PROJECT PROPOSAL

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1. Title of the project: SMART WASHROOM

2. Overview of the Project

- Even though we see places like luxurious hotels (like Kingsbury) and large companies (like Dialog Axiata) that have washrooms that smartly controls the inner lighting system and water taps based on whether there's human presence or not. Those systems turn off when there is no human using the washroom and through that, saves energy: both electricity and water.
- But still these green concepts haven't reached the local houses yet. In our houses, there are numerous occasions when we leave the washroom either without turning off the light or either without closing a tap. None of us do these intentionally, but with the busy lives we got, we come across these situations. That's why I believe that a better, cheaper and more customized system should be introduced to washrooms of local houses in order to save energy and make lives easy.
- The proposed system is a micro-controller-based design that basically controls the lighting system and water inlet system of a washroom that also sends alerts to the house owner in case of an emergency situation. The system will consist of couple of sensors, a water valve, a light, a LCD display, a Wi-Fi module and a centralized micro controller to take inputs from the censors and control the light, valve, LCD display and the Wi-Fi module.
- The system will take several inputs.
  - Data readings of the pressure sensor → checks if there's a water cut
  - Data readings of the PIR Motion sensor → checks for human presence
  - Data readings of the water flow sensor → checks the rate of water flow
  - Time that the system is needed to wait before automatically switching off the light, waterflow rate and the time that the system is needed to check before automatically closing the water inlet valve
    (These values can be changed by the user whenever required)
- Following outputs will be provided by the system.
  - Switching on/off the bathroom light
  - Closing/opening the water inlet valve
  - Twitter messages to the house owner

3. Objectives of the Project

    The objectives of this project are,
  - Design and implement a micro-controller-based IoT system to minimize wastage of water and electricity.
  - Make life easy for the users (lights will be lit when users enter the washroom)
  - Notify the house owner in case of an emergency
    (ex: water inlet valve is not closing)

- Record stats for water usage over a given time period (additional)

4. The Need for the Project

Increased water bills and electricity bills are a headache for every house now-a-days. Wit the busy lives we got, we tend to forget to close the taps or switch off the lights. This causes higher electricity bills and water bills, water flooding etc
What the system will do is, it will check whether there's any human presence inside the washroom. If there's no human present, it will switch off the lights if lights are on. Since the taps are usually fully mechanical devices, the system will close the water inlet through a valve if any tap is left open by the user mistakenly.
This system is required for the modern society because of two reasons. It will save thousands for the house owner over the time and also it will help the country through preservation of energy.

5. Scope of the Project
This section describes the main user roles and lists their functionalities within the system.
What the system is supposed to do (main functions of the system)?

6. Deliverables .
This section describes the main outputs of the system. Eg:
A web based software system/ mobile application/ standalone application for….
A GUI with ……

7. Overview of Existing Systems and Technology
Briefly explain few existing similar systems (if available) and the techniques/ approaches they have used to develop their systems.
State the techniques/ tools/ resources/ approaches (eg. JAVA, specific APIs, specific libraries, SQL, php,) that you are planning to use for system implementation.
You should **include/ cite the references** for each and every existing system, tool, technique mentioned.

8. References
Refer any data/ information in a standard format (eg. **IEEE referencing style**)
For different algorithms/ techniques/ theories you can refer text books.
For tools you can refer web pages.
For similar work you can refer research paper articles that describe the work.
You may include white paper articles for the description of technologies; web URL for the tool references. When you refer such a web page, you have to indicate the (Accessed on <<date>>)