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| **TITLE:** |  | | **DURATION:** |
| INTRODUCTION TO PROGRAMMING | | | 25 mins |
| **OBJECTIVES:** | | **RESOURCES REQUIRED** | |
| * Use the Arduino IDE to write a simple program * Identify how the Setup() and Loop() functions work * Use the Serial Monitor to output code | | * PowerPoint * Arduino * USB-B Cable * Laptop running Arduino IDE | |
| **SECTION** | **POINTS TO COVER** | | |
| **Introduction:** | * Reflect on last lesson * Objectives for this lesson * Identify the programming experience of the course | | |
| **Main:** | * Integrated Development Environment (IDE)   + The IDE is where we write code and is how we upload code onto the Arduino   + The three main parts we will use are:     - Board select (tell the computer what kind of Arduino we are using)     - Upload button (which compiles the code into 1s and 0s that the Arduino can understand, and sends that onto the board)     - Sketch area (where you will write your code) * Functions   + Functions are individual groups of code   + In Arduino programming, there are two default functions:     - Setup – Which runs once when the Arduino is turned on or reset     - Loop - Which runs continuously while the Arduino is powered   + We can also make our own custom functions which we will do later today   + Go through the flow diagram to describe these functions * Get cadets to open the Arduino IDE and plug in their Arduino using the USB-B Cable * Get cadets to identify the 3 parts of the IDE discussed * Select the Arduino Uno in the board select * Discuss how there may be some existing code on the Arduino so the best thing to do first is to upload some blank code. Get cadets to press the upload button. Describe that they can observe flashing TX and RX LEDs on the board. * Introduce the code walk-though. Cadets will write code that will output some text. * Code Walkthrough – Hello World   + Follow walk-though in document 03a * If time allows demonstrate a syntax error by writing a line of code incorrectly and talking through how to understand and resolve the error. | | |
| **Conclusion:** | * Explain that now we will use these skills to program our robots * In the next session, cadets will control some motors! | | |