# Lesson 17 – LEDs and Classes

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * Classes are an essential staple of the Python programming language * LEDs are everywhere, screens, phones displays providing data and information | * Recap the role of the micro:bit pins * Know what a class is * Wire up an LED * Write a program to control the LED |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * The LED torch is interesting, shine it at the Learners as they work into the classroom, turn the lights out too * Ask Learners to make a list of where LEDs are used | **Expected Progress:**   * Learners know what a class is * Learners can wire up the LED correctly   **Good Progress:**   * Learners are able to give examples of classes * Learners program the LED and adapt the code   **Exceptional Progress:**   * Learners can set up and program two LEDs on the same micro:bit. |
| Links to KS3 Programme of Study | |
| * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems | |
| Key Concepts | Key Words |
| * Wiring up an LED * Programming a torch * Adapting code to make LED flash | * LED * Pins * Classes |
| Differentiation | Resources |
| Ensure that Learners wire up the LED correctly, the longer leg attached to Pin 0. Learners can work together to complete the Stretch Tasks. | * Lesson 17 ppt * Lesson 17 Activity Sheet * Sample Python files * 1 micro:bit per Learner * 1 USB cable to connect the micro:bit to a PC * A PC * Battery pack * Crocodile clips and wires * LED * Access to [micro:bit Python Editor (microbit.org)](https://python.microbit.org/v/3) |
| Lesson Flow | |
| * Teacher could demonstrate the LED micro:bit torch as Learners enter the room * Discuss and recap the pins on the micro:bit (Lesson 5 recap) * Analyse a program to control the LED * Introduce the programming concept of classes * Demonstrate how to wire up the LED correctly * Learners wire up their LEDs * Teacher to check * Learners write code to build LED torch * Teacher to support Learners where required * Learners complete Stretch Task * Teacher to support Learners where required * Recap main learning content of the lesson | |
| Making | |
| There are no making activities in this lesson. | |