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| **TITLE:** |  | | **DURATION:** |
| MOTOR CONTROL PROGRAM | | | 60 mins |
| **OBJECTIVES:** | | **RESOURCES REQUIRED** | |
| * Describe why the motor driver is needed and what it’s pins do * Program a control script for a single motor * Write a function for motor control | | * Robot * Testing Jig * USB-B Cable * Laptop * Batteries | |
| **SECTION** | **POINTS TO COVER** | | |
| **Introduction:** | * We have made a robot, but how do we make it move? * We program it with Arduino! | | |
| **Main:** | * Explain why we need a motor driver   + To control the speed and direction of the motors   + Without changing the wiring like we did in the ‘DC Motors’ session * Identify the parts of the Motor Driver   + **Motor #1 Screw Terminals** – For supplying power to the motor in the correct direction & voltage   + **Motor #2 Screw Terminals** – For supplying power to the motor in the correct direction & voltage   + **Battery Power and Ground** – For supplying power to the driver which the motors draw   + **Speed and Direction Control** – For sending Arduino signals to set the speed and direction of each motor * Identify the pins for Speed and Direction Control   + **Motor Speed #1 & #2** – Analog signals to control motor speed – 5v means full speed, 0v means no speed, 2.5v means half speed etc.   + **Motor #1 Clockwise/Anticlockwise** – Digital signal, one must be set HIGH (5v) and one must be set LOW (0v). If Clockwise is HIGH, motor will turn clockwise, if Anticlockwise is HIGH, motor will turn anticlockwise.   + **Motor #2 Clockwise/Anticlockwise** – As above.   + Therefore, 6 individual signals must be sent from the Arduino to the Motor Driver to control both Motors * Code walkthrough:   + Follow the walkthrough in document 07a * Encourage teams to test their code with the robot on the desk on the Jig. * Once each team has written their own control script, take them to a central place and have them place down their bots in unison to observe their behaviour. | | |
| **Conclusion:** | * Now we can control the motors, next we are going to learn how to use a sensor * That will be the last piece of learning to make the robot autonomous! | | |