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DESIGN AND IMPLEMENTATION OF POWER SAVING ON RAILWAY PLATFORM BASED ON ARRIVAL AND DEPARTURE OF TRAIN

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ABSTRACT

As we know the Railway platforms will be long and there will be more number of lights glowing through out the platform during night. This results in wastage of Electric power. With the help of Intelligent Lighting System project, we can save the power and increase the economy of railway department.

Let us consider a Railway platform consisting of around 200 Lights, using this project we make some of the lights to glow automatically as soon as it becomes dark in the evening (i. e.50 lights), this gives mild lighting through out the platform. When the train approaches the station the remaining all the lights will glow automatically (i. e.150 lights) and gives enough lighting to the passengers. As soon as the train leaves the platform, the 150 lights gets OFF and makes the 50 Lights to glow. It also gives an indication by giving a sound for a predetermined time if the train arriving to the station. The same process repeats for the other trains. Again in the morning all the Lights becomes OFF, in the day time the system will not work though the train arrives or departures to the station.

The sensing of train arrival and departure in the platform is sensed with the help of magnetic switches, which is interfaced to the 8051 Microcontroller. Dawn and Dusk is detected with the help of LDR.

INTRODUCTION

Let us consider a Railway platform consisting of around 200 Lights, using this project we make some of the lights to glow automatically as soon as it becomes dark in the evening (i. e.50 lights), this gives mild lighting through out the platform. When the train approaches the station the remaining all the lights will glow automatically (i. e.150 lights) and gives enough lighting to the passengers. As soon as the train

leaves the platform, the 150 lights gets OFF and makes the 50 Lights to glow. It also gives an indication by giving a sound for a predetermined time if the train arriving to the station. The same process repeats for the other trains. Again in the morning all the Lights becomes OFF, in the day t ime the system will not work though the train arrives or departures to the station.

The sensing of train arrival and departure in the p latform is sensed with the help of magnetic switches, which is interfaced to the 8051 Microcontroller. Dawn and Dusk is detected with the help of LDR.

The same project can be employed in domestic places, ATMS etc..This project idea is new and it has not been installed so far.

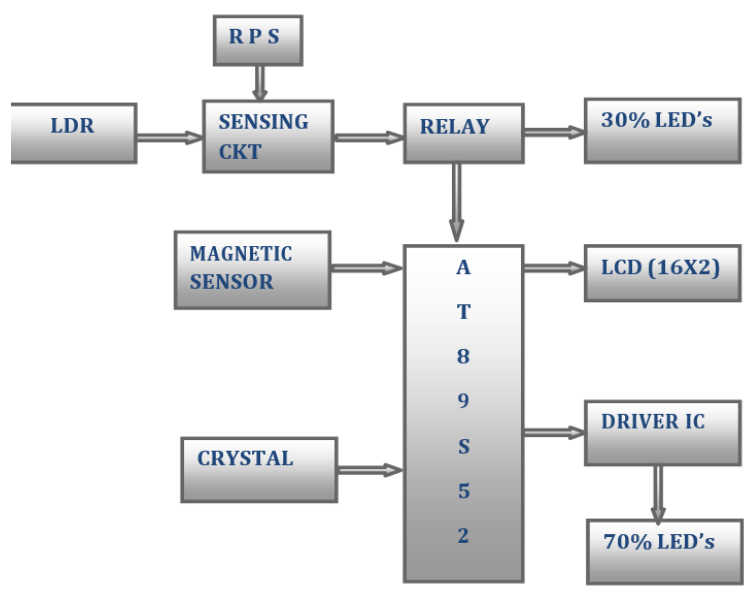


Figure.1 Block Diagram

PROPOSED SYSTEM

The LDR is used to sense whether it is day or night. Depending on the intensity of light, the resistance of LDR varies. With the help of above principle the LDR is used in order to detect the sun raise or sun set. During daytime, the resistance of LDR offers less resistance and it provides current to flow through it and it also provides biasing to light sensing circuit.

