients with kidney disease often experience fluid retention due to drinking water beyond the amount their kidneys can handle.

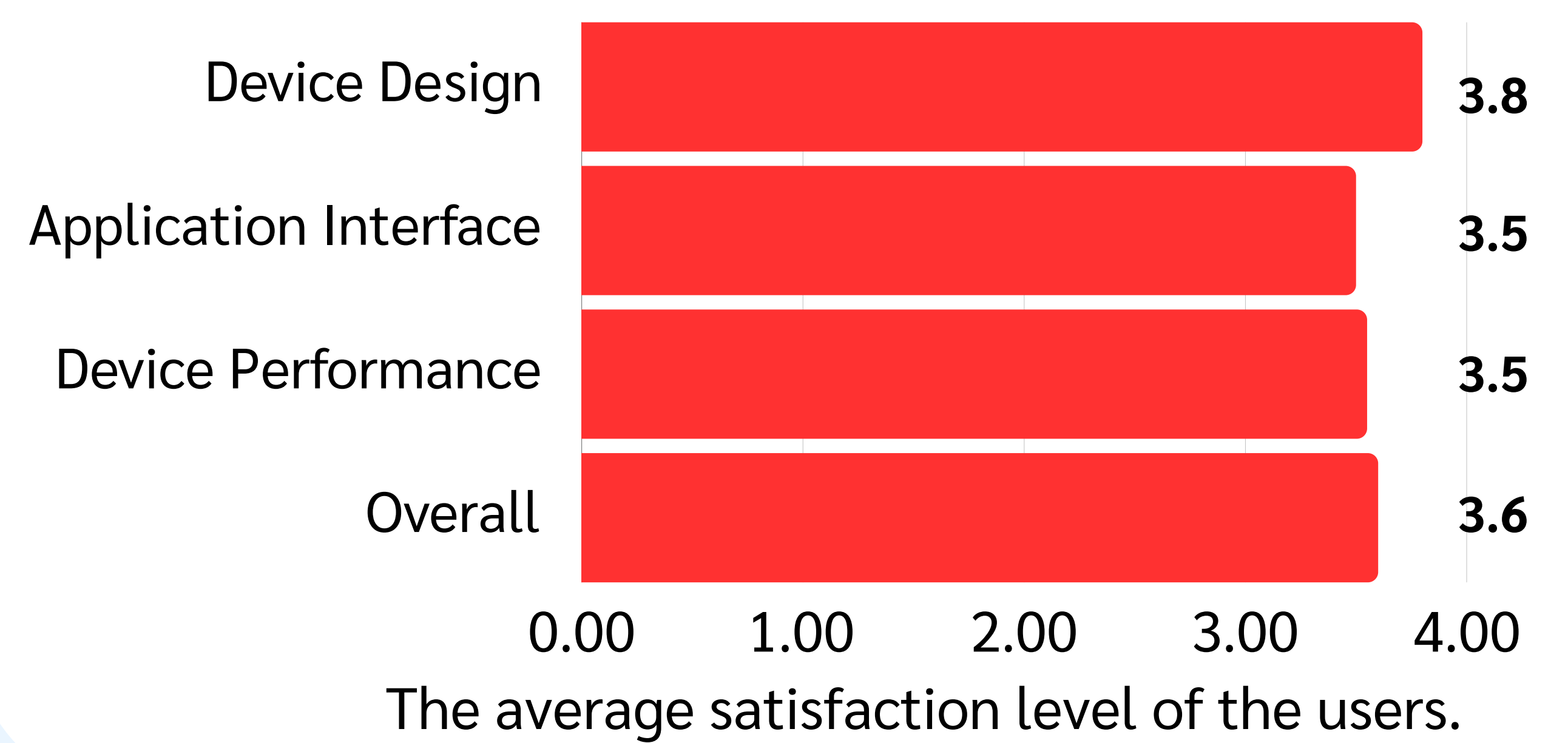
Therefore, the researchers have studied and designed a device to alert and monitor water consumption for kidney disease patients. Doctors can set the desired amount for patients to drink each time and schedule when patients should drink water. The device can track the amount of water and the time when patients drink to monitor the treatment of fluid retention by calculating the change in the weight of the water glass.

