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Under the IEC 61131-3 standard, PLCs can be programmed using standards-based programming languages. A graphical programming notation called Sequential Function Charts is available on certain programmable controllers. In recent years "Safety" PLCs have started to become popular, either as standalone models or as functionality and safety-rated hardware added to existing controller architectures (Allen Bradley Guardlogix, Siemens F-series etc.). These differ from conventional PLC types as being suitable for use in safety-critical applications for which PLCs have traditionally been supplemented with hard-wired safety relays. For example, a Safety PLC might be used to control access to a robot cell with trapped-key access, or perhaps to manage the shutdown response to an emergency stop on a conveyor production line. Such PLCs typically have a restricted regular instruction set augmented with safety-specific instructions designed to interface with emergency stops, light screens and so forth. The flexibility that such systems offer has resulted in rapid growth of demand for these controllers. PLC language have few types which named above .Prior to the discovery of the Stuxet Computer Virus in june 2010, PLC received attention. As PLCs became more advanced, methods were developed to change the sequence of ladder execution, and subroutines were implemented. A primary reason for this is that PLCs solve the logic in a predictable and repeating sequence, and ladder logic allows the programmer (the person writing the logic) to see any issues with the timing of the logic sequence more easily than would be possible in other formats.

PLC contains real time operating system and exploits for these system exit much as they do for dekstopcomputer. PLCs can also be attacked by gaining control a computer they communicate with. We will load and configure the sample ladder logic program and download. Start RSLogix500. It should come up to a blank window:

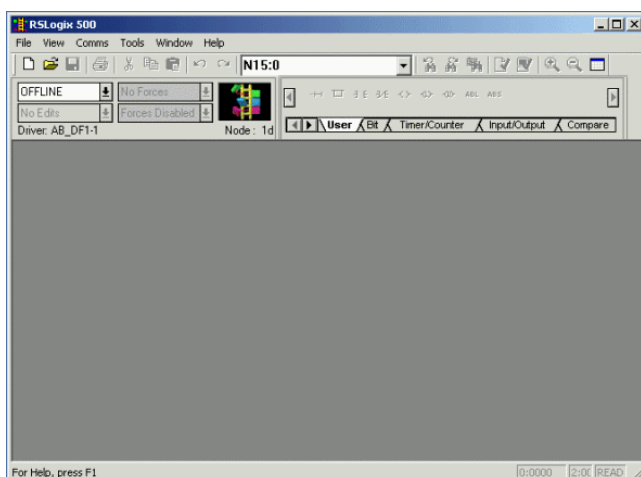


Figure 3: RS Logix Window

The advantage of using PLC tools such as PLC LOGIX are that they save time in design of automated control applications and they also increase the level of safety associate with equipment because various “what if” scenerios can be tried and testeed before the programme is activated .

Here in above figure the screen of RSLogix has shown with whom we will precede our programme. Ladder language make easy all the controlling with less wiring and there is another advantage we can reload the program because it have all the controlling in program and we can easily change the program [3]. Ladder language have two vertical lines one is positive and another is negetive and these lines called power rails,There are some horizontal line which are connected with these vertiial lines called rungs. Ladder have many instruction for different type of application like XIC,XIO,Timer,Counter,Compare,Latch/Unlatch,Scaling,li mit and others. In this program we use XIC,XIO,Counter.We design all the program on these rungs with the help of some instruction.In order to design the control circuit PLC system divides into few points and ladder language make easy all the controlling with less wiring and there is another advantage we can reload the program because it have all the controlling in program and we can easily change the program [5].

Our PLC programme in ladder language will be divided in three steps:

1. In the first step the processing of gate and counter will be explained. Here in this programme one sensor used for IN GATE. Here up counter used for counting the number of people on entrance. LED glows when the capacity of hall or industry full and LED will also glow during the entry of persons. Sensor senses the people when they will be in front of door. LED will glow with each entry and when the capacity will be full then LED will also glow. Here done bit will be DN bit high when acc.<=preset. Here when value of accumularor is less or equal to preset then done bit will be ON.

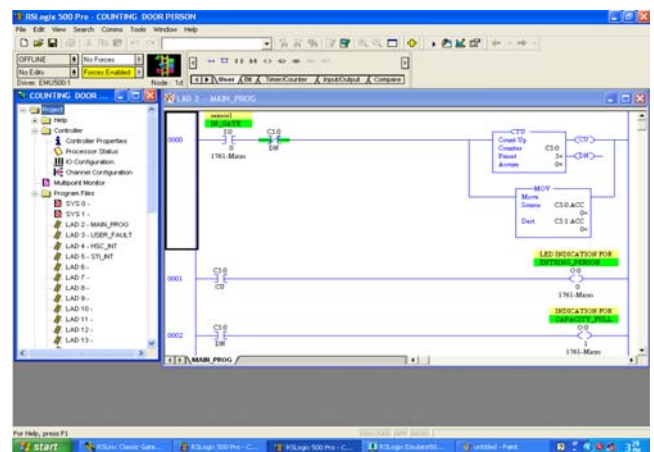


Figure 4: Ladder Logic for Entrance gate

2. In the next step, another sensor used for the exit gate. Where LED also used for indication of exit person and also for the capacity full indication. Here LED will glow when it sense person near the sensor and it will also glow when the capacity of conference hall will be full. With the help of down counter the number of people can be counted on the exit gate.CD bit means counter down bit. DN bit high when acc.<=preset.Here door will be opened if anyone wants to leave the hall or room.

