Upper Key Stage 2 - Session 3
Switching from Blockly to Python

Objectives

- Develop an initial understanding of Python as a text based language.
- Understand that Python has precise syntax
- Identify characteristics of Python, compare this with Blockly
- Use and understand the movement instructions in Python
- Use and understand repeat loops in Python (**for count in range (n)**)

Resources

- Interactive White Board (IWB)
- Levels 80 to84 in Rapid Router
- Resource Sheets UKS2-S3-1 - UKS2-S3-2
- UKS2 Program Solutions Table
- UKS2 Code Wall Cards

Vocabulary

- Python
- Text-based programming language
- Syntax
- Indent

Let's get started

Explain to the class that today they are going to learn about a new programming language called Python.

This will be different from Blockly and you will be asking the class to spot the differences.

Show Level 80 on the IWB. *[fig S3.1]*

This is a simple challenge. Can we solve it in Blockly?

Choose a pair to do this solution on the IWB.

fig S3.1

The class should find that easy and they can now see in the pane below how the Blockly code translates to Python. Draw their attention to the code in Python on the screen. *[fig S3.2]*

Hand out Resource Sheet UKS2-S3-1 between pairs. Ask them to take five minutes to discuss with their partner and write notes on what similarities and differences they see in the two different languages. *[fig S3.3]*

Recap on concepts of movement and repeat, comparing Blockly with Python. Encourage the children to:

Identify characteristics of Python – text, syntax, indents …

Experiment to see what happens if you change some of the code in Python.

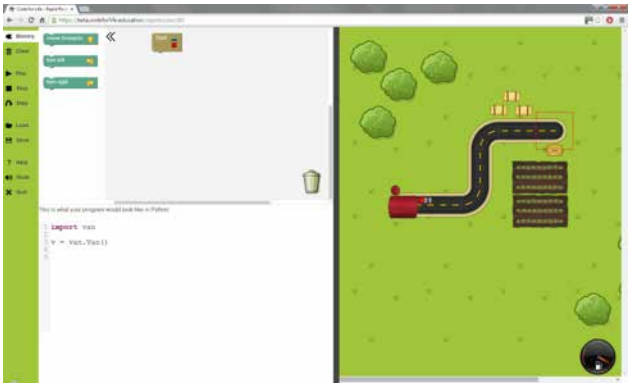

fig S3.2

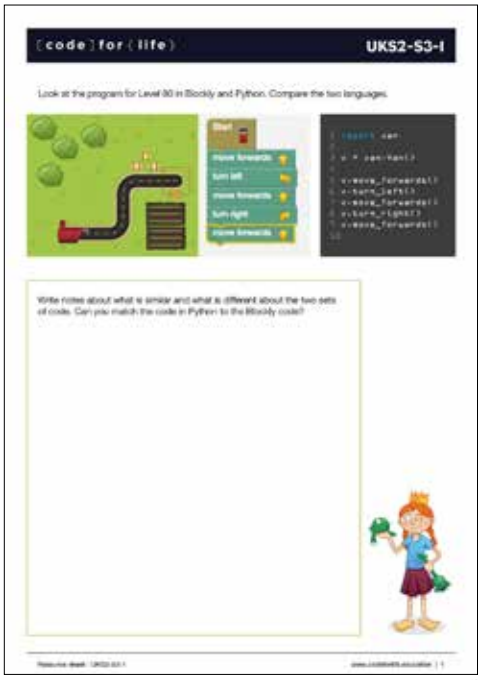

fig S3.3

Paired activity

Ask the children to try Levels 81 and 82, starting off by creating the code in Blockly, and watch it being converted to Python.

Ask them to make a note of the Python commands on their whiteboards.

Mini review

Bring everyone together to discuss what they have learnt.

Recap on the syntax of the **v.move_forwards()** instruction and notice how the **v.**, the _ and the **()** are in the same position for each movement instruction.

The Blockly-Python phrasebook explains this in detail.

Ensure the children understand the terms: ‘underscore’ and ‘brackets’.

Show Level 83 on the IWB. *[fig S3.4]*

fig S3.4

What do you notice on this route? What programming tool can we use to help us? (repeat loop)

Can we write a neat program in Blockly?

Give the children time to discuss and write a possible solution on their whiteboards. Choose a pair to show this on the IWB.

Can you explain how the code in Python works here?

```
1  import van
2
3  v = van.Van()
4
5  for count in range(3):
6    v.move_forwards()
7    v.turn_left()
8    v.turn_right()
9    v.turn_left()
10
```

Paired activity

Recreate this solution for Level 83.

Set this task:

Find out what happens if

- **you replace the 3 by a 2 or another number in Python.**
- **you replace the word count by any other single word, e.g. number or times**
- **you leave out the : at the end of the line**

Those pairs who have completed the task quickly can try Level 84.

Share and review

Discuss what they have found out about the for … in range (n): loop in Python.

What can change and what can stay the same?

Display the relevant Python Code Wall Cards on your display board. *[fig S3.5]*

Unplugged activity – matching Blockly blocks to Python code with resource sheet UKS2-S3-2

Print, laminate and cut up the Python cards for movement and loops, together with the corresponding Blockly cards. Give each pair/ small group a set and ask them to match them up.

fig S3.5