

REPORT OF MODULE 2 PROJECT

PROJECT TITLE:

TOGGLE TWO LED'S USING PUSH BUTTON

CONTENTS:

1. Introduction
2. Components used
3. Schematic diagram
4. working
5. Simulations
6. Result

Introduction:

To Toggle two LED's using push button the main element here is ATMEGA328. In this, we will toggle the status of the two LED's according to the input from a button switch. Every time when the controller receives input from the switch, it will toggle the current status of the LED's.

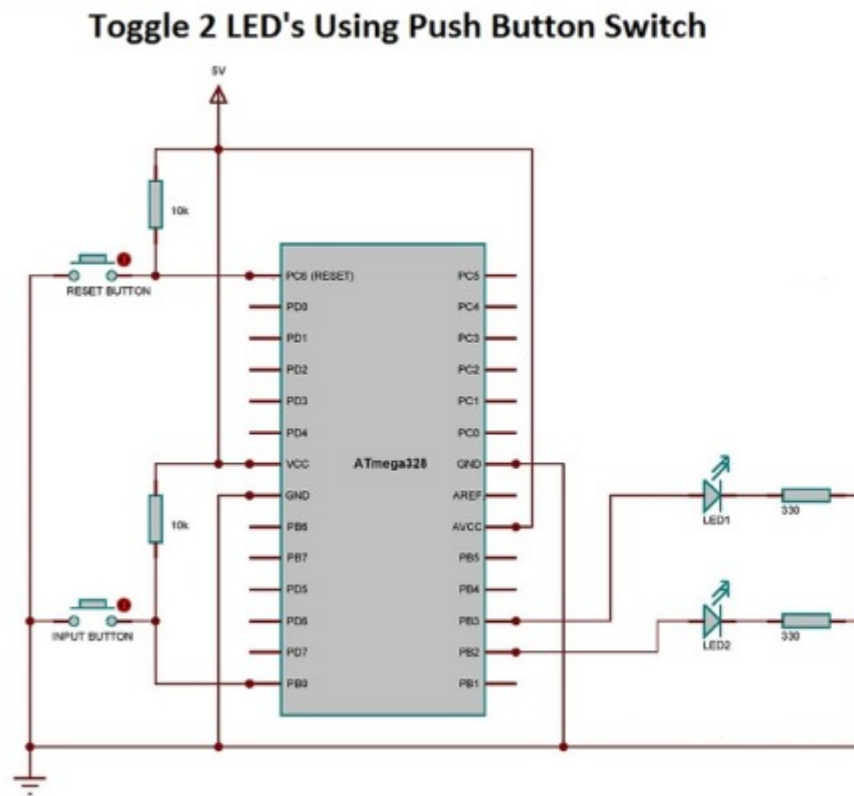
ATMEGA328 is a popular microcontroller due to it being a major component in the Arduino board projects. The ATMEGA328 is the 8-bit RISC heart of the Arduino UNO and Nano, with maximum clock frequency of 20MHz, 32KB program FLASH, and 2KB of RAM. Most Arduino boards consists of an Atmel 8-bit AVR microcontroller with varying amounts of flash memory, pins and features.

The push button switch is usually used to turn on and off the control circuit, and it is a kind of control switch appliance that is widely used. It is a kind of control switch appliance that is widely used. It is used in electrical automatic control circuits to manually send control signals to control contractors, relays, electromagnetic starters etc. the push button switch can complete basic controls such as start, stop, forward, reverse rotation, speed change and interlock.

COMPONENTS USED:

- ATMEGA328
- Resistors Of 330 ohms
- Resistors of 10k ohms
- LED's
- Push button
- Supply voltage
- Ground

SCHEMATIC DIAGRAM:



WORKING:

we will toggle the status of the two LED's according to the input from a button switch. The circuit needed for this is similar to that of the above section. The only difference is in the programming part. And the working of the circuit is also slightly different. Every time when the controller receives input from the switch, it will toggle the current status of the two LED's.

