Practice Questions

DC Motor & H-Bridge

1. Write a code snippet to rotate a DC motor forward and reverse using an H-bridge motor driver (e.g., L298N).
2. Write a code to gradually increase the speed of a DC motor from 0 to 255 using analogWrite() and then stop after 5 seconds.

Ultrasonic Sensor

3. Write an Arduino function that reads distance from an HC-SR04 ultrasonic sensor and returns it in centimeters.
4. Write code to stop the motor if an object is detected within 10 cm using the ultrasonic sensor.

LCD Display

5. Write a code snippet to display "Distance: xx cm" on a 16x2 LCD based on ultrasonic sensor readings.
6. Modify the above code to show "Obstacle!" on the second line if distance is less than 10 cm.

Interrupts

7. Write an Arduino program that uses an external interrupt to toggle a motor ON/OFF with a push button.
8. Modify your interrupt code so that the LCD displays "Motor ON" or "Motor OFF" accordingly.

Strings

9. Write code to read a value from a sensor, convert it to a string using String(), and print it on the LCD.
10. Combine a string message and a numeric sensor value into one string and print it via Serial.println().

Photoresistor

11. Write a code to read the value from a photoresistor and control the brightness of an LED using analogWrite().

12. Modify your code to also show the brightness level on the LCD in percentage.

Photodiode

13. Write code to detect light intensity using a photodiode and turn a motor on when the light is below a certain threshold.

map() Function

14. Write a program that reads a photoresistor value (0–1023), maps it to (0–255), and uses it to control motor speed.
15. Modify your code to display the mapped speed value on the LCD.