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Department of Electronics and Instrumentation Engineering, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India

Automatic Car Washing System Using LabVIEW

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ABSTRACT: The Objective of this paper is to explain the method of designing a LabVIEW based Car Washing Automation system. Basically this idea is used to detect the the car by means of proximity sensor. Automatic are tunnel car washing are the more common type of car washes. They wash your car with series of high power brushes and blowers. As soon as an adequate amount of water is sprayed, the sprayer is paused, This Process of perception of start and stop of the belt and step on to the cleaning process, bodywash, high pressure wash and carried future on. By adjusting the time duration this process can be further carried to make the system more efficient.

KEYWORDS: Car Wash, Proximity Sensor , LabVIEW.

I. INTRODUCTION

Automobiles, especially cars can be either manually or mechanically cleaned. Cleaning requires a lot of time and labor. Furthermore, the result may or may not be competent. Instinctive cleaning may be automatic or manually run. Again a non-automated requires more time and people to run the system. So, the best way is opting the car washing automation i.e, automatic cleaning , in which the switching[7] on and off of process or controlled by a controller based on the response of the sensors. Here, we have chosen Lab View as the one who does the part of the controller[19]. We have only explained the car washing. We'll work on the water recycling part in the next stage,in this paper we are explaining about the automatic car washing system by use of lab view software, which is used to overcome the needs of manpower and also the time management.In this we also focus on certain things to avoid the use of conveyer. We are using robotic hands instead of conveyers. Car washes can be self-serve, fully automated are full-service with machines Here the block diagram will be represented and explained.In LabVIEW we can design and develop every of the programs using LabVIEW icons which is in the frontpann[9]l and also in the block diagrams pannel,ith is also one of the easiest way to process the code,LabVIEW is systwem engineering software applications that require test , measurement[4] and control with rapid access to hardware and data insights,it is a visual pogramming language it is a system-design platform and development environment[16] that was aimed at enabling all forms of system to be developed.LabVIEW acts as a portal for a variety of facilities , bring them together under a single element that is easy to manage,within this there are several element and concepts that are key to the formate and operation of the environment

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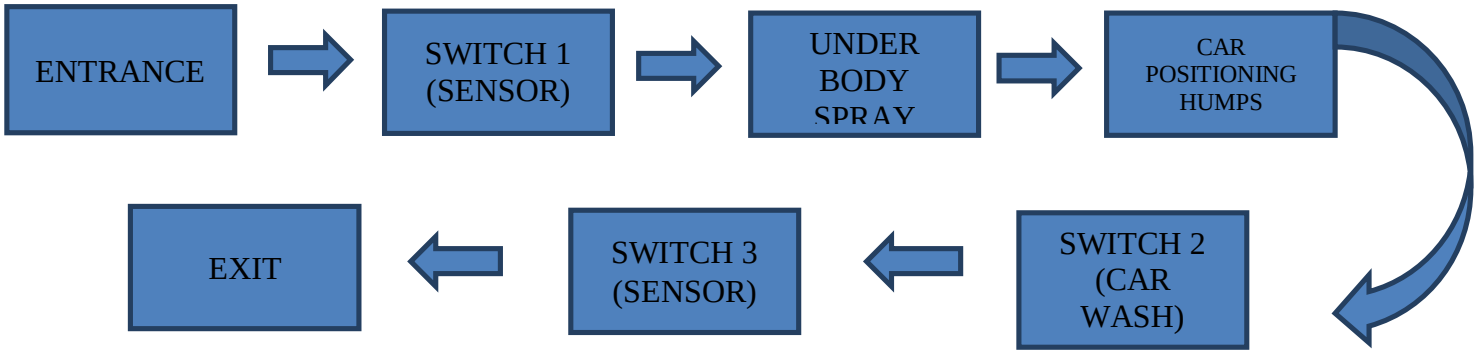
I. Block Diagram

