Lesson 09: Nested selection

Introduction

This lesson introduces learners to the concept of nesting `if` statements. Learners will walk through some basic nested statements to check their understanding. They will then follow the PRIMM approach and investigate a ‘guess the animal’ game. Learners will modify the game to improve the functionality of it.

Learning objectives

- Define nested selection
- Walk through code that uses nested selection
- Modify a program that uses nested selection

Key vocabulary

Nested selection, selection

Preparation

Subject knowledge:

For this lesson you will need to be able to use nested selection in Python.

You will need:

- Slides
- Activities:
    - Starter activity: worksheet
    - Make a prediction: A1 worksheet

    - Guess the animal game: A2 worksheet and solutions

You may also need:

- The animal game
- The animal game modified
- Completed vegetable game
- Vocabulary sheet

Assessment opportunities

Use the starter activity to assess what learners remember about evaluating logical expressions. The answers are provided on the slide deck for peer- or self-assessment.

Model answers have been provided for the ‘Guess the animal game’ activity. Use these to mark the worksheet or to assist with peer- or self-assessment.

Outline plan

Please note that the slide deck labels the activities in the top right-hand corner to help you navigate the lesson.

**Timings are rough guides*

Starter activity (Slides 2–6) 5–7 mins	**Evaluate the logical expressions** Distribute the ‘Starter activity’ worksheet as learners arrive in the classroom. Alternatively, you could display the worksheet on the board and ask learners to write their answers on mini whiteboards or in their exercise books. Give learners a few minutes to write their answers. Use the following slides to provide answers for the learners. As a quick assessment you could ask learners to use hand signals for True and False to help you gauge their understanding.

Activity 1 (Slides 8–29) 5–7 mins	**What is nested selection?** Ask learners to make a prediction about the username and password program on slide 8. Give them a few minutes to think, pair, and share their thoughts. They should focus on the three questions but also think about the whole block of code. Questions: • What would happen if Ben was entered for the username? • What would happen if Eirini was entered for the username? • What exactly needs to be inputted to gain access to the system? A worksheet has been provided for learners to write their answers, or they could use their exercise books for this. The following slides walk the learners through the code from the starter activity. It takes them through the three possible outcomes for the program. **Note:** A rotating arrow appears on the slide to signify the code being restarted. Take learners through the step-by-step execution of the code, noting the states of the variables and conditions at each point in execution. The walkthrough is to give learners an example of nested selection. Nested selection is when a selection statement is nested inside

	another selection statement. This means that the first condition needs to be True before the next condition can be executed. If the condition is False, then the program will move on to the next executable line of code.
Activity 2 (Slide 30) 35 mins	**Guess the animal game: A PRIMM activity** The 'Guess the animal game' worksheet has been designed using the PRIMM approach. It will take learners through predicting, running, and investigating the code. This will allow learners to get a grasp of how nested selection works in a larger program. The worksheet then moves on to some modification steps where learners start to adapt the code. Here is a copy of the finished modified version. There is a make task for the learners to create a 'guess the vegetable' game. The game follows a similar structure to the animal game, and guidance has been provided to help them make the game. Here is an example of the completed version of this program. An explorer task has been included to ask learners to join the two games together.

Plenary (Slides 31–32) 5 mins	**Multiple choice questions** The plenary provides two multiple choice questions for learners to answer. Use peer instruction to work through the possible correct answers before revealing the actual answer.