Keywords: Device for water intake monitoring, Kidney Disease

Conclusion

The project resulted in a device for notifying kidney disease patients to drink water. It can send reminders and track the amount of water the patient drinks by calculating the weight of the glass. When tested on a group of 20 people, the satisfaction results are shown in the graph.

The graph shows the satisfaction of users with the device in each aspect.



Problem



Fluid retention

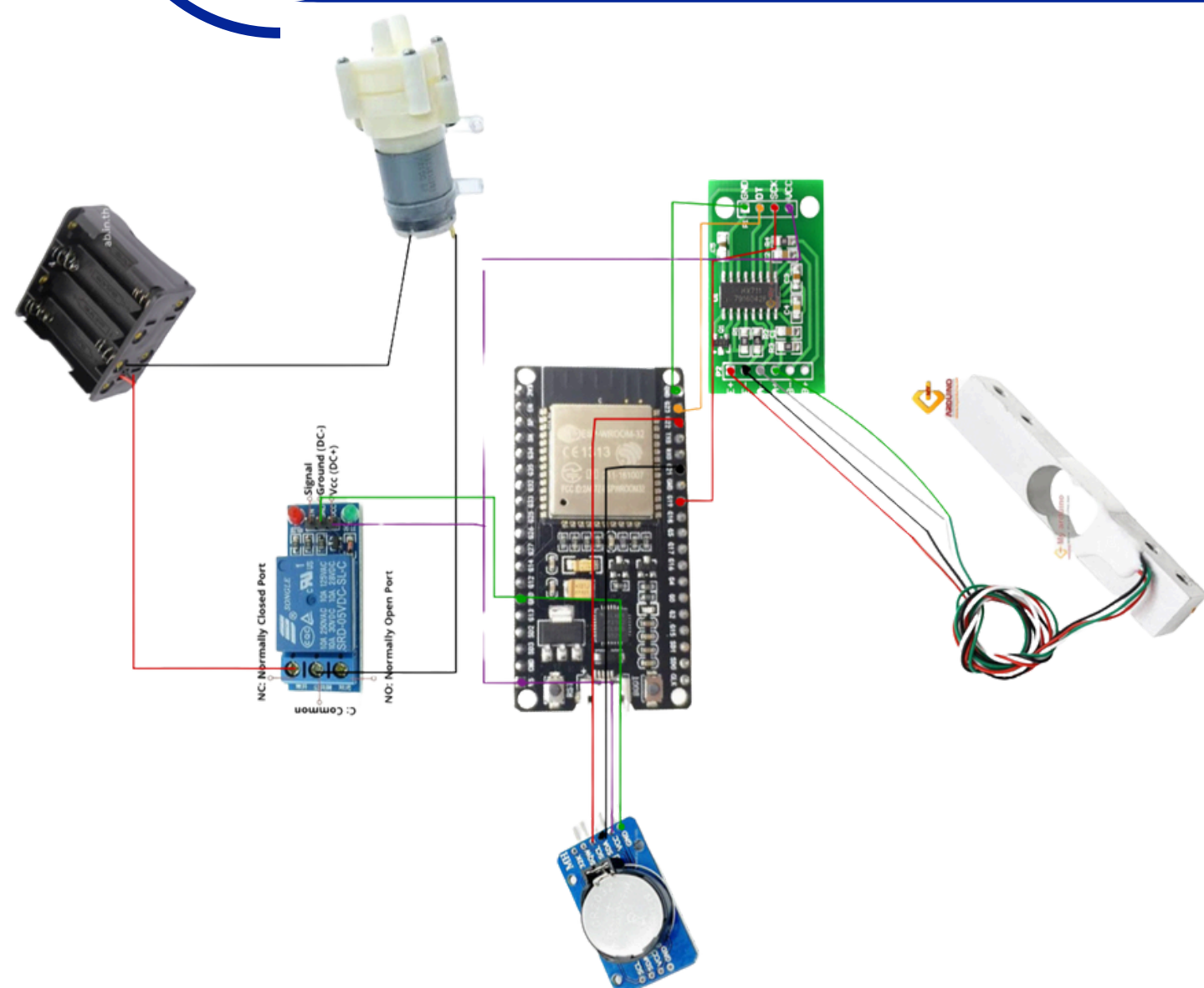


Monitoring

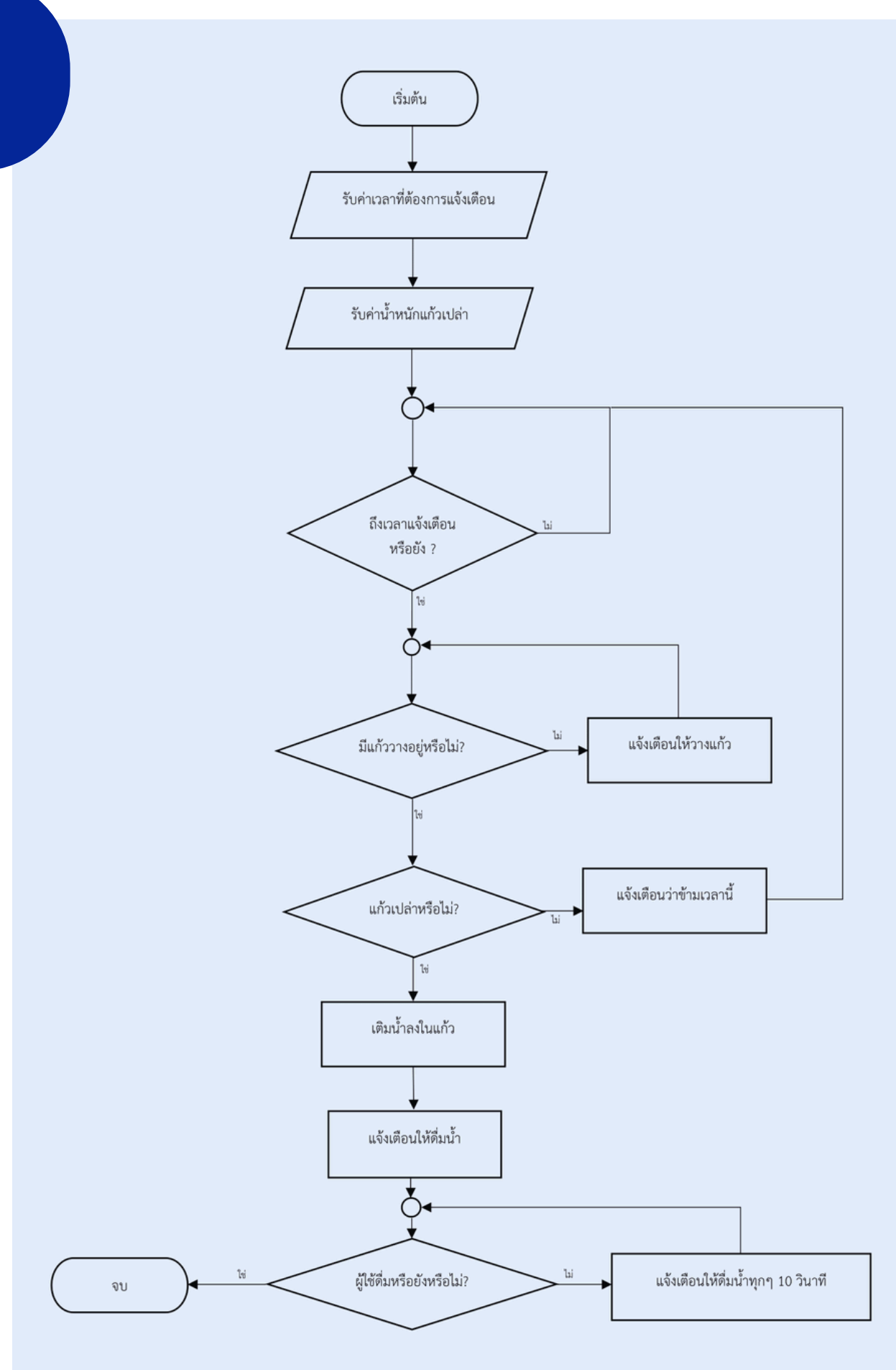
Objective

To make reminder that can alert and monitor water consumption for kidney disease.

