Python Inputs

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LESSON OVERVIEW

Subject(s)	Technology
Topic or Unit of Study	Python Programming
Grade/Level	Grade 9, Grade 10, Grade 11, Grade 12
Objective	Students will be able to write a Python program to ask for user input, utilize that input, and print the result of your program.
Summary	This is an introductory lesson to the input([Prompt]) function in Python. The lesson is designed to have students discuss what input and ouput is, what types of input and output they have been using so far, and then practice using the function.

IMPLEMENTATION

Learning Context	Students have been working on Python tutorials which includes some information about inputs. It should be noted that Algebra I is a prerequiste to this class, so students should be familiar with linear equations.
Teaching Strategies	Direct instruction, Peer Editing/Evaluation
Time Allotment	1 class periods. 50 Mins. per class.
Sample Student Products	
Author's Comments & Reflections	Different students have taken different levels of mathematics. I suggest that the teacher has Algebra I students solve linear equations and Algebra II students solve quadratics.

PROCEDURE

Anticipatory Set	We have been coding for a few weeks now and we have learned many functions and concepts. The print function is one of the most important and useful functions we have seen. Yet, the print function does what? Give use information? Outputs information? We have been writing programs to complete some task for us and print the result, the output. What do we use technology for mostly? Google searches, social networking, email, video games...the list goes on. We give information and then expect a response. We want technology to display links to websites, post to a wall, send a message, turn the wheels of a car in a video game. What is this information called that we give technology? Input, which happens to be the topic of today's lesson.
Modeling	*The teacher will explain the idea of input and output in regards to user input and the function input([prompt]). The teacher will use several examples of Python programs to demonstrate how the function works.* **Important Note** There is a difference between Python 2.7 and 3.4. raw_input() no longer exists in 3.4, it is just input(). **Example 1 - The Input Function** *user_input1.py* **Example 2 - Prompts** *user_input2.py* **Example 3 - Input a Number** *intput.py*

Title Printer (after example 2)

The teacher will help the students write the program as necessary. I will model what the program should do with the program 'TitlePrinter.py' without showing the code.

Program Directions

1. Write a Program which asks for the user's name using the prompt of the input function.

2. The program will then add a fancy title to the name (such as "King _____ ").

3. Lastly the program will print using only one print function the following:

   ◦ a greeting ("Hello"),

   ◦ the user's name,

   ◦ title added before or after the user's name, as appropriate, and

   ◦ some appropriate punctuation at the end. For example, "Hello King Turner!"

After students have completed the task (and I have approved it), students will be assigned a partner who has just finished (order of completion). They are to test the other student's program and give students feedback on their program.

Peer Editing Instructions:

1. Raise your hand after you have completed your program.

2. A teacher will check your work to ensure that you have written a program and determine whether you can move to the next step.

3. Walk to the front of the room and wait and pair with a student waiting at the whiteboard. If no one is there, wait for the next student.

4. You will run their program and determine whether the program followed the directions and provide feedback.

5. Your partner will now run your program and provide you feedback.

Examples of Helpful Feedback:

- I think that your program's output is missing something.

- Do you think there is a simpler way to code that?

- Would that output be acceptable in an English class?

- I do not think you are using the input() function correctly.

Problem Solver (after example 3)

The teacher will help the students write the program as necessary. I will model what the program should do with the program 'linear_solver.py' without showing the code.

Goal: Write a program which will ask for the user to input the coefficients (integers only) of a linear or quadratic function and ask for an x-coordinate. Then the program will print the inputted linear or quadratic equation, the x-coordinate, and the corresponding y-coordinate.

Requirements:

- If you have not taken Algebra II, you will write a program for a linear function. If you are/have taking Algebra II, you will write a program for a quadratic function.

- There is only one print statement in your program. It will be at the end of your program and used to print the equation and the x,y coordinate.

- Program must include the input function and prompts.

- Do not import any other libraries into your program.

Closure	*Teacher will review the parameters of the input function and ways to use this function.*
Follow-Up	**Warm-Up** *Students will be asked to write a Python code which requires the input function in the next lesson.* Directions: Write a Python program which asks for the user's age and print the user's age five years from today (2019).

MATERIALS AND RESOURCES

Instructional Materials

Resources

- Materials and resources:
  Teacher's computer connected to a projector.
- Technology resources:
  Python 3.4
- The number of computers required is 1 per student.

Links:

1. **Mr. Turner's Website** All materials are available on the website and schoolloop.

STANDARDS & ASSESSMENT

Standards

Assessment Plan

Students will submit their title printer program and linear/quadratic program at the end of the class period. They will receive points for turning the program in on time as well as including all of the required components in their program, writing a program that runs without syntax errors, and designing a program that achieves the goal of the assignment. The students can receive a total of 20 points for each program.

Assessment/Rubrics

Rubrics:

1. Computer Program Rubric