INTEGRATING IoT SOLUTIONS FOR REAL-TIME WASHROOM MONITORING IN HOSPITALS

A PROJECT REPORT

Submitted by,

SANDRA SAGAR	-	**20211CDV0014**
AMRUTHA R LAKSHMI	-	**20211CDV0017**
VINAYAK SINGH	-	**20211CDV0046**
VAIBHAV THAMMAIAH	-	**20211CDV0064**

Under the guidance of,

Mr. RAJAN THANGAMANI

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND TECHNOLOGY(DEVOPS)

At

PRESIDENCY UNIVERSITY

BENGALURU

JANUARY 2025

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CERTIFICATE

This is to certify that the Project report **"INTEGRATING IoT SOLUTIONS FOR REAL-TIME WASHROOM MONITORING IN HOSPITALS"** being submitted by "SANDRA SAGAR, AMRUTHA R LAKSHMI, VINAYAK SINGH, and VAIBHAV THAMMAIAH" bearing roll number(s) "20211CDV0014, 20211CDV0017, 20211CDV0046 and 20211CDV0064" in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Technology is a Bonafide work carried out under my supervision.

Mr. RAJAN THANGAMANI
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SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **INTEGRATING IoT SOLUTIONS FOR REAL-TIME WASHROOM MONITORING IN HOSPITALS** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Technology**, is a record of our own investigations carried under the guidance of **Mr. Rajan Thangamani, Assistant Professor, School of Computer Science And Technology , Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

NAME	ROLL NUMBER	SIGNATURE
SANDRA SAGAR	20211CDV0014	
AMRUTHA R LAKSHMI	20211CDV0017	
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ABSTRACT

Maintaining hygiene standards in hospital washrooms is important to ensure patient safety, staff well-being, and regulatory compliance. Traditional cleaning schedules fail to account for dynamic usage patterns, resulting in either over-maintenance or neglected cleanliness. To address these inefficiencies, this project proposes an advanced IoT-based Washroom Management System tailored for hospital environments. With all of the leading technologies involved-integrating devices like motion sensors, magnetic door locks, and IoT communication modules for the proper tracking of time spent by persons inside a given space-actual legitimate versus false washroom entry entries; real-time notification alert for the housekeeping staff concerning clean/stock; in-depth analytics toward understanding the trends in the busy times. The technical framework utilizes Python for backend processing, MySQL for robust database management, and React for an intuitive user interface, with APIs that enable seamless communication between sensors, cloud databases, and user interfaces. Beyond the immediate needs of smarter hospital washroom management, the system presents a scalable model applicable to other high-traffic public facilities, promoting sustainable and efficient operations through the integration of technology, analytics, and a user-centered approach.

ACKNOWLEDGEMENT

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We express our heartfelt gratitude to our beloved Associate Deans **Dr. Shakkeera L and Dr. Mydhili K Nair,** School of Computer Science Engineering & Information Science, Presidency University, and **Dr.Pravinth Raja**, Head of the Department, School of Computer Science Engineering & Information Science, Presidency University, for rendering timely help in completing this project successfully.

We are greatly indebted to our guide **Mr. Rajan Thangamani, Assistant Professor** and Reviewer **Ms. Meena Kumari K, Assistant Professor**, School of Computer Science Engineering & Information Science, Presidency University for their inspirational guidance, and valuable suggestions and for providing us a chance to express our technical capabilities in every respect for the completion of the project work.

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Vaibhav Thammaiah

Amrutha R Lakshmi

Vinayak Singh

Sandra Sagar