

CHAPTER 6

Expected and Simulation Results

6.1 Expected Results

The project involves preventing accidents due to drowsiness in vehicles by using eye blink sensor. The IR transmitter transmits infrared rays into the eyes. The ray reflected from the eye is picked up by the receiver which is in a straight line to the transmitter. Depending on the output of receiver, we get to know whether the eye is in an open or closed position. Another extra feature is the alarm system inside the vehicle to alert the driver. If the eye is in a closed position, then the output is high.

This output activates the corresponding pin in the microcontroller and sets on an alarm. In this system, we make use Eye-blink and Alcohol sensors to monitor the status of the driver. In one application when the driver is tired, the eye-blink sensor compares with the predetermined count in the microcontroller and if it is abnormal, the microcontroller generates an alarm signal and the alert message is displayed in the LCD. In the meanwhile, the motor gets stopped.

In other application, if the driver is in a drunken state, the alcohol sensor detects the abnormality by comparing the predetermined values in the microcontroller and the alert message is displayed on the LCD. Meanwhile, the motor gets stopped and driver is in a safe condition.

6.2 Simulation Results

The working of the entire system can be analyzed in 4 different cases according to the input from the sensors and that are as follows,

Initialization State

Case 1: Safe Condition/All Good Condition

Case 2: Drowsy state detection

Case 3: Drunken state detection

Case 4: Drowsy and Drunken state detection

The detailed working can be understood with the help of look up table given in the Table 6.1,

Table 6.1: Look Up Table

Alcohol Sensor Output	Eye Blink Sensor Output > 5s	Case Execution	LCD Display Output	Buzzer Status	Motor Status	LED Status	
						Red	Green
-	-	Initialization state	“WELCOME TO MINI PROJECT!!”	OFF	ON	OFF	ON
0	0	Case 1	“Hello USER!! YOU CAN’T DRIVE”	OFF	ON	OFF	ON
0	1	Case 2	“YOU LOOK DROWSY!! YOU CAN’T DRIVE”	ON	OFF	ON	OFF
1	0	Case 3	“YOU ARE DRUNKEN!! YOU CAN’T DRIVE”	ON	OFF	ON	OFF
1	1	Case 4	“WARNING!! YOU CAN’T DRIVE”	ON	OFF	ON	OFF

Initialization State

This is the initialization state in which the startup phase of the system is described where irrespective of input state the system will perform following actions,

1. The message will be displayed on LCD screen “**WELCOME TO MINI PROJECT!!**”.
2. Buzzer output is made **LOW** to mute the buzzer.
3. The control signals are sent to motor driver to turn **ON** the DC Motor.
4. The red LED is made 0 to turn **OFF** as there is no indication of danger as such and green LED made 1 and kept **ON** by default.

