Unit 2 Introduction to Programming

# Learning goals

1. Use an integrated development environment (such as IDLE) to create programs.
2. Use print statements, assignment statements, input statements, increment statements,  
    if-elseIf-else statements, and nested if-statements in programs.
3. Explain the difference between the meaning of an equals sign in mathematics and an equals sign in programming.
4. Explain the term *Boolean expression* and give examples.
5. Design, write and test programs that solve familiar math problems (e.g. determining what type of quadrilateral is formed by 4 given ordered pairs.)
6. Design test-cases for programs before coding and use them to validate programs after coding.
7. Use string variables to improve the clarity and flexibility of computer programs.

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| **Topic** | **Content** | **Assessments** |
| **Lesson 1:** Getting started in Python | - The IDLE environment - My First Python Program.py  - Input statements | Practice #2-1 |
| **Lesson 2:** Principles of coding | - Equals sign in math vs. programming - Assignment & increment statements  - Boolean expressions  - If-ElseIf-Else statements  - Nested if-statements | Practice #2-2 |
| **Lesson 3:** Getting unnecessarily good at if-statements | - Application: Formatting the equation of a line  - Take up solutions to Practice 2-1/2-2  - Use of string variables to reduce coding effort | Begin Assignment 2 |
| **Lesson 4:** Manipulating strings | - Using indices to pick out portions of strings (String Data.py) | Work on Assignment 2 |
| **Lesson 5:**  Design of test-cases |  | Work on Assignment 2 |

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| **Lesson 6:**  Application: Identifying quadrilaterals from 4 given points | - Intro to the problem  - Tools: side lengths, slopes & perpendicular slopes, diagonals  - Criteria for identifying a parallelogram  - Team Investigation: criteria for other quadrilaterals  - Identifying test-cases with GSP | Make a flow chart for the main algorithm |
| **Lesson 7-8:**  Work day |  | Finish Assignment 2 |