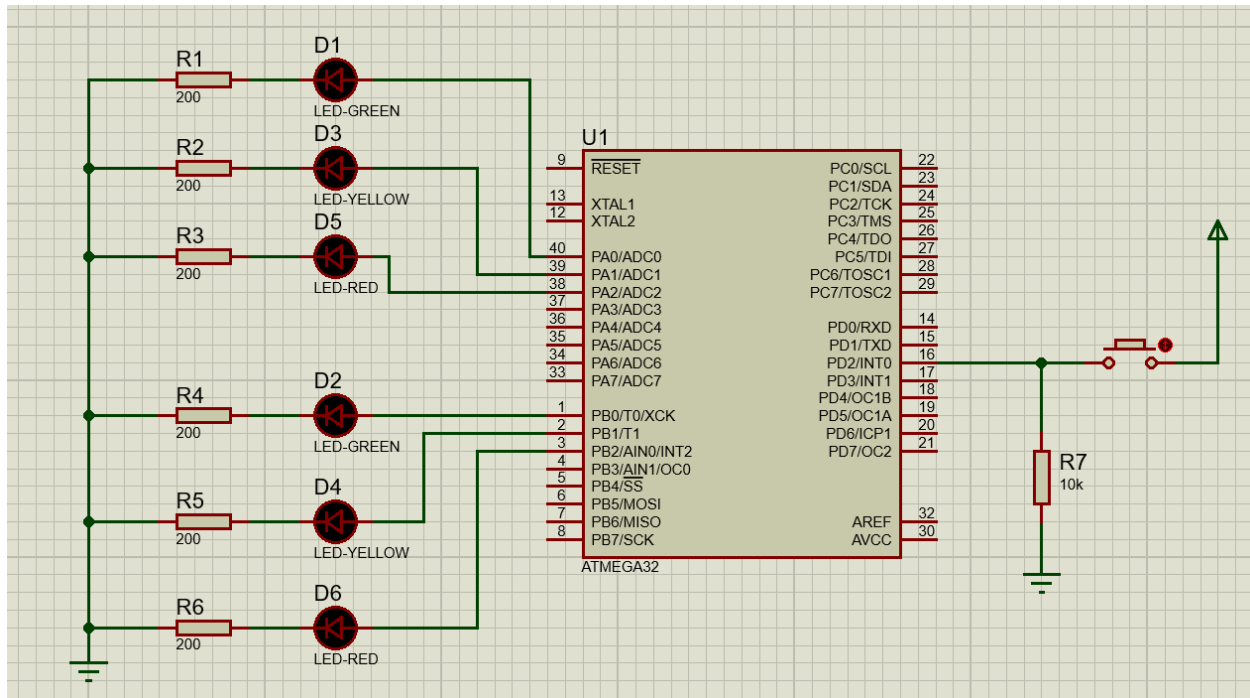# On-demand Traffic Light control

Khaled Tarek

1. System description

1. 1 system overview

2. 1 system functionality

The system can detect when the button is pressed. Afterwards, based on current state it would decide what to do. It allows pedestrians to walk by making sure cars are stopped first.

2.System design

1.1   Hardware requirements

- AVR Atemga32
- 2 Res LED$_s$
- 2 Yellow LED$_s$
- 2 Green LED$_s$
- Resistance 10 k Ω & 6x 200 Ω
- Push button

1.2   Simulation requirements

Proetus license.

3. Flow chart

Legend / boxes:

carLED:
0 Green
1 Yellow
2 Red

Mode
1->normal
0->pedestrian

Start

carLED = 0
prevcarLED=1
mode = 1

is mode=1 or carLED=0 or carLED=1?   — Yes / No

is mode=0?   — Yes / No

carLED=1

Ped LEDs:
G->OFF
Y->OFF

Ped LEDs:
G->ON
Y->OFF
R->OFF

Car LEDs:
G->OFF
Y->OFF
R->ON

Wait 5s

Car LEDs:
R->OFF

Yellow LEDs
Blink (each 1
second)

is Repeated
5 times?   — Yes / No

Yellow LEDs OFF
Pedestrian R->ON
mode = 1
carLED=0 prevcarLED=1

carLED=0   — Yes / No

Car LEDs:
G->ON
Y->OFF
R->OFF

is Seconds
passed?   — Yes / No

is Button
pressed?   — Yes / No

ISR
mode=0

carLED=1
prevcarLED=0

carLED=1   — Yes / No

is mode=0?   — Yes / No

is prevcarLED=2?   — Yes / No

Ped LED:
R->ON

Yellow LEDs
Blink (each 1
second)

is Repeated
5 times?   — Yes / No

prevcarLED=2
carLED=1
Car R->ON

Car Yellow
LED Blink
(each 1
second)

is Button
pressed?   — Yes / No

ISR
mode=0

prevcarLED=1

is Repeated
5 times?   — Yes / No

Yellow LEDs
OFF

is prevcarLED=0?   — Yes / No

carLED=2
prevcarLED=1

is prevcarLED=2?   — Yes / No

carLED=0
prevcarLED=1

carLED=2   — Yes / No

Car LEDs:
G->OFF
Y->OFF
R->ON

is Seconds
passed?   — Yes / No

is Button
pressed?   — Yes / No

ISR
mode=0

prevcarLED=2
carLED=1

prevcarLED=1

4. State machine