

Creating a VI for washing machine UI

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Abstract— This report describes the design and implementation of a user interface (UI) for a washing machine, using the LabVIEW platform. The UI provides users with a range of washing modes and offers a real-time display of washing progress, as per given requirements.

I. INTRODUCTION

The modern-day consumer appliance market has been witnessing a significant rise in demand for intelligent devices that offer user-friendly interfaces and efficient operations. Amongst these machines washing machine is the most common household appliance. It is almost used in every household. This project focuses on designing a UI for washing machine using UI design platform. The washing machine will be designed using LabView according to the requirements. This project focuses on designing a user interface for a washing machine that not only offers various modes of operation but also provides the user with timely feedback on the washing progress.

II. METHODOLOGY

A. System Requirements

The fundamental requirements for the washing machine UI included:

1. Power controls (On/Off and Start).
2. Selection among three washing modes: Colourful, Intensive, and Quick Wash.
3. A display that indicates the current washing stage and time remaining.
4. Resetting and stopping of operation upon turning off.
5. Distinct washing durations for each stage, based on the selected mode.

LabVIEW Implementation:

LabVIEW, with its graphical programming capabilities, was chosen as the development platform for the UI. The methodology can be broken down into the following steps:

- Power and Mode Control: Utilized a Boolean switch for the On/Off button, enum for mode selection, and

another button to initiate the washing sequence. When the machine is powered off, the system state is reset.

- Timer Logic: Implemented a timer mechanism that reads the washing mode selection and calculates the total time and individual stage durations.
- Display Mechanism: Used string indicators to dynamically update the washing stage and a progress bar, complemented with a countdown timer to show the time remaining.
- Completion Indicator: Once a washing cycle completes, a message pops up indicating "Washing Done".
- Washing Stages and Durations

The washing machine's cycle was divided into three stages: Pre-rinse, Main Wash, and Final Spin. Based on the mode selection, the duration for each stage was fetched from a predefined look-up table.

Washing Mode Durations

Mode	Pre-rinse	Main Washing	Final Spin	Total Cycle
Colourful	10s	15s	3s	28s
Intensive	15s	25s	5s	45s
Quick Wash	5s	7s	3s	15s

Discussion:

The UI developed for the washing machine using LabView plays a pivotal role in ensuring the washing machines efficiency and user-friendliness.

1. The system boasts an intuitive interface with easily accessible power controls. Once on, it patiently awaits

the user's mode selection, ensuring ease of navigation for all users.

2. Three modes — Colourful for vibrant fabrics, Intensive for heavily soiled items, and Quick Wash for speedy washing — provide versatile washing solutions without complicating user choices.
3. A dynamic display keeps users informed about the ongoing washing stage, supplemented by a countdown for the remaining time, enhancing user experience.
4. The "Washing Done" alert not only signifies cycle completion but also indicates when it's safe to access the contents, preventing potential mishaps like water spillage.

III. CONCLUSION

The washing machine UI, designed using LabVIEW, successfully meets all the specified requirements. It offers a clear and intuitive interface for users, allowing them to easily select the desired washing mode and monitor the progress in real-time. Implementing such user-centric designs can lead to enhanced user experience and operational efficiency. In the future, more features, such as error handling and custom wash cycles, can be added to further refine and expand the system's capabilities.

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