



Beginning Python: Lesson 3

In this lesson we'll recap on some of the topics covered in the last lesson. We'll also do a Python version of the "Math Game" we did in Scratch. Today you'll learn how to do the following in Python:

- What a String is.
- Use Variables.
- Use the `input()` function.

We will use the Wings IDE again to do the coding. If you do not have this you ask a mentor for help.

1. Create a Folder for your programs

On your computer, create a new **folder** called `python-programs` on your desktop. We will save all out new Python programs in here. You can ask a mentor to help with this...

2. Create a New Program in Wing IDE

Open Wing IDE on your computer. Click on the File menu and select New . A new blank window will appear for us to type our program in. This window is the file editor. Enter the following code in the editor window and save as `math-game.py` in the "python-programs" folder.

```
print("Hello!")
```

Now run the program. You should see "Hello!" printed in the console.

3. Get Python to Ask Your Name

We want to get Python to ask for the players name. We can do this by following these steps:

1. Print "What is your name?"
2. Get users name and assign it to the name variable
3. Print "Lets play a Math Game " followed by the users name

Add the following highlighted lines of code to your program to do this. Your Program

```
print("Hello!")  
print('What is your name?')  
myName = input()  
print('Lets play a Math Game ' + myName)
```

4. Print a random addition problem

To create a random maths problem, we need to compute 2 random numbers. In Python, we can calculate random numbers using the random library. First, we need to import it, then we can calculate a random number using the `random.randint(...)` function. For example, `random.randint(1,20)` computes a random number between 1 and 20. Add the following code to your program:

```
import random  
  
print("Hello!")  
print('What is your name?')  
myName = input()  
print('Lets play a Math Game ' + myName)  
num1 = random.randint(1,20)  
num2 = random.randint(1,20)  
print('What is ',num1,'+',num2, '?')
```

Now run the code, you should now see the program print a random sum in the console window. Press run a few times to see the program print a different sum every time.

5. Ask for the Answer and Check if it's correct

Just like we did for the name, we need to get an answer for the sum using the `input()` function. We then want to do the following:

If the answer is correct, print "Correct, Well Done!", otherwise print "Oop! You are incorrect, the answer is ...". Add the following highlighted code to your program to do this...

```
import random

print("Hello!")
myName = input("What is your name?")
print('Lets play a Math Game ' + myName + '?')
num1 = random.randint(1,20)
num2 = random.randint(1,20)
print("What is 'num1,' + 'num2,?")
answer = input()

if int(answer)==num1 + num2:
    print("Correct. Well Done!")
else:
    print("Oops. The answer is ",num1 + num2)
```

The `(int) answer` converts the answer to a number so that it can be compared to the correct answer (`num1 + num2`).

Now run your program to see if it works. If not, try to fix it.

6. Repeat 5 times

Now improve the program by getting the player to answer 5 sums and keeping score of how many are correctly answered. We will need a for loop and a score variable to do this. Now add the following highlighted code. Make sure to add it in the right place and remember to indent your code...

```
import random

print("Hello!")
myName = input("What is your name?")
print('Lets play a Math Game ' + myName + '?')
score = 0
times = 5
while times>0:
    num1 = random.randint(1,20)
    num2 = random.randint(1,20)
    print('What is 'num1,' + 'num2,?')
    answer = input()

    if int(answer)==num1 + num2:
        print("Correct. Well Done!")
        score = score+1
    else:
        print("Oops. The answer is ",num1 + num2)
```

```
times = times-1

if score==5:
    print('Wow, you answered them all correctly!!!')
else:
    print('You got',score,'out of 5 correct!')
```

Run your program and see if it works. It should now ask 5 questions and , at the end, let you know what the answer is.

7. Improve your program

Now try to improve your program as follows:

- How could you make the sums harder (hint: change the `random.randint(...)` to compute a number from 1 to 100.)
- How would you get the program to ask 10 questions instead of 5.
- Make another program that does multiplication.
- Like our Scratch program last year, ask the user to enter a level, 1 for easy, 2 for hard.