Week 1 Assignment

Four Way Traffic Controller

	SIGNAL 1: - Red, Yellow, Green	
	SIDE ROAD Bidirectional	
MAIN ROAD Bidirectional	**ARDUINO MICROCONTROLLER**	**MAIN ROAD** Bidirectional
SIGNAL 4: - Red, Yellow, Green		**SIGNAL 2: - Red, Yellow, Green**
	SIDE ROAD Bidirectional	
	SIGNAL 3: - Red, Yellow, Green	
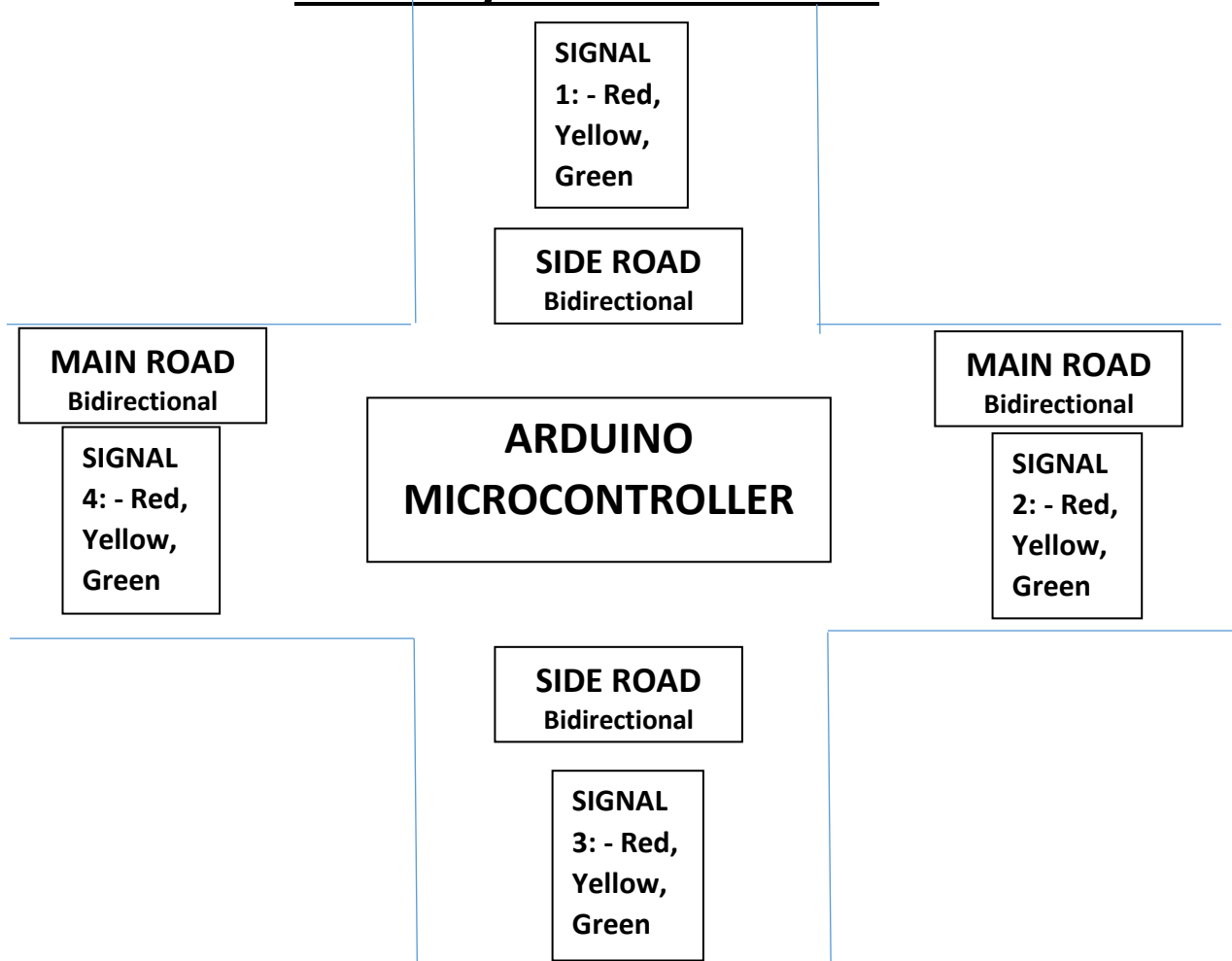
Problem Statement: -

To design a basic 4-way traffic control system with LEDs using Arduino Micro controller.

A typical 24-hour day in a city X sees the following traffic patterns during various time slots: -

1. 3 am to 6 am – Light traffic
2. 6 am to 9 am – Medium Traffic
3. 9 am to 9 pm – Heavy Traffic
4. 9 pm to 3 am – Medium Traffic

Your goal is to design the LED timing system, to operate a typical 4-way intersection in X, as shown in the above diagram.

ARDUINO AND IOT

Conditions: -

1. Include a variable named '*time_slot*' in the code which can take values from 1 to 4 to depict the time of day. Based upon the value of '*time_slot*', the corresponding control pattern of LEDs should execute as mentioned below.
2. At any given time, no more than one LED of the same signal should glow.
3. While defining pins, each code should include a comment showing which pin is connected to which LED of which signal.
   e.g. pinMode(9, OUTPUT); //signal 1 red led
4. *time_slot*==1
   Under this condition, all the four yellow LEDs at signals should blink, and all the remaining LEDs should remain OFF.
5. *time_slot*==2
   The 4 signals should execute the following pattern in a cyclic manner going in the order as 1, 2, 3, 4(see diagram for clarity).
   Pattern of LEDs
   Signal 1 GREEN ON, Signal 2 RED ON, Signal 3 RED ON, Signal 4 RED ON. (For 3 sec.)
   Signal 1 GREEN OFF, YELLOW ON, Rest Signals remain RED ON, as before. (For 1 sec).
   Signal 2 GREEN ON, Signal 1 RED ON, Signal 3 RED ON, Signal 4 RED ON. (For 3 sec.)
   Signal 2 GREEN OFF, YELLOW ON, Rest Signals remain RED ON, as before. (For 1 sec).
   …and so on.
6. *time_slot*==3
   Pattern of LEDs
   Signal 2 and Signal 4 (Main Road) must have GREENS ON, Signals 1 and 3 REDS ON. (For 3 sec)
   Signal 2 and Signal 4 GREENS OFF, YELLOWS ON. Signals 1 and 3 REDS ON (For 1 sec)
   Signal 1 and Signal 3 (Side Road) must have GREENS ON, Signals 2 and 4 REDS ON. (For 3 sec)
   Signal 1 and Signal 3 GREENS OFF, YELLOWS ON. Signals 2 and 4 REDS ON (For 1 sec)
   …and so on repeating again.
7. *time_slot*==4
   Same as Condition 4.

Submission Rules: -

1. Submission should include a clear screenshot of circuit diagram, and written code in a text file format.
2. The entire assignment must be uploaded to your GitHub accounts, as stated earlier in Group.