EXPERIMENT 8: SHAPE FORMING ROBOT

Objective

This innovative robot is designed to create specific shapes, introducing you to the fascinating world of robotic movements. This user manual will guide you through the setup and operation of your Shape Forming Robot.

Setup

1. Assemble the Chelonia Bot hardware following the instructions in Section 2.1.
2. Connect the Chelonia Bot to the Arduino IDE as explained in Section 2.3.
3. Establish the following hardware connections:
    - **Motor A (Left Motor):**
        - Pin 8 (motorAPin1): Connect to the first motor's input 1 (IN1).
        - Pin 9 (motorAPin2): Connect to the first motor's input 2 (IN2).
    - **Motor B (Right Motor):**
        - Pin 10 (motorBPin1): Connect to the second motor's input 1 (IN3).
        - Pin 11 (motorBPin2): Connect to the second motor's input 2 (IN4).
    - **Bluetooth Communication:**

      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

Code Example: Shape Forming Robo

Usage Instructions

1. Terminal
    - Open the Terminal in the Arduino Bluetooth controller application. For any doubts, please refer previous Bluetooth controlled experiment.
2. Enter Commands
    - Type the following commands in the Serial Monitor and press Enter:
        - 'l' - Move in L-shape.
        - 'c' - Move in a circular motion.
        - Default condition it stops.
3. Observe Movement
    - As you send commands, observe how the robot responds, creating the desired shapes.

Expected Output:

Upon successfully executing the provided code and following the instructions in this user manual, you can anticipate the following outcomes:

1. **L-Shape Movement:**

- When the command 'L' is sent through the mobile application, the Chelonia Robot will perform an L-shaped movement. Observe the robot moving forward for a specified duration, followed by a stop. Subsequently, it will execute a right turn, pause again, and finally move forward once more.

2. **Circular Motion:**
   - Upon sending the command 'C,' the Chelonia Robot will initiate a circular motion. You can expect the robot to rotate clockwise, creating a circular path. Adjustments to the delay time in the code can control the speed of this rotational movement.

Note: Ensure that the Bluetooth connection is stable, the motor connections are correct, and the code is uploaded successfully for the Chelonia Robot to exhibit the expected output. Feel free to experiment and modify the code to achieve different shapes and motions.

How do I control the Chelonia Robot to form an L-shape using the provided code?
A: To initiate the L-shape movement, send the command 'L' through the designated communication channel (e.g., Bluetooth). The robot will execute a sequence of movements, including forward motion, a right turn, and subsequent pauses. Adjustments to the code can further customize the robot's behaviour.

Q: Can I modify the code to create different shapes or movements?
A: Absolutely! The provided code is a starting point. Feel free to experiment and modify the code to achieve various shapes and motions. You can adjust delay times, motor control parameters, and implement additional commands for diverse robot behaviours.