# 🛠️ Assembly Guide

Arduino Bluetooth-Controlled Robotic Car with Custom PCB  
Designed by Daham Sathmin

## 📦 Required Components

|  |  |  |
| --- | --- | --- |
| **Component** | **Quantity** | **Notes** |
| Arduino Nano | 1 | Microcontroller |
| L298N Motor IC | 1 | H-Bridge Motor Driver IC |
| HC-05 Bluetooth Module | 1 | For wireless control |
| Custom PCB | 1 | From included Gerber file |
| DC Gear Motors | 2 or 4 | Based on car design |
| Robot Chassis | 1 | Includes wheels and motor mounts |
| 18650 Two Battery Holder | 1 | Or other power source |
| Jumper Wires / Female Headers | As needed | For programming headers if needed |
| Screws & Spacers | As needed | For chassis mounting |

## 🧰 Tools Required

- Soldering iron and solder  
- Screwdriver set  
- Wire stripper/cutter  
- Multimeter (optional for debugging)

## 🔧 Step-by-Step Assembly Instructions

### Step 1: Fabricate the PCB

* - Download the Gerber file: Gerber\_Arduino-Bluetooth-Controlling-Car-PCB.zip
* - Upload it to a PCB manufacturer (e.g., JLCPCB)
* - Choose standard specs: 2 layers, 1.6mm thickness, HASL finish

### Step 2: Solder Components to PCB

* - Start with small components (female headers, resistors if used)
* - Solder the Arduino Nano headers
* - Install / Solder the L298N motor driver IC onto the PCB
* - Solder the HC-05/HC-06 Bluetooth module
* - Connect power terminals and motor output wires

### Step 3: Mount to Chassis

* - Attach the motors to the robot chassis using screws
* - Fix the PCB to the top platform using spacers/screws
* - Mount wheels to motors and secure all wiring

### Step 4: Upload the Code

* - Open Arduino\_BT\_Controlling\_Car\_PCB.ino in Arduino IDE
* - Connect the Arduino to your computer via USB
* - Select the correct board Nano and COM port
* - Click Upload
* - Disconnect USB after successful upload

### Step 5: Power Up & Test

* - Insert batteries or connect an external power source (7–12V)
* - Turn on the switch (if available)
* - Pair the HC-05/HC-06 module with your phone (default PIN: 1234 or 0000)
* - Open a Bluetooth terminal or controller app (You Like App)
* - Send control characters: F (Forward), B (Backward), L (Left), R (Right), S (Stop), Other Features.

## 🛠 Troubleshooting Tips

* - Motors not responding? – Check motor wiring and power voltage
* - Bluetooth not connecting? – Ensure HC-05 is powered and in pairing mode
* - Wrong direction? – Swap motor wires or adjust code logic
* - Upload failed? – Check correct COM port and board selection in Arduino IDE

## ✅ Final Notes

- Always power off before making hardware changes

- Use double-sided tape or heat shrink to prevent shorts

- For advanced control, consider using PWM or adding sensors

## 🔗 Designed By:

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