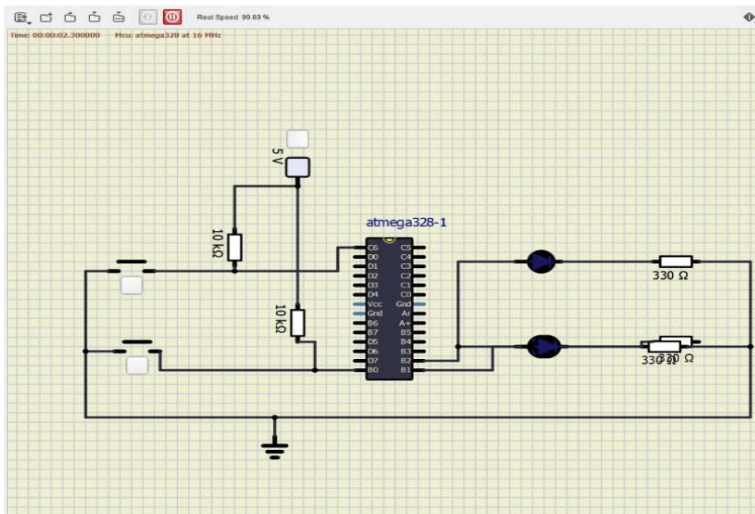
Here also we included the pre-processors and libraries. And the necessary pins are configured as input and output using the DDRx (Data Direction Register). An "if" loop is then included at the main program with a condition

`"!(PINB & (1 << PINB0))"`, which will continuously monitor the status of the PB0 pin.

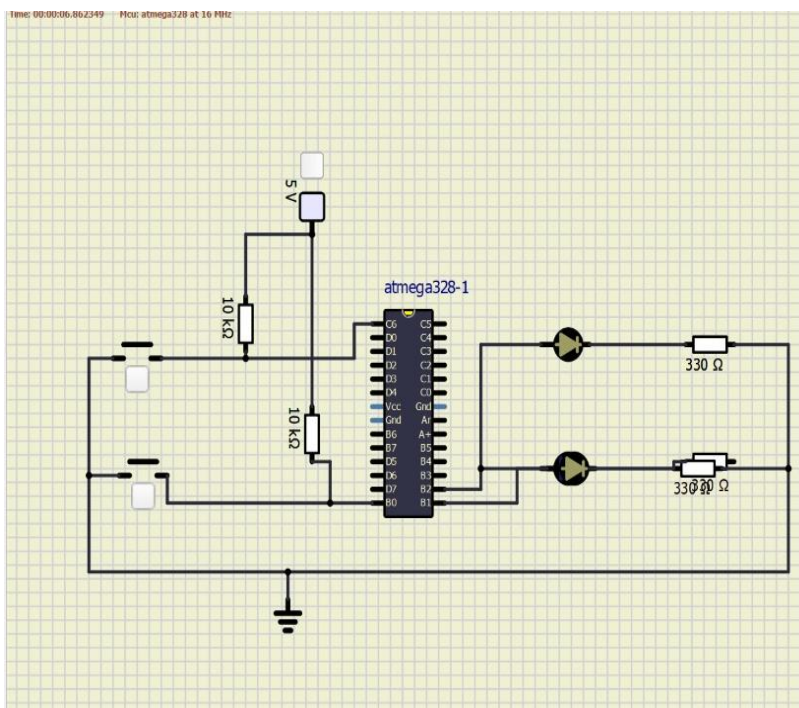
`"PORTB ^= (1 << PINB2) ^ (1 << PINB3)"` is the instruction for toggling the current status of the PB2 and PB3 pins. A 300 ms delay is also included at the end of the program in order to avoid debounce of the push button switch.

SIMULATIONS:

LED OFF CONDITION:



LED ON CONDITION:



RESULTS:

By using ATMEGA328 simulated the above simulations by load firmware in the microcontroller. And observed the toggle states of the two LED'S by using the push buttons. And accurate results are been observed.