Process



Circuit Design

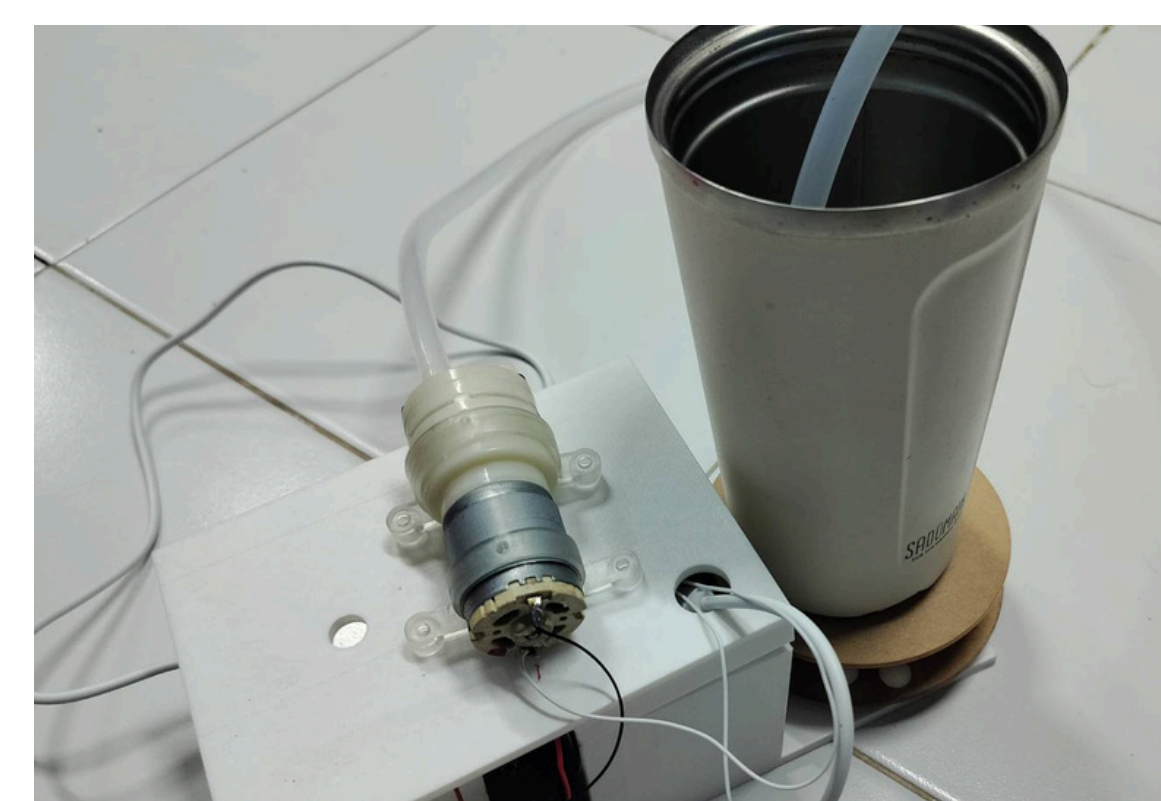


Flowchart



Follow the plan

Result



Drink water reminder device for kidney disease patients

References

สกรณีย์ บุชชง. (2554). ESP32 Node MCU <https://shorturl.at/grCDZ>
 ม.ป.ท. (2563). โหลดเซลล์ (Load Cell). <https://mall.factomart.com/what-is-load-cell/>
 Busto Arsizio. (2022). How does a diaphragm pump work?. <https://www.debem.com/en/operation-diaphragm-pumps/>
 David Meaney. (2023). WHAT IS A REAL TIME CLOCK (RTC)?. <https://ecsxtal.com/what-is-a-real-time-clock-rtc/>
 Sompong Sangmit. (1980). Giant Hydronephrosis: Unusual Presentation. <https://he02.tci-thaijo.org/index.php/ThaiJSurg/article/view/249124>
 trs. (2022). Hydronephrosis. <https://www.mayoclinic.org/diseases-conditions/hydronephrosis/cdc-20397563>