Ideas

* For each step that requires electrical assembly, provide an electrical schematic.
* For each step that requires electrical fabrication, provide high quality photos.

Draft

1. Fasten the rearShellToBottomChassisBracket part onto the bottomChassis part using four M2.5 x 12 mm hex socket cap screws and M2.5 nuts.
2. Obtain two HC-SR04 ultrasonic distance sensors and eight female-female jumper wires and connect them to each of their pins.
3. Install the two HC-SR04 ultrasonic distance sensors onto the rearShell part and install this assembly onto the rearShellToBottomChassisBracket using two M2.5 x 18 mm hex socket cap screws and M2.5 nuts.
4. Fasten ten M2.5x10mm female-female standoff screws onto the bottomChassis part using ten M2.5 x 12 mm hex socket cap screws.
5. Cut 1.25” of red 22 AWG wire from its spool.
6. Obtain wire strippers and strip a ¼” of the wire’s insulation on both sides.
7. Grab and twist both stripped ends until they are no longer frayed.
8. Repeat steps 4-6 for four wires.
9. Obtain a soldering jig and mount a DAGU DC motor on one of the clips by its tab and a wire from steps 4-7 on the other.
10. Obtain the coil of solder and straighten its free end to a length of 2”.
11. Obtain a soldering iron, turn it on and adjust its temperature settings to a temperature that is sufficient for the solder being used.
12. Route one of the stripped ends of a wire from steps 4-7 through the specified lead of the DAGU DC motor.
13. Carefully place the tip of the soldering iron on the routed lead of the DAGU DC motor and quickly apply solder before its components begin to melt.
14. If needed, obtain flush cutter pliers and trim excess solder.
15. First, unmount the wire from steps 4-7 and then the DAGU DC motor from the soldering jig and place them on the workspace.
16. Repeat steps 8-14 for each DAGU DC motor.
17. Cut two 3” of red 22 AWG wire from its spool.
18. Obtain wire strippers and strip a ¼” of the wire’s insulation on both sides.
19. Obtain a 2.5x45mm heat shrink tube and cut it in half using flush cutter pliers.
20. Route the red DAGU DC motor wires through the cut heat shrink tube.
21. Coil the free ends of the red DAGU DC Motor wires and one of the wires from steps 16-17 together.
22. Obtain the free wire of the daisy chained wires and mount it on one of the clips of the soldering jig.
23. Carefully place the tip of the soldering iron on the coiled joint and quickly apply solder.
24. After the joint and its surrounding wires cool down, position the cut heat shrink to cover the joint.
25. Obtain a BBQ lighter and apply heat onto the cut heat shrink until it has shrunk to capacity.
26. Repeat steps 4-24 for black 22 AWG wire.
27. Inspect coupling and fasten the black set screws so that interference is prevented during couplingCollarBracket insertion.
28. Insert the couplingCollarBracket part through the coupling.
29. Mount the coupling-couplingCollarBracket assembly onto the plastic noncircular shaft of the DAGU DC motor and fasten the black set screws.
30. Fasten the daguDCmotorBracketPiece1 part onto the coupling-couplingCollarBracket assembly using two M2.5 x 25 mm hex socket cap screws and M2.5 nuts.
31. Repeat steps 26-29 for a second DAGU DC motor.
32. Fasten the daguDCmotorBracketPiece1- coupling-couplingCollarBracket assemblies onto the bottomChassis part using seven M2.5 x 12 mm hex socket cap screws and M2.5 nuts.
33. Repeat steps 26-31 using daguDCmotorBracketPiece2 for the remaining DAGU DC motors.
34. Fasten the L298N motor driver onto the bottomChassis part using four M2.5 x 6 mm cross head screws.
35. Loosen the terminal blocks corresponding to OUT1, OUT2, OUT3, and OUT4.
36. When viewing the car from the rear, insert the red wire of the right-side motor’s free end into the OUT1 terminal block and tighten it.
37. When viewing the car from the rear, insert the black wire of the right-side motor’s free end into the OUT2 terminal block and tighten it.
38. When viewing the car from the rear, insert the red wire of the left-side motor’s free end into the OUT3 terminal block and tighten it.
