T.C.
DOKUZ EYLUL UNIVERSTY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

2021 - 2022
SPRING SEMESTER

CME 3208
PRINCIPLES OF EMBEDDED SYSTEMS

LAB 7 – 19.04.2022
MOTION SENSOR LIGHT WITH TIMER

In this lab you are asked to create a light (represented via a LED) using “HC-SR501 Integrated Motion Sensor” as activation key and using “14 mm Seven Segment Display” to display remaining time until turning out the light.

Compare this system to motion sensor lights or lamps that you have seen in buildings. When motion sensor detects a movement, it turns the light on and waits a previously determined time before it turns the light off and returns to its initial state, waiting for activation again.

While using “HC-SR501 Integrated Motion Sensor”, you may require to set certain variables concerning activation distance, location or speed. Try to declare these values as global variables so that we can input different values in lab hour to see their effect on the sensor.

You can use a single LED to represent light in this experiment. Just turn it on when motion sensor activated and turn it off when the wait time has passed.

“14 mm Seven Segment Display” is used to show the remaining time until light is turned off. As you know, it can be used to represent decimal or hexadecimal values. However, showing larger values may not be possible. Assuming we choose a larger wait time, we can create a circle animation through “a” to “f” segments, similar to busy mouse pointer animation in operating systems. If you have alternative animation idea to represent larger values, in place of suggested circle one, you can use it and show them in lab hour. However, it must be an animation, not a static image like an integer.

Try to make your circuit elements as distant as possible from each other and make sure there are no jumper wires over circuit elements that prevent the correct working of sensors or other input devices.

GOOD LUCK TO YOU ALL!