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Unit Plan: Introduction to Python
Topic of the Lesson: Variables, statements and expressions
Grade and Content: 10th - 12th / CSP
Date: Fall 2022

Learning Objectives:

- Students will learn to assign the values of type integer, float and string to a variable.
- Students will learn to identify the value stored in a variable.
- Students will learn to write statements.
- Students will learn to write simple expressions.

NYS standards:

- **9-12.CT.9:** Systematically test and refine programs using a range of test cases, based on anticipating common errors and user behavior.
- **9-12.CT.1:** Create a simple digital model that makes predictions of outcomes.

Content-specific vocabulary:

- Variable
- Data type
- Statement
- Expression
- Operator
- Operand

Materials/Resources:

- Computers
- Smartboard
- Slides
- Python
- Replit
- Warm-up handout
- Lab
- Textbook: https://books.trinket.io/pfe/index.html

Assessments:

- Programming log
- Lab completion

Warm-up (10 minutes):

- The teacher will model how to assign variables in Python (live coding). The teacher will indicate that Python uses the equal sign to assign a value to a variable.

```
>>> x = 1
>>> x = 2
```

- The teacher will ask students to work in pairs on the activity “01_Warm_up”. (5 minutes)
  Note: The warm-up activity consists in predicting the values of variables after the values are changed.

- The students will come back as a group and share their responses. The teacher will intervene for any clarification. (5 minutes)

Activity / Sequence of Lesson (15 minutes lesson, 15 minutes lab):

- The teacher will ask students to recall the purpose of a variable (students learned about variables in previous lessons with Snap!). The students will share their thoughts.

- The teacher will reinforce the concept of variables and will explain the type of data that could be stored in the variables with Python.

- The teacher will model how to assign variables in Python and how to use the method type() to return the class type of the variable (live coding).

- The teacher will provide a list of rules to name variables in Python.

- The teacher will explain what a statement is in Python and will model some examples (live coding).
  This script:

```
print(1)
x = 2
print(x)
```

  Produces the output:

```
1
2
```

- The teacher will explain what an expression is in Python and will model some simple examples (live coding).

```
>>> 15
>>> x   #  assuming that the variable x has been assigned a value
>>> x + 5
```

- The teacher will ask students to individually work on the “01_LAB_Variables _Statements_Expressions”.

- The teacher will walk around the classroom to observe students’ performance and assist with questions or problems about the lab.

Summary / Next Steps / Exit Slip (5 minutes):

- The teacher will ask students to complete their lab as homework if they still need to finish it.

- The teacher will ask students to complete their “Log Programming”.