39. When viewing the car from the rear, insert the black wire of the left-side motor’s free end into the OUT4 terminal block and tighten it.
40. Connect a female-female jumper wire from the pin above the ENA pin on the L298N motor driver to the pin located on row V, column 22 on the Arduino Mega Sensor Shield.
41. Connect a female-female jumper wire from the ENA pin on the L298N motor driver to the pin located on row S, column 22 on the Arduino Mega Sensor Shield.
42. Connect a female-female jumper wire from the IN1 pin on the L298N motor driver to the pin located on row S, column 23 on the Arduino Mega Sensor Shield.
43. Connect a female-female jumper wire from the IN2 pin on the L298N motor driver to the pin located on row S, column 24 on the Arduino Mega Sensor Shield.
44. Connect a female-female jumper wire from the IN4 pin on the L298N motor driver to the pin located on row S, column 25 on the Arduino Mega Sensor Shield.
45. Connect a female-female jumper wire from the IN3 pin on the L298N motor driver to the pin located on row S, column 26 on the Arduino Mega Sensor Shield.
46. Connect a female-female jumper wire from the ENB pin on the L298N motor driver to the pin located on row S, column 27 on the Arduino Mega Sensor Shield.
47. Connect a female-female jumper wire from the pin above the ENB pin on the L298N motor driver to the pin located on row V, column 23 on the Arduino Mega Sensor Shield.
48. Connect a male-male jumper wire from the VCC terminal block of the Arduino Mega Sensor Shield to the 5V terminal block of the L298N motor driver.
49. Connect a male-male jumper wire from the GND terminal block of the Arduino Mega Sensor Shield to the GND terminal block of the L298N motor driver.
50. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Gnd pin of the left HC-SR04 ultrasonic distance sensor to the pin located on row G, column AREF on the Arduino Mega Sensor Shield.
51. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Echo pin of the left HC-SR04 ultrasonic distance sensor to the pin located on row S, column 13 on the Arduino Mega Sensor Shield.
52. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Trig pin of the left HC-SR04 ultrasonic distance sensor to the pin located on row S, column 12 on the Arduino Mega Sensor Shield.
53. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Vcc pin of the left HC-SR04 ultrasonic distance sensor to the pin located on row V, column AREF on the Arduino Mega Sensor Shield.
54. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Gnd pin of the right HC-SR04 ultrasonic distance sensor to the pin located on row G, column 46 on the Arduino Mega Sensor Shield.
55. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Echo pin of the right HC-SR04 ultrasonic distance sensor to the pin located on row S, column 49 on the Arduino Mega Sensor Shield.
56. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Trig pin of the right HC-SR04 ultrasonic distance sensor to the pin located on row S, column 48 on the Arduino Mega Sensor Shield.
57. When viewing the car from the rear, connect the female jumper wire that’s already connected to the Vcc pin of the right HC-SR04 ultrasonic distance sensor to the pin located on row V, column 46 on the Arduino Mega Sensor Shield.
58. Write steps for fabricating tail lights.
59. Obtain two M4 x 12 mm cross head screws and fasten the male-female USB Type A cable onto the rearShell part.
60. Connect the male-female USB Type A cable into the USB Type A port of the Arduino Mega.
61. Obtain three M2.5x20mm male-female standoff screws and one M2.5x10mm female-female standoff screws and one M2.5x10mm female-female standoff screw and fasten them together in any order.
62. Repeat step 60 until there are four standoff assemblies comprising of three M2.5x20mm male-female standoff screws and one M2.5x10mm female-female standoff screws and one M2.5x10mm female-female standoff screw.
63. Obtain two standoff assemblies and two M2.5 x 12 mm hex socket cap screws and fasten them to the bottomChassis part using the mounting holes shown below.