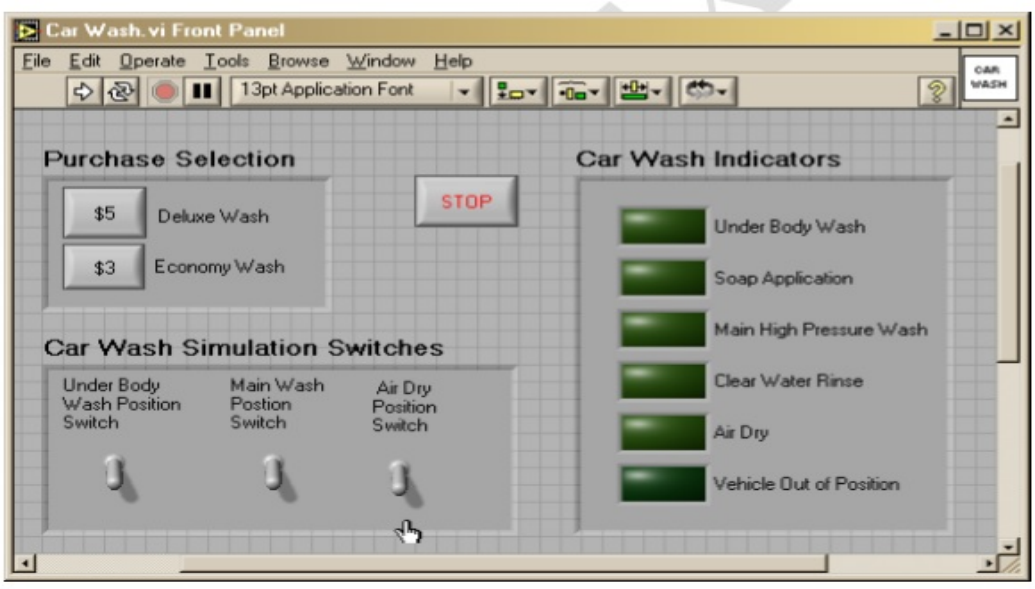


II. GENERAL REQUIREMENTS

Function as quantified in following application requirements. Conform to LabVIEW coding style and certification standards (found in LabVIEW documentation – LabVIEW Development Guidelines). Be created explicitly for this exam using VIs and functions available in LabVIEW. Patterns, examples, or code developed outside the bounds of this exam are not acceptable for use in the application. Be tiered in nature. All major roles should be performed in subVIs. Use a state machine that either uses a type defined tallied control, queue, or Event structure for state management. Be easily ascendable to add more states / features without having to manually update the hierarchy. Minimalize the use of excessive structures, variables (locals / global) and Property Nodes. Retort to front panel controls (within 100 ms) and not utilize 100% of CPU time. Close all opened situations and handles where charity. Be well predictable and include the following: Labels on proper wires within the main VI and subVIs. Descriptions for each algorithm.Credentials in VI Properties Documentation for both main VI and subVIs.Tip strip and Description for front panel controls and meters. Labels for quantities.

III. APPLICATION REQUIREMENTS

For this application, the car wash switches are replicated by switches on the Front Panel. The car wash starts when aobtaining switch has been selected. The execution of a cycle is denoted by revealing the appropriate LED. For this application, each cycle's period should be set to 5 seconds unless otherwise stated in the Operating Rules below.



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IV. SPECIFICATIONS

Cycles and associated timing:

1. Underbody Wash – 10 seconds
2. Soap Application – 5 seconds
3. Main High-Pressure Wash – 5 seconds
4. Clear Water rinse – 5 seconds
5. Air Dry Cycle – 10 seconds

V. CAR WASH OPERATING RULES

1. Only one acquisitions selection can be made at a time. The car wash should not accept a second purchase selection while the car wash is in action.

2. Not all cycles are achieved for each wash. The more classy wash performs more cycles. The list of cycles performed is: Cycles achieved for the Deluxe Wash: 1 – 2 – 3 – 4 – 5 Cycles performed for the Economy Wash: 2 – 3 – 4

3. Each cycle is introduced by a switch. If the vehicle rolls off of the switch, the wash proximately pauses and illuminates an indication to the driver to re-position the vehicle. The sum of time that expires while the car is out of position should not count against the wash time.

4. Underbody Wash Cycle: The spray heads for this wash are placed near the entrance of the car wash. The under body spray heads are fixed in spot, and require the vehicle to slowly drive over them to wash the under
body of the vehicle. The Underbody Swab is activated under the following conditions: a. The Deluxe Wash has been purchased. b. The car wash is in the Underbody Wash cycle. c. Under Body Wash Point Switch is closed (proximity switch). This cycle of the swab should last for 10 seconds. Upon finishing point of this cycle the controller should signal moving to the next cycle by activating the Vehicle Out of Position LED.

5. Main Wash Cycle: Main Wash Position Switch verifies the automobile is in the correct location for the wash cycles (cycles 2, 3 and 4) to operate. Each cycle should last for 5 jiffies. If the vehicle rolls off of the Main Wash Position Switch, the wash instantaneously pauses and illuminates an indication to the driver to re-position the vehicle. The amount of time that perishes while the car is out of position should not count against the wash time. The wash resumes after the vehicle is properly situated. Upon start of this cycle the controller should signal moving to the next cycle by activating the Vehicle Out of Position LED.

6. Air Dry Cycle: The air drier is a set of fixed position blowers located near the exit of the car swab. They require the vehicle to drive slowly out of the car wash through the air stream to dry the vehicle. The Air Dry Cycle activates on the following conditions: a. Thesumptuous wash has been purchased b. The car wash has reached the Air Dry cycle c. Air Dry Position Switch is closed (proximity switch) If the vehicle rolls off of the Air Dry Location Switch, the wash immediately pauses and illuminates an indication to the driver to re-position the vehicle. The quantity of time that expires while the car is out of position should not count against the Air Dry time. The swab resumes after the vehicle is properly positioned. This cycle of the wash should last for 10 seconds. Upon accomplishment of this cycle the controller should allow the next vehicle in line to select another wash.

7. The Car Wash must respond to the STOP Boolean and Vehicle Situation Switches within 100mS. The STOP Boolean aborts the manoeuvre of the VI.

VI. RESULT AND CONCLUSION

This prototype is an excellent method to automatically clean cars or other automobiles efficiently, less laboriously and in much more time efficient way than the conventional methods. In this system, more than one car can be cleaned simultaneously. By simply adjusting the system to make more components be active at a particular time and wisely adjusting the time intervals say, the 1st car is dried while the 2nd is brushed and the 3rd is cleaned and so on we can increase the efficiency and effectiveness of the system by reduction in the time and energy consumed

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