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Advanced Sanitary Napkin Vending Machine

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Abstract: Women hygiene is of the most importance and is to be taken care of. A solution to this problem is installing napkin dispensing system in schools, colleges and public places. The main drawback of the existing coin operated dispensing system is that there is no mechanism available for the person refilling the napkins to know about the status of napkins available in the system. So, a person has to regularly check the availability of napkins in the system manually and refill it. This work aims at installing an automatic napkin dispenser in toilets and places that can keep track of available napkins and inform the person concerned when fewer napkins are available. Around the world, women have developed their own personal strategies to cope with menstruation. The issue of menstrual hygiene is inadequately acknowledged and has not received proper attention. Use of sanitary pads is essential practices to keep menstrual hygiene. Government launched 'Amodini (happy girl child) Menstrual Health and Hygiene Programme' on May 28, 2016. Under this project sanitary napkin vending machine and incinerator were installed in government schools and colleges. The project aimed at breaking menstrual taboos that jeopardize the health of millions of girls every day.

Keywords: Women menstrual hygiene, Sanitation, Health, Safety, Microcontroller, IoT.

I. INTRODUCTION

According to a survey 23% of adolescent girls drop out of school since proper facilities are not provided to them when they are menstruating. In schools, girls don't have access to functional toilets, access to clean water and proper sanitation and disposable facilities. During the first three days of menstruation they need to change their sanitary napkins every three to four hours else they will be easily getting affected by uterus Cancer and Toxic Shock Syndrome (TSS). TSS can affect anyone who uses the tampons for long time. So there is a need to make the sanitary napkins easily available to them, which can be achieved by vending machines. Napkin Vending Machine is a personal hygiene product for women. It allows immediate access to napkins anytime of the day to meet menstrual emergencies. It also saves women from embarrassment faced while buying napkins at the shop. By installing vending machines in the working area and educational institutions, it would help them to get the napkins as and when required. Now a day's Government of India has taken the initiative and issued the GR (Govt. Circular No. D. O. No.4-160(10)/2013-NCW Dt 03/09/2014) to install the vending machine which can provide sanitary napkin in emergency. We are promoting Menstrual Health of women and adolescent girls by ensuring availability of quality Sanitary Napkins through Sanitary Napkin Vending Machines.

For the same on 1st March 2018 government has circulated GR (Asmita 2018/ Pra.Kra. 33/ Yojaga- 3) which says that the sanitary napkins should be provided to girls who comes under the age of 11yrs to 19yrs in schools.

In view of the stigma and social taboo associated with/sanitary napkins, majority of the girls/women, feel embarrassed and hesitate to go to the commonly known, manned and often crowded conventional/medicine outlets for sanitary napkins, resulting in un-safe practices, and use of unhygienic materials during menstrual periods.

II. LITERATURE REVIEW

Mali Satish and Jamdade Amar, June 2019 [1] introduced a system which is helpful to dispose used sanitary napkins which fixes health and environmental issues.

Rajanbir Kaur, Kanwaljit Kaur, and Rajinder Kaur, February 2018 [2] explained that Drawback of the existing system is, person has to regularly check the availability of napkins manually and refill it.

Ramu Velishala, March 2018 [3] modelled a system of an automatic napkin dispenser that can keep track of available napkins and inform the person concerned when fewer napkins are available.

K. Samba Siva Rao, K. Harish, M. Kavin Kumar, D. Vishnu Harish, march 2018 [4] their work aims at installing an automatic napkin dispenser in toilets and places that can keep track of available napkins and inform the person concerned when fewer napkins are available.

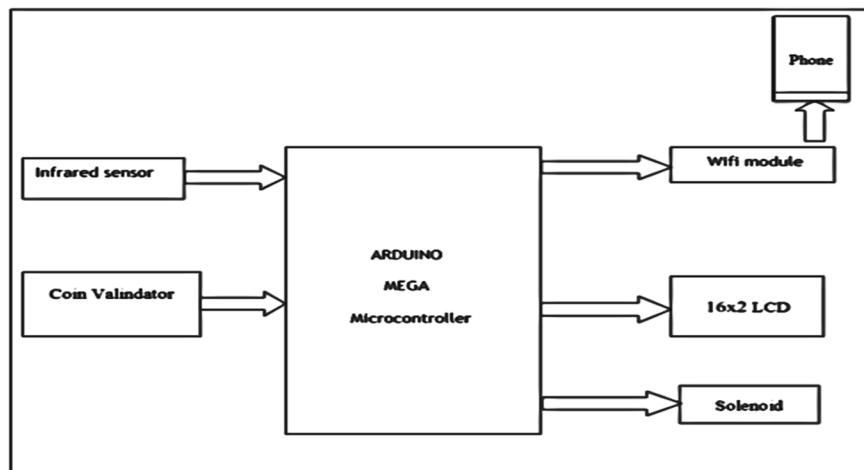
Avril-Ann Braganza, Jan 2017 [5] designed a system as a project in which one can keep the track of availability of napkins. This runs on electricity and batteries upto 10 hours.