Case 1: Safe Condition/All Good Condition

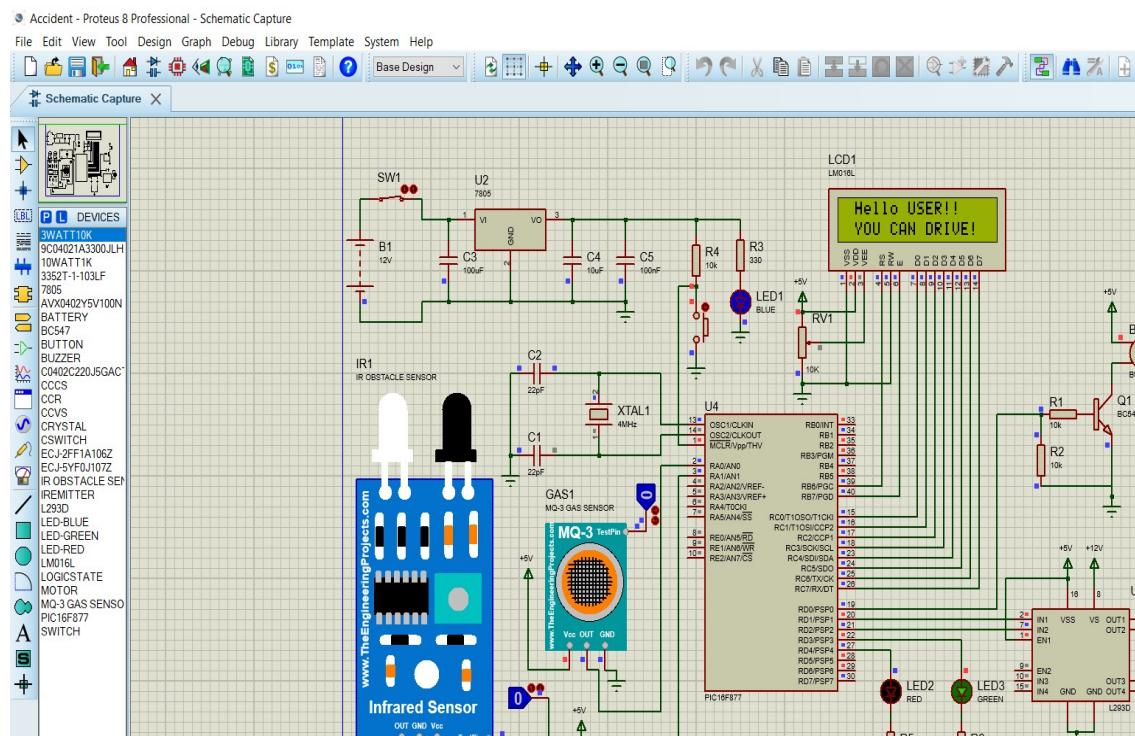


Figure 6.1: Case 1

As shown in Figure 6.1, In this case if the driver is in good condition that means he/she was sober and as well as he/she is not at all drowsy then following actions will be performed by system,

1. The message will be displayed on LCD screen **“Hello USER!! YOU CAN DRIVE”**.
2. Buzzer output is made **LOW** to mute the buzzer.
3. The control signals are sent to motor driver to turn **ON** the DC Motor.
4. The red LED is made 0 to turn **OFF** as there is no indication of danger as such and green LED made 1 to turn **ON** and indicate safe mode.