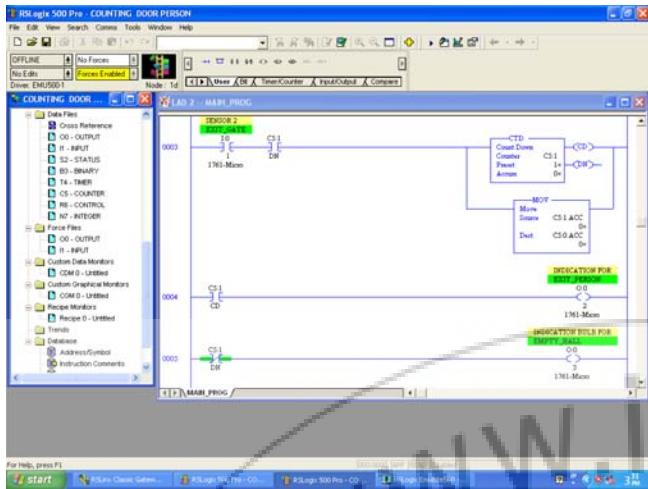


Figure 5: Ladder Logic for Exit Gate

Counter, the word itself defines their meaning which indicates that it is used for counting. In different types of PLC, different types of counter are used, but here we use two types of counter. The first is an up counter and the second one is a down counter. An up counter is used for counting in an increment order, meaning if we count starts from 0, the next value will be 1, 2, 3, A down counter is used for counting in a decrement order, meaning if we count starts from a maximum value, for example, if we give a maximum value of 10, the next value will be 9, 8, 7, 6, 4, 3, 2, 1, It will also go to a negative value and a minimum value will be -32768.

3. Display screen will be used for displaying the number of people present at the end of operation. Here, in the third step, the total number of people present will be displayed on the screen. Here, the MOV instruction is used for displaying the total number of people present. Here, in this RSLinx Classic, it is used as communication software, which communicates between a PC and a PLC. RSLinx 500 is a kind of programming software which communicates between a PC and connecting devices. With the help of this software, the whole of the process of automation will be performed. The controller allows programming of the system and the door will be opened with LED glows.

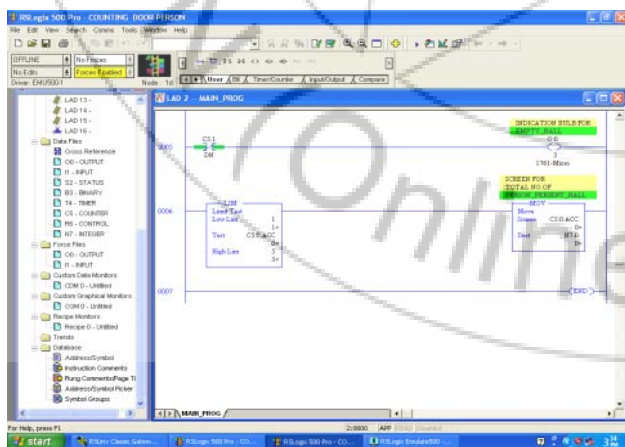


Figure 6: Ladder Logic for total number of people

4. Conclusion and Future Scope

The conclusion of this programming language shows that it is very easy to program. This system is important because of

the security and also for new age generation. This language is very useful to run all types of industrial applications. In our result, we calculate the people who enter a room and also control a gate system. This system is very useful in metro trains, not only metro, it is very useful for the entry gate system of any company, college, conference hall, elevator system, so we can easily count the people [8]. This system can also be used in our home automation system. This system also uses very low power consumption because PLCs use only 24V DC to operate their input and output modules and only 5V DC is used to operate their CPU. Automatic Door Control not only looks beautiful but it is also more secured and convenient [9]. PLCs communicate between devices using a variety of protocols and verify the performance of the system. We consistently try to reduce the cost of our product and with the help of programming, the cost reduces and programming advances. PLCs are mainly used for automation processes in many industries and machines [6]. A PLC is a real-time system, which means it is a kind of system which provides output with respect to input. PLCs are well adapted to a range of automation tasks. These are typically industrial processes in manufacturing where the cost of developing and maintaining the automation system is high relative to the total cost of the automation, and where changes to the system would be expected during its operational life.

Another advantage of this system is that wiring of the input and output devices is very easy. Easy to repair and we can change the program as per our need again and again.

This system is very useful for the future with the help of this system, we can complete automation of our home with less energy consuming and within a low period of time. As time passes, people have no time for their home security, so with the help of this system, we can secure our home without manpower with the help of connection with a GSM system. We can also control all home appliances and also industrial operation with the help of a mobile phone from some remote location. Door control systems are widely used in large shopping malls, banks, conference halls, large hotels, airports, and office buildings, etc. Our safety PLC systems bring the benefits of traditional PLC systems to complex safety applications, replacing the relay system required to bring a process to a safe state. Safety PLCs allow standard and safety-related programs, providing flexibility in programming as well as a familiar, easy-to-use environment. We have to download the program from the emulator, then we can run it, otherwise, processing of run cannot obtain.

According to the above figures, sensor one is the input sensor which we connect at the input module of the PLC when the people come in front of the sensor, then the value will increase in the counter, and here we use the counter CU bit, which will be high at each pulse, so that the output which connects at the output module of the PLC. Here, our output is the entry gate, which will attach with the PLC output. Similarly, when the second sensor which connects at the inside terminal of the input module senses the input and gives the signal to the counter down, and the value will decrease, and the gate will be open with the help of the CD bit (count down). And the number of people present will also be displayed on the screen.

Implementation and performance of door control system described with the help of this programming language. The performance of door control system explained with the help implementation. With each step performance can also be seen during the running programmes. Door control system is necessary for daily use as well as for industrial applications[4]. Door control system application can be extended according to the requirements.

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