Project Name: Pressure-controlled car.

Introduction: Our project was to build such a car that we can drive that car in particular direction by pressing a sensor in each hand. If the sensor in our right hand is pressed, then our car will turn to right direction. In the same way, if the sensor in our left hand is pressed, then our car will turn to left direction. The more we press any sensor, the more rapidly our car will turn to the respective direction. If both sensors are pressed, then the car will run forward direction. We can increase the speed in forward direction by pressing the sensor harder. When no sensors are pressed, then the car will stop driving and will become stand still.

Component List:

I. Complete Chassis board with two DC motors(590 Tk)
II. One Arduino UNO(450 Tk)
III. One L293D Dual DC Motor Driver setup mounted on PCB(320 Tk)
IV. One Breadboard(50 Tk)
V. Two Pressure Sensors(671 x 2 Tk)
VI. Two 10kΩ Resistances(10 Tk full set)
VII. 10 Male to Male Jumper Wires (20 Tk)
VIII. 8 Male to Female Jumper Wires (20 Tk)
IX. Connecting Wires(100 Tk)
X. Super Glue(20 Tk)
XI. Soldering Lead(90 Tk)

Description of Construction:

I. At first, we attached our chassis board with two dc motors with wheels by superglue.
II. We mounted bovine wheel at the back side of chassis board by two screws to give it a support on the floor. Thus the construction of the body of our car become completed.
III. We connected those two DC motors with L293D motor driver setup.
IV. We connected the Input pins of motor driver with digital i/o pins of Arduino UNO.
V. We connected the Enable pins with PWM signal creating pins of Arduino UNO.
VI. We connected the 5V power Input pins of L293D with Arduino UNO 5V power output pin with the help of breadboard.
VII. We connected the 5V power output pin and GND pin with Arduino UNO Vin pin and GND pin to power up the Arduino UNO.
VIII. We soldered two 2 gauge wires with each terminal of each pressure sensor to connect it with the circuit and to create a three terminal voltage divider pressure sensor.
IX. We created 2 three terminal pressure sensor by connecting a terminal of each built-in 2 terminal pressure sensor with one terminal of 10kΩ resistor. Another terminal of each pressure sensor is connected to 5V power output terminal of Arduino UNO by bread board. The other terminals of 10kΩ resistors are connected to the ground terminal of Arduino UNO.
X. We connected each connecting node of pressure sensor and resistor to Analog Input pin of Arduino UNO to send analog values of voltage to microprocessor.

XI. Then we wrote our Code on Arduino IDE and compiled it.

XII. We uploaded the Code to Arduino UNO .

XIII. Then we connected two 9V batteries in series and connected the increased voltage source to L293D's Vcc and GND pins to power up the whole car.

Working Principle:

I. When we press the pressure sensor on right hand, then the resistance in pressure sensor will decrease. So that the analog value in the respective connecting node will increase as the voltage drop across the resistance will increase. Then the left side motor will start and increase its speed as we press the sensor harder. The right side motor will remain standstill and the left side motor will rotate forward. So that a resulting torque will produce and the car will turn to right direction.

II. When we press the pressure sensor on left hand, then the analog value in the respective connecting node will increase as the voltage drop across the resistance will increase. Then the right side motor will start and increase its speed as we press the sensor harder. The left side motor will remain standstill and the right side motor will rotate forward. So that a resulting torque will produce and the car will turn to left direction.

III. When analog input of a pin will increase then the pwm creating output pins will send increased analog valued pwm signal to motor. Thus the speed of motor will be increased.

IV. When we press both sensors by same pressure, then both motor will start rotating forward in same speed. So that there will be no torque, no turn of car. The car will start running forward.

V. When we press both sensors by different pressure, then the car will get a torque to particular direction according to PWM signals analog value.

VI. When we don't press any sensor then no motor will get PWM signal. So the motor will not move.

Discussion: By making the car we fulfilled our project objectives. The motor can go to forward direction, not backward. By adding extra sensors to arduino and editing the code we can be able to make it move backward and can be make it more useful.