Case 2: Drowsy state detection

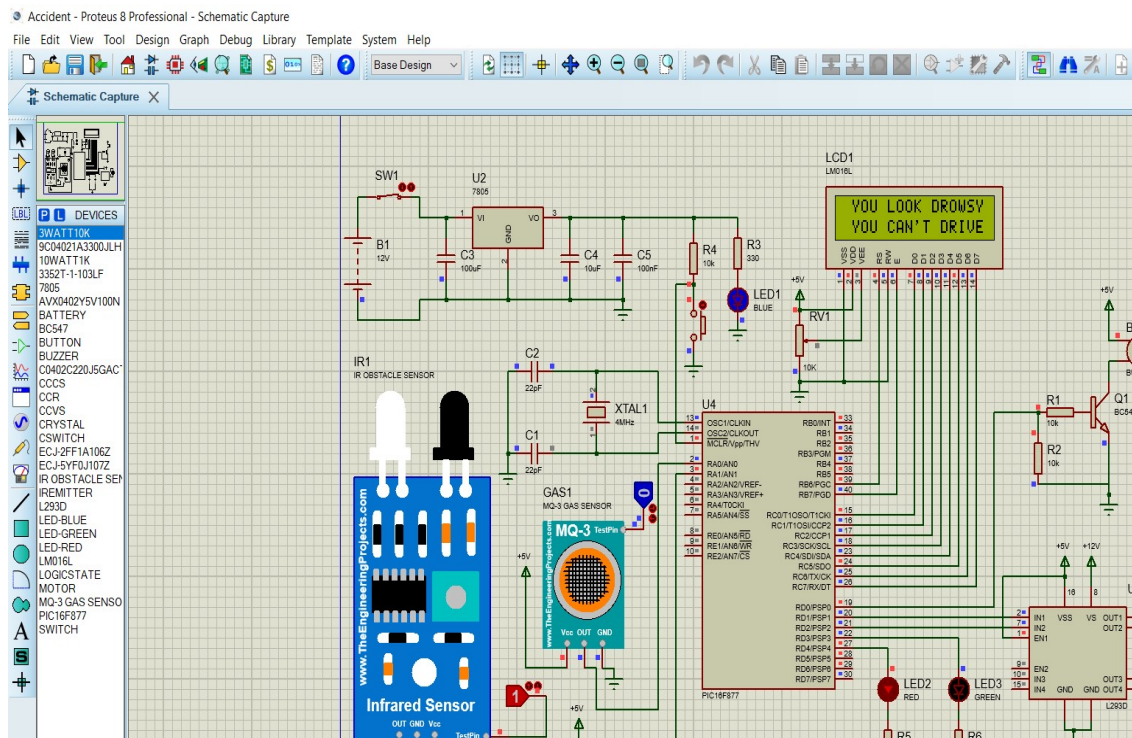


Figure 6.2: Case 2

As shown in Figure 6.2, In this case if the driver is abnormal such that he/she was sober that's a good thing but he/she is looks drowsy then following actions will be performed by system,

1. The message will be displayed on LCD screen **“YOU LOOK DROWSY!! YOU CAN'T DRIVE”**.
2. Buzzer output is made **HIGH** to buzz the buzzer.
3. The control signals are sent to motor driver to turn **OFF** the DC Motor.
4. The red LED is made 1 to turn **ON** as there is an indication of danger and green LED made 0 to turn **OFF** and indicate no safe mode.

Case 3: Drunken state detection

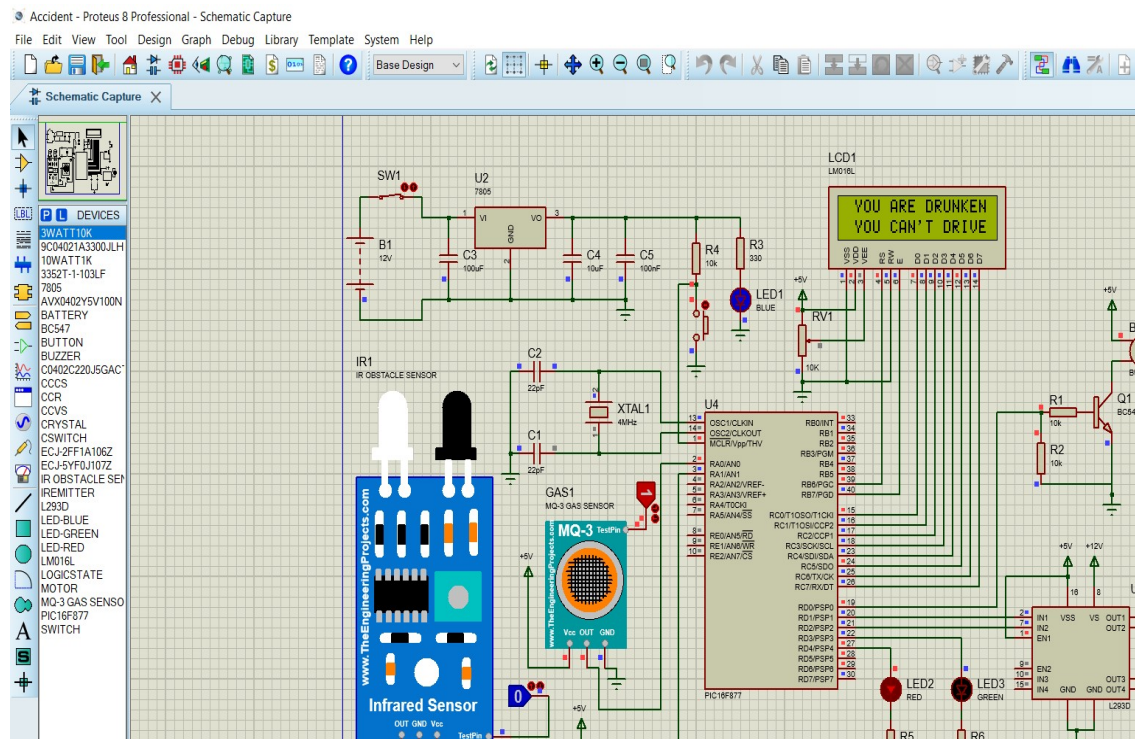


Figure 6.3: Case 3

As shown in Figure 6.3, In this case if the driver is abnormal such that he/she was drunken and he/she is not drowsy then following actions will be performed by system,

1. The message will be displayed on LCD screen **“YOU ARE DRUNKEN!! YOU CAN’T DRIVE”**.
2. Buzzer output is made **HIGH** to buzz the buzzer.
3. The control signals are sent to motor driver to turn **OFF** the DC Motor.
4. The red LED is made 1 to turn **ON** as there is an indication of danger and green LED made 0 to turn **OFF** and indicate no safe mode.

