On Demand Traffic Light

egypt**fwd**
initiative

UDACITY

By: Marwan Yasser

Contents:

System Description

Traffic lights are signaling devices positioned at road intersections, pedestrian crossings, and other locations to control the flow of traffic.

Traffic lights normally consist of three signals, transmitting meaning to drivers and riders through colors and symbols including arrows and bicycles.

The regular traffic light colors are red, yellow, and green arranged vertically or horizontally in that order.

Although this is internationally standardized, variations exist on national and local scales as to traffic light sequences and laws.

This is an implementation of a traffic lights system with an on-demand crosswalk button.
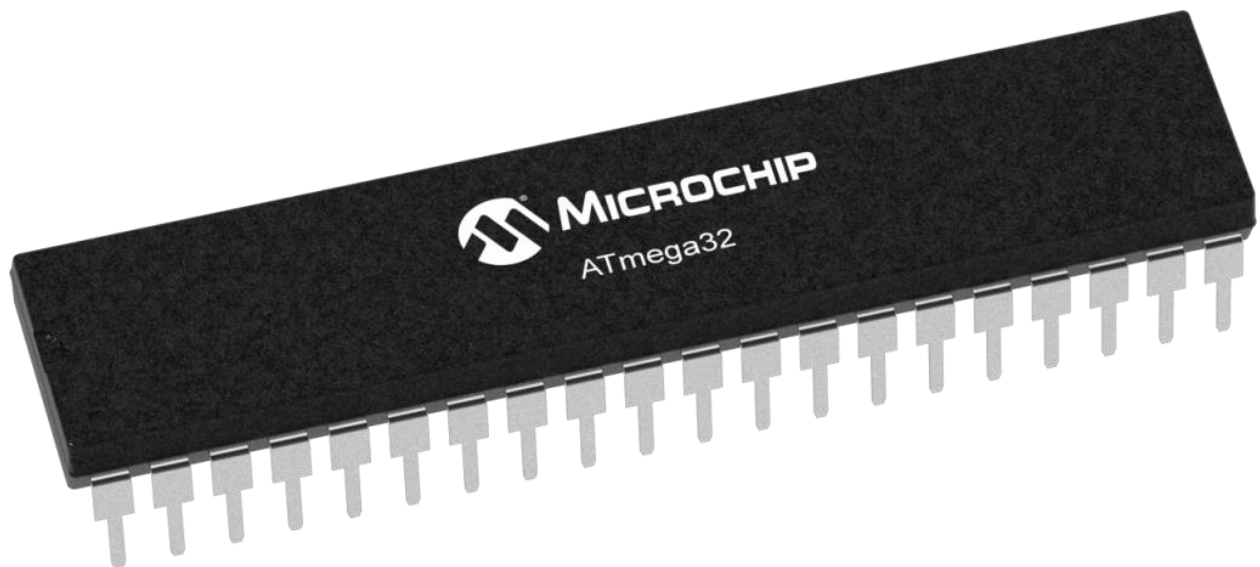
Crosswalk buttons let the signal operations know that someone is planning to cross the street, so the light adjusts, giving the pedestrian enough time to get across.
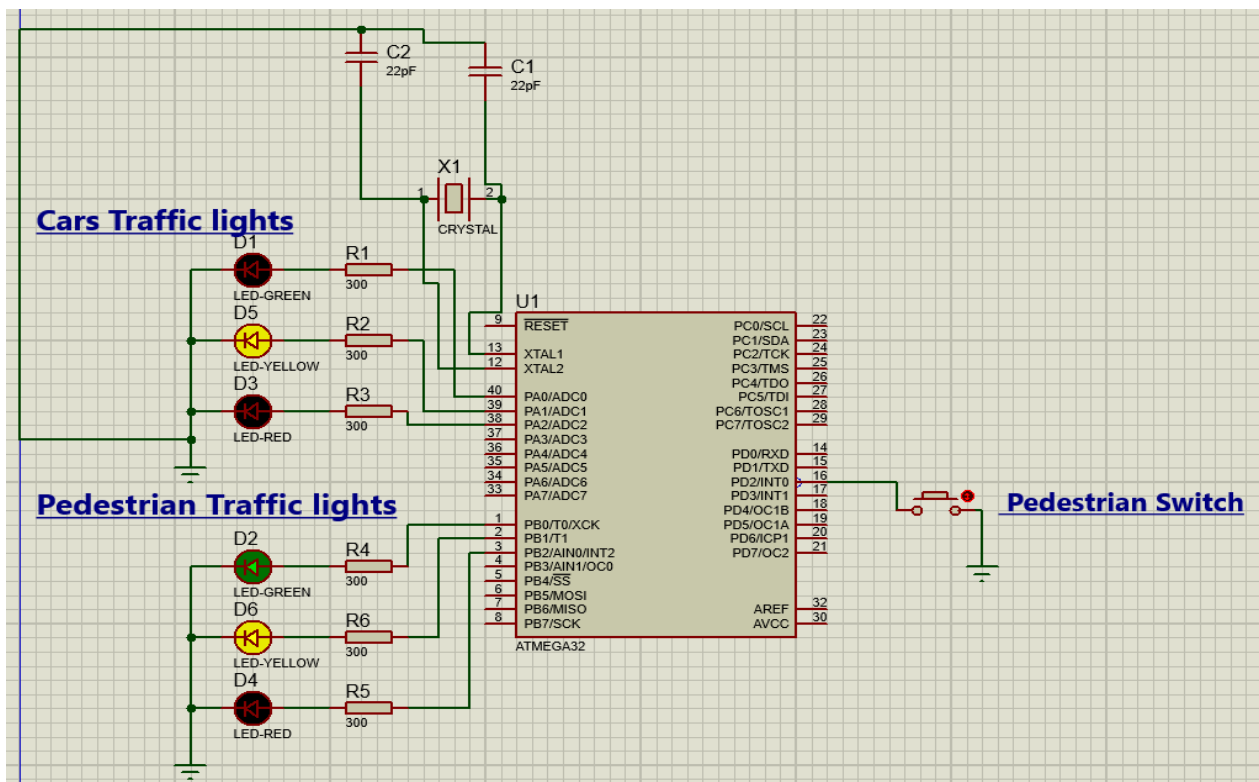
System Design

System consists of:

-Atmega 32 as the microcontroller

-6 LEDs (2 Red, 2 Green, 2 Yellow) as the traffic lights

-Switch used by pedestrians

System Architecture

Traffic_Light
- Binaries
- Includes
- Application
  - Application.c
  - Application.h
- Debug
- HAL
  - LED_config.h
  - LED_interface.h
  - LED_private.h
  - LED_program.c
- LIB
  - BIT_MATH.h
  - STD_TYPES.h
- MCAL
  - DIO
  - EXTI
  - GIE
  - PORT
  - TIMER
- main.c

MCAL
- DIO
  - DIO_config.h
  - DIO_interface.h
  - DIO_private.h
  - DIO_program.c
  - DIO_register.h
- EXTI
  - EXTI_config.h
  - EXTI_interface.h
  - EXTI_private.h
  - EXTI_program.c
  - EXTI_register.h
- GIE
  - GIE_interface.h
  - GIE_program.c
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- PORT
  - PORT_config.h
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System Flowchart

The system flowchart explains how the program works.