

QUS 1. COUNTDOWN TIMER [points: 15]

Develop Arduino timer that countdowns from 99 to 0.

How should it work?

- The timer shall flash light and turns on the buzzer when it strikes zero.
- Include a visual feedback (LCD or LED) to see the current status.
- Attach a push button to start/reset the timer.

QUS 2. SMART MEDICINE REMINDER [points: 20]

Build a Smart Pill Box for Medicine Reminder and Monitoring System.

How should it work?

- Alert clients/patients to take pills at the predefined time slots.
8am, 2pm and 8pm.
- Provide alerts via light & sound

QUS 3. GAS LEAK SENSOR [points: 20]

Develop a system to alert gas leak. Glow a green LED if the gas (or smoke) is within the safe limit (set your own limit!). If the gas crosses the limit, turn on red LED and alert using a buzzer.

QUS 4. THREE-WAY TRAFFIC LIGHT [points: 20]

Develop a 3-way traffic light controller to control traffic at a junction point. You may stimulate the traffic light box using appropriate LED's grouped together.

How should it work?

- Initially box 1 will show GREEN while other boxes shall be RED.
Let the traffic in path 1 pass the junction for 30sec.
- Indicate path 1 to wait for RED and path 2 to get ready for GREEN by showing YELLOW light for 5sec.
- Turn box 1 to RED and box 2 to GREEN so as to let the traffic pass in path 2 for 30sec.
- Indicate path 2 to wait for RED and path 3 to get ready for GREEN by showing YELLOW light for 5sec.
- Turn box 2 to RED and box 3 to GREEN so as to let the traffic pass in path 3 for 30sec.
- Indicate path 3 to wait for RED and path 1 to get ready for GREEN by showing YELLOW light for 5sec.
- Turn box 3 to RED and box 1 to GREEN so as to let the traffic pass in path 1 for 30sec.
- Keep repeating the above sequence.

QUS 5. **SECRET DOOR KNOCKER** [points: 25]

Protect your secret hideout from intruders with a lock that will only open when it hears the secret knock pattern.

How should it work?

- The secret door knocker should record and detect your secret knock pattern.
- It turns a servo motor that will be connected to your door lock.
- Press the button to record a knock pattern and another button to detect your knock pattern and open the door (servo motor).