EXPERIMENT 30: BUTTON CONTROLLED ROBOT

Objective: The objective of the Chelonia Button-Controlled Robot experiment is to demonstrate basic robotic control using button commands sent via serial communication. By interfacing with the Arduino microcontroller, users can send specific commands to the robot to control its movement in different directions. This experiment aims to provide hands-on experience in programming and controlling a simple robot, fostering understanding and proficiency in robotics fundamentals. Through this project, users can gain practical knowledge of motor control, serial communication, and basic robotics concepts, laying the foundation for more advanced robotics projects and learning endeavors.

Setup:

- Assemble the robot hardware according to the instructions in Section 2.1.
- Connect the robot to the Arduino IDE as explained in Section 2.3.
- **Hardware Assembly:**
- **Motor Connections:**

- Connect the motor control pins to the Arduino board as follows:
- **Motor 1:**
  - Direction Pins: Connect motor1Dir1 to pin 8 and motor1Dir2 to pin 9.
- **Motor 2:**
  - Direction Pins: Connect motor2Dir1 to pin 10 and motor2Dir2 to pin 11.
- Ensure the Bluetooth module (HC-05) is properly connected to the Arduino (VCC and GND). Connect its RX to TX and TX to RX.For detailed guidance on connecting the HC-05 Bluetooth module to your Arduino, please refer to the following link: HC-05 and Arduino Connection

Mobile Application:

- To download the required mobile application, "Arduino Bluetooth Connector," simply visit the Play Store on your Android device and search for the app, or conveniently click on the provided link for quick access. This app is essential for establishing a connection between your mobile device and the Chelonia's Bluetooth module, enabling seamless voice control.

Code Example: Button controlled Robo.

Frequently Asked Questions (FAQs)

Q: How do I control the Chelonia Button-Controlled Robot?

A: You can control the robot using simple button commands sent via serial communication. Enter 'B' to move forward, 'F' to move backward, 'L' to turn left, 'R' to turn right, and 'STOP' to stop the robot.

Q: Can I use any serial communication software to send commands to the robot?

A: Yes, you can use any serial communication software that allows you to send characters over the serial port. Popular options include the Arduino Serial Monitor, PuTTY, and Cool Term.

Q: What type of power source does the robot require?

A: The robot can be powered by batteries, or an external power source connected to the Arduino board. Ensure that the power source provides sufficient voltage and current to operate the motors and other components.

Q: How can I troubleshoot if the robot is not responding to commands?

A: First, check the wiring connections to ensure they are secure and correct. Verify that the batteries are charged, or the power source is connected. Also, monitor the Serial Monitor for error messages or debugging information that may indicate the problem's source.