III. SYSTEM ARCHITECTURE

A. Objectives of Developed Work

- 1) To build a low cost “Advanced sanitary napkin vending machine”.
- 2) To implement advanced notification system.
- 3) To provide easy and immediate access to sanitary napkins.

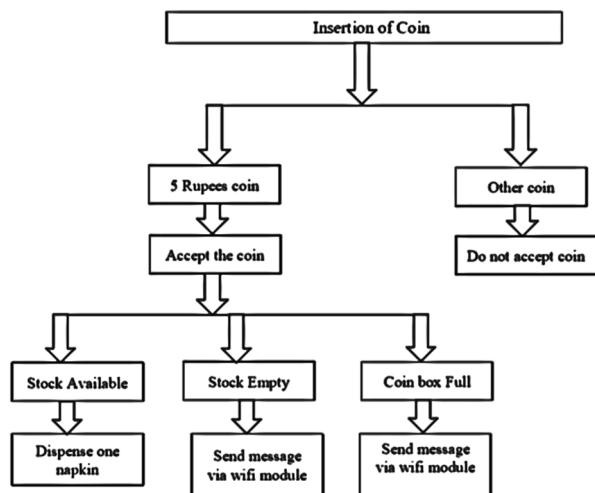
B. Block Diagram



C. Methodology

- 1) Step 1: The first step is insertion of coin into the coin validator.
- 2) Step 2: Coin validator itself will check whether the coin is of 5 rupees or not. If it is of 5 rupees then it will be accepted and dropped into coin box. If it is of any other type then it will send back.
- 3) Step 3: One sanitary napkin will be dispensed in the outlet with the help of internal mechanism.
- 4) Step 4: The count of the available sanitary napkins will get displayed on the LCD Display for next user.
- 5) Step 5: If stock is empty or the coin box is full then with the help of wifi module message will be send to the owner so that he can refill the stock and empty the coin box for next insertion of coin.

D. Flow Chart



The above flow chart shows the working flow of this developed system & the detailed information about these steps is given below in the methodology of this system.

IV. RESULT

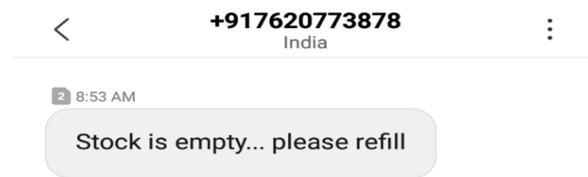


Fig 1 Received message when stock is empty

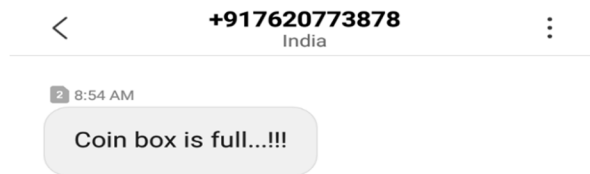


Fig 2 Received message when coin box is full



Fig 3 Sanitary napkin vending machine



Fig 4 Count of available napkins is displayed

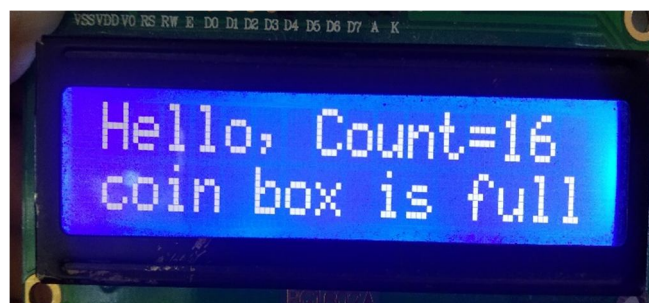


Fig 5 Message will be displayed on the display when coin box is full

V. CONCLUSION

It is concluded from the present work that the knowledge of more than half of the female students regarding sanitary napkin vending machine and incinerator strategies is adequate. Female students have positive attitude toward sanitary napkin vending machine and incinerator strategies. But yet these machines were not used adequately. Menstrual hygiene and correct technique of disposal of menstrual waste is important in order to safeguard the females from RTI and for eco-friendly waste management.

So in this system we have provided a display which indicates the availability of napkins so that the user can easily get to know about stock. Also we have provided a facility that whenever stock is empty one text message will be automatically send to owner so that he can refill the stock. When the coin box will be full at that time as well the message will be send to the owner.

Also for both of these events on the display it is showing that there is no stock available and the coin box is full do not insert coin.

The above mentioned system is having all these facilities as well as at low cost.

A. Future Scope

- 1) The system can be improved by using Solar Panel.
- 2) This would reduce the Electricity Bill and as well as it is use of renewable energy.
- 3) Napkin disposer too can be fabricated and integrated with the vending machine, so that dispensing and disposing can be achieved in a single unit.
- 4) It can also be modified to fit the corporate environment

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