# Lesson 4:

Introduction

The class will be introduced to variables using Edublocks by creating an application that will draw different shapes on the screen.

## Learning Objectives

How to use edublocks

To understand how a sequence of code works.

How to use conditional statements to change the output of the code.

How to create and update variables.

How variables are useful tools to temporarily store data.

## Key Vocabulary

Sequence, selection and iteration, variables.

## Preparation

#### Subject Knowledge

An understanding of creating code in a block based environment and understanding how key coding concepts are across all languages and can be illustrated using different languages.

Possible Misconceptions

That variables are complicated.

#### Pedagogy

Ideally the class will each have access to a computer and complete the tasks individually. The lesson can be completed with 1 computer per 2 children.

#### You will need

A computer running Windows / Mac or Linux or Chromebook

A web browser (Firefox, Edge, Google Chrome, Safari)

## Assessment Opportunities

Understand that variables are temporary storage.

How to update the contents of a variable in the sequence.

How to read the contents of a variable.

## Outline Plan

This is a quick overview of the accompanying slide deck.

| Group Activity  (Slide 3)  5 Minutes | Here we introduce the concept of variables using a box analogy.  The cardboard box is a container for data, we write a name upon the box, and then place items into the box.  To look inside the box we use the given name and Python will show us the contents.  If you have a cardboard box to hand, along with some small items, you can demonstrate this in class. |
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| Group activity  (Slide 4-5)  5 Minutes | To start Edublocks, ask the class to open a web browser and type in  app.edublocks.org/editor  Select Python 3 as the mode, give the project a file name and click Create  In these two slides we create a variable called “bedroom” and in there we shall update the contents to show three common items in a bedroom.  The data stored in the variable is a string, can any of the class correctly identify this based on Lesson 3? |
| Group Activity  5 Minutes  Slide (6) | The class will use this example code to learn   * How to set the contents of the loops variable to an integer. (Can they spot that?) * How to use the variable in a for loop to set the number of times that the loop will iterate.   Can the class identify the shape that this code will draw? |
| Group Activity  10 Minutes  (Slide 7 - 8) | Using the code from previous slide the class will   * Add code to ask the user “How many sides the shape has?” * Use a calculation to determine the turning angle.   Remember that the user input will need to be saved as an integer, otherwise the code will error!  The turning angle calculation is 360 / number of sides. |
| Group Activity  10 Minutes  (Slide 9 - 10 - 11) | We add more code to the sequence.  A new variable “colour” is used to capture a choice of red, green or blue. Can the class remember what data type this is?  Slide 9 introduces three conditional tests, one for each colour choice. The complete code for red is on the slide, the class is challenged to add the code for green and blue.  Remember that the colours are set using three numbers.  Red = 255,0,0  Green = 0,255,0  Blue = 0,0,255  The complete solution is on slide 11 |
| Plenary  2 Minutes  (Slide 12) | Here we recap the learning from this lesson.   * How to create, update and use a variable. * How we can use the data in a variable to control a loop. * How to use conditional logic with a variable |
| Next Time  1 Minute  (Slide 13) | We will continue our learning with edublocks, and learn how to create functions that will draw patterns and shapes automatically. |