The light sensing circuit provides enough voltage to drive the driver circuit. With the help of Driver circuit, the required voltage (9V or 12V) can be obtained to operate the Relay. With the help of Relay contacts 230V AC can be obtained to make some of the lights ON as the sunsets and to provide the DC supply voltage to operate the Train sensing circuit.

The 8051 IC receives the signal from the Input port and sends the high output at the output port. In order to make all the lights ON as soon as the Train comes to platform, Two Magnetic switches are provided on either sides of the platform. The magnetic sensors are interfaced to the input port of Microcontroller 8051. The 8051 IC receives the signal from the Input port and sends the high output at the output port. The output port of Microcontroller Voltage is not sufficient to drive (operate) the relay. The output of microcontroller is fed to the driver circuit; the driver circuit is a single stage transistor amplifier, which amplifies the signal to the required level to activate the relay

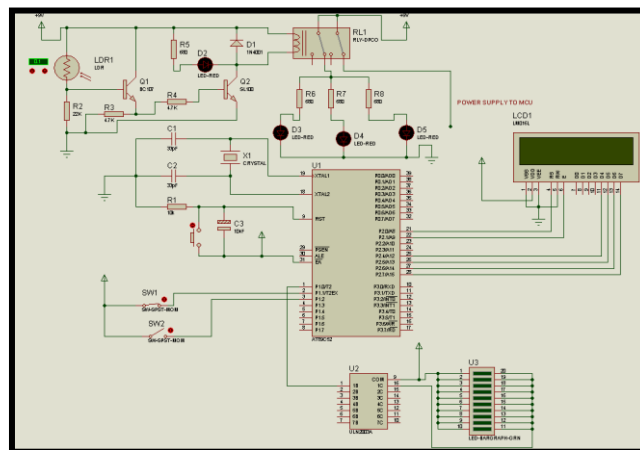


Figure.2 Schematic Diagram

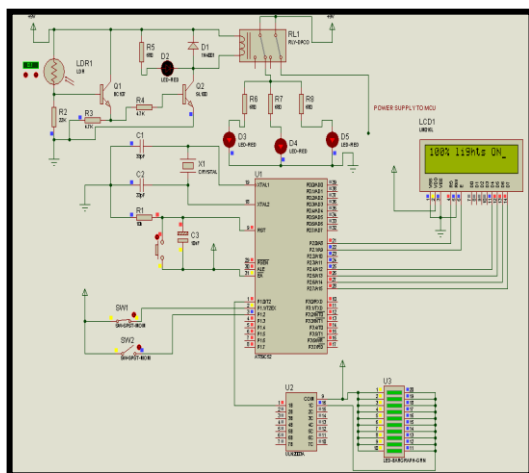


Figure.3 100% Light

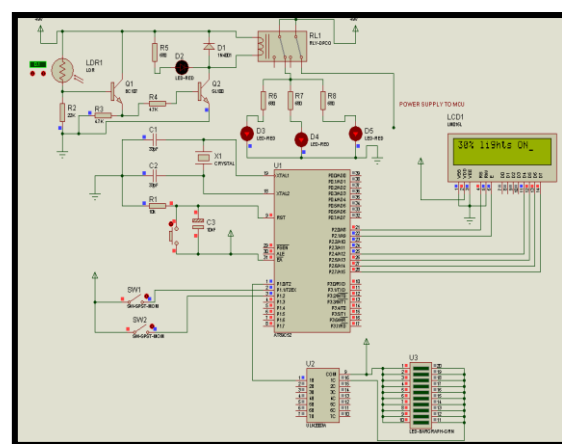


Figure.4 30% Light

RESULTS

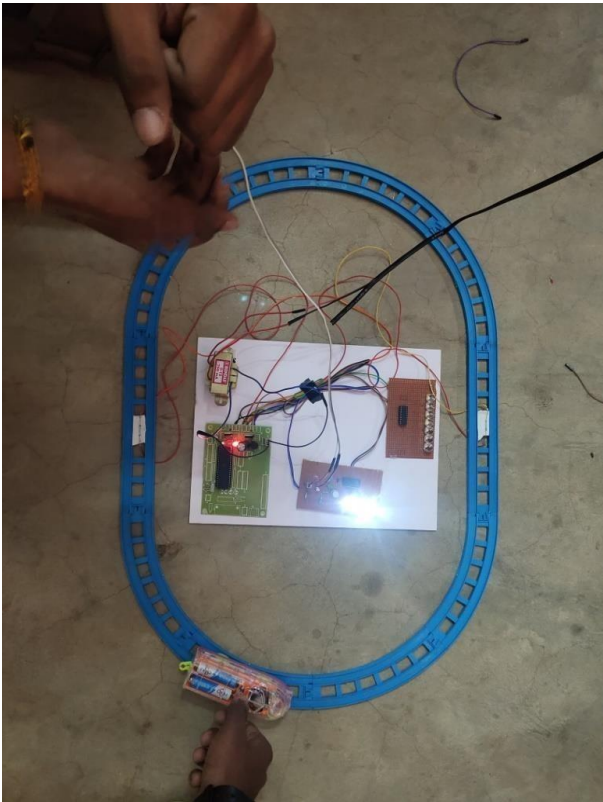


