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MAGIC LIGHT WITH A MUSICAL  
BELL

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## **ACKNOWLEDGEMENT**

Assalamualaikum and greeting to all readers...

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## **ABSTRACT**

This simple project 'Magic Lights with a Musical Bell' is valuable, acceptable and interesting for use in the house, despite it can also be use as a security system.

The main purpose of the project is to facilitate the resident of the house where it save energy, money and electricity. Beside that, it can give advantages to the blind person by knowing the presence of the person from the sound produced.

With a total expanse of RM 60.60, it is suitable for the residence of the house who are budgeting their money.

The circuit operate by sensing the presence of a person that switch on the lights at the entrance gate to a premises, at night, automatically. In addition, it sounds a musical bell to signify the presence of the person. The lamp is switched on only for a short interval to save electricity.

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## 1.1 : THEORETICAL BACKGROUND

### Circuit 1 : Automatic Gate Light With A Musical Bell

#### Circuit Operation :-

This circuit may be used to automatically switch on a light at the entrance gate to a premises, at night, by sensing the presence of a person. In addition, it sounds a musical bell to signify the presence of the person. The lamp is switched on only for a short interval to save electricity. This circuit has two stages: a transmitting unit and a sensing unit. The transmitting unit consists of two infrared LEDs while the sensing unit consists of an IR sensor and its associated circuitry. The IR LEDs emit a beam of infrared light when switch S1 is put on. This infrared beam falls on the IR sensor D3. As a result transistor T1 gets forward biased while transistor T2 is cut-off. When any person tries to enter the gate, the IR beam falling on the IR sensor is momentarily interrupted. As a result NE555, configured as monostable flip-flop, gets a trigger pulse at its trigger input pin 2. Its output goes high for a predetermined time period. The period can be adjusted by varying the value of resistor R5 and / or capacitor C1 as  $T = 1.1 \times R5 \times C1$  sec. Output pulse from IC1 forward biases transistors T4 and T5. As a result the musical bell is switched on, but the bulb is switched on only at night as explained in the succeeding paragraph. The musical bell is built around IC2 (UM66). The output from IC2 is amplified by transistors T6 and T7 to drive an 8-ohm, 500mW loudspeaker. An LDR based circuit is used to switch on the bulb at night only. The bulb is switched on when relay RL1 is de-energised. During day time the LDR offers a very low resistance, and thus transistor T3 is forward biased to 'on' state and the relay RL1 is energised. In energised state of relay RL1, the main supply circuit to the bulb is incomplete. During night time the 'dark' resistance of LDR is very high and the relay is de-energised. As a result mains supply is connected to triac BT136 via