Case 4: Drowsy and Drunken state detection

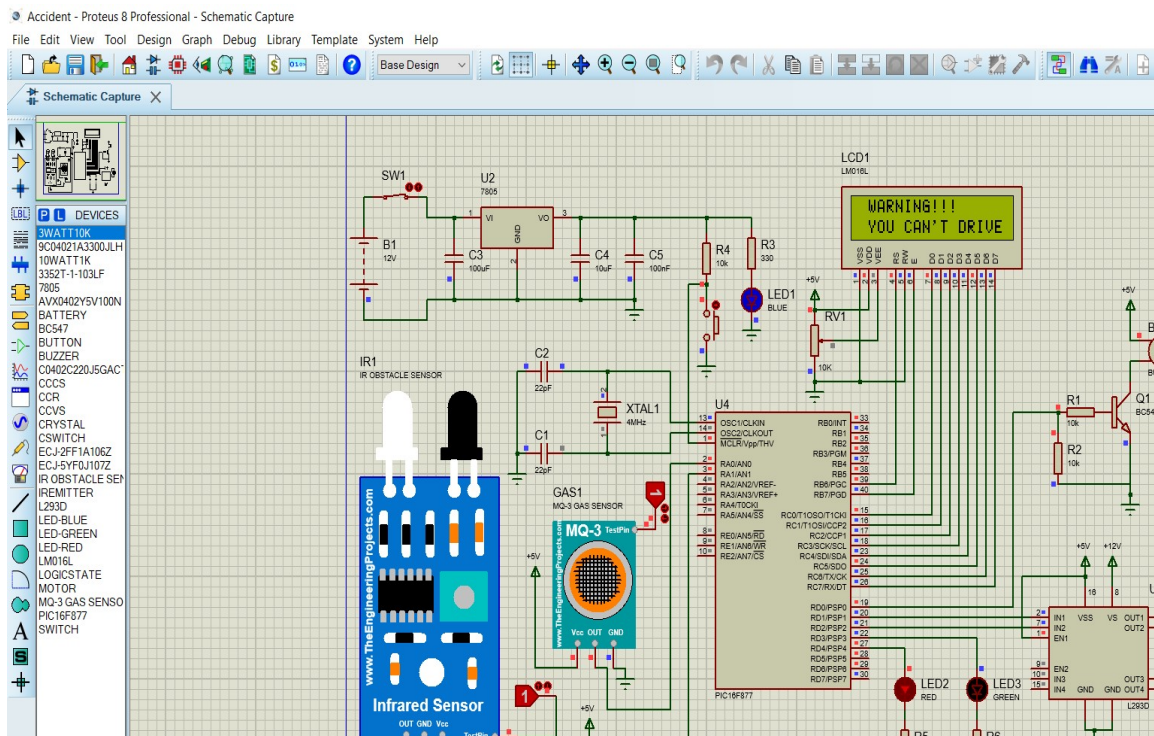


Figure 6.4: Case 4

As shown in Figure 6.4, In this case if the driver is abnormal such that he/she was drunken as well as he/she looks drowsy too then the risk of accident increases, to avoid this the following actions will be performed by system,

1. The message will be displayed on LCD screen “**WARNING!!! YOU CAN’T DRIVE**”.
2. Buzzer output is made **HIGH** to buzz the buzzer.
3. The control signals are sent to motor driver to turn **OFF** the DC Motor.
4. The red LED is made 1 to turn **ON** as there is an indication of danger and green LED made 0 to turn **OFF** and indicate no safe mode.