Figure.5 30% Lighting System

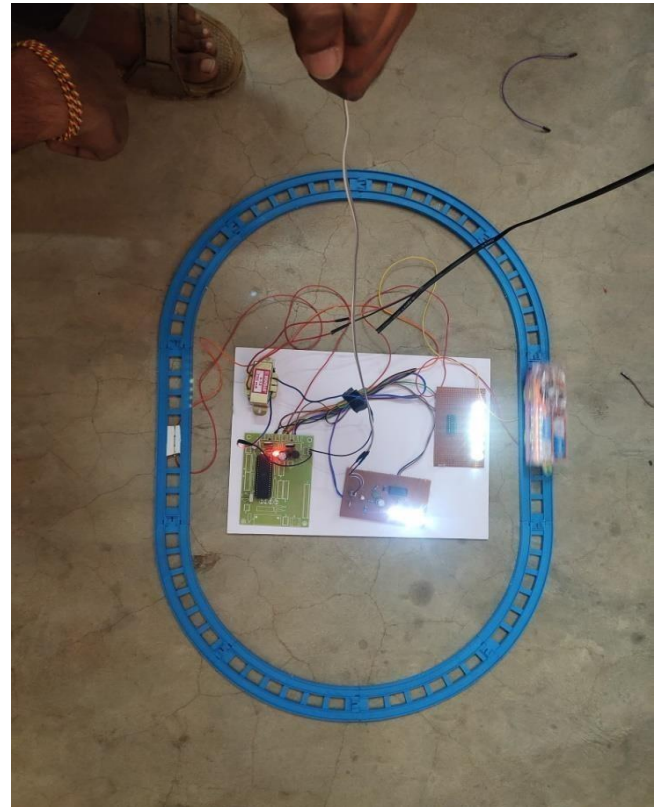


Figure.6 100% Lighting

CONCLUSION

The project is with simple devices with software programming. The inputs from magnetic sensors are read by microcontroller and identified the arrival and departure of train. As soon as the train arrived on plat form the 100% lighting system is get ON and when the train depart from platform, the 70%of lighting system is get OFF.

The day and night sensing circuit sensing the day time and night time functioned as per the light. During day time, the sensing board gets ON and which made the relay ON. Hence a open circuit

is created to power supply and microcontroller board. During night time, the sensingboard gets OFF and relay OFF. Hence a closed circuit is formed between power supply and microcontroller. The DPDT relay also gives continuity to 30% of lighting system. During night time only the microcontroller identifying the arrival and departure.

FUTURE SCOPE

The project can develop in the future by using high efficient and long duration sensors. The magnetic sensors are high sensitive and can broke easily. The project also develop with by implementing RF technology to make a wireless.

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