EXPERIMENT 12: JOYSTICK OPERATED ROBOT

Objective: The objective of this experiment is to create a Joystick Operated Robot using a Chelonia Bot. The Chelonia Bot has two motors controlled by a dual-axis joystick. The robot can move forward, backward, left, and right based on the joystick inputs.

Hardware Setup:

- Connect the motors to the Chelonia Bot following the instructions provided in Section 2.1.
- Connect the Chelonia Bot to the Arduino IDE as explained in Section 2.3.
- Connect the dual-axis joystick: Refer the link for connection Joystick Arduino connection
  - Connect the VRx pin to Arduino A0 (Analog 0).
  - Connect the VRy pin to Arduino A1 (Analog 1).
  - Connect the SW pin to Arduino A2.
- Connect the motor control pins:
  - ENA (Enable Motor A) to pin 9.
  - IN1 (Input 1 of Motor A) to pin 8.
  - IN2 (Input 2 of Motor A) to pin 7.
  - ENB (Enable Motor B) to pin 3.
  - IN3 (Input 1 of Motor B) to pin 5.
  - IN4 (Input 2 of Motor B) to pin 4.

Code Example:Joystick operated Robot

Usage Instructions:

- Power on the Chelonia Bot.
- Observe the joystick inputs on the serial monitor in the Arduino IDE.
- Move the joystick to control the robot:
  - Move the joystick left to turn the robot left.
  - Move the joystick right to turn the robot right.
  - Move the joystick up to move the robot forward.
  - Move the joystick down to move the robot backward.
  - Release the joystick to stop the robot.
- Check the switch status in the serial monitor.

Expected Results:

- Moving the joystick in different directions should result in corresponding movements of the Chelonia Bot.
- The robot should stop when the joystick is released.
- The switch status should be displayed in the serial monitor.

Additional Information:

- Adjust the THRESHOLD value in the code to fine-tune the joystick sensitivity.
- The robot speed is controlled by mapping the joystick values to PWM signals sent to the motor enable pins.