Class 3

Introduction to Python: Strings, Integers, and Floats

Review from Last Week

- The code to have your program say a personal hello to you:
  - `name = input('Give your name : ')`
  - `print('Hello ' + name)`
- In this code:
  - `name` is variable
  - the program always reads user input as a string
  - What is a variable and string? Let's find out!

What is a variable?

- Imagine you have a box labeled CANDY.
  Inside the box CANDY, there are 20 pieces of candy.
  Then, we can say CANDY = 20.
- OR
- Let's say we have a cage BIRD_CAGE.
  Inside the cage BIRD_CAGE, we have a parrot.
  Then, BIRD_CAGE = parrot.
- In these examples, the variables are CANDY and BIRD_CAGE. These are like containers which hold the values 20 and parrot, respectively.
- In Python, we can write these variables as follows:
  - `CANDY = 20`
  - `BIRD_CAGE = 'parrot'`

Going back to last week…

- Let’s go back to our code from last week:
  - `name = input(‘Give your name : ‘)`
  - `print(‘Hello ‘ + name)`
- **name** is a variable that stores the value that the user inputs, meaning that name is a container that holds the name of the user
- In the terminal, the session could go as follows:

```
Give your name : Miss Maria
Hello Miss Maria
```

What is a string?

- A string in Python is a type of value that is encompassed by quotes
- Correct examples:
  - `string1 = ‘hello’`
  - `string2 = ‘12’   #a string can be a number, but we cannot do math`
    `#unless we convert it to an integer`
- Incorrect examples:
  - `string3 = “hello’   #two different types of quotation marks`
  - `string4 = 12   #a string must include quotation marks`
- Note: in Python we can make notes in our code using #
  (the program does not read anything in the line after # as code)

When we do “math” with strings…

- String concatenation happens!
- Ex:

Script	Shell/Terminal
➢S1 = ‘Miss Maria’ ➢S2 = ‘is’ ➢S3 = ‘your teacher.’ ➢S = S1+S2+S3 ➢print(S1) ➢print(S2) ➢print(S3) ➢print(S)	➢ Miss Maria ➢ is ➢ your teacher. ➢ Miss Maria is your teacher.

Moving on to Integers!

- Integers are whole numbers (not fractions or decimals!)
- to convert a string number to an integer type → use int() function

Script	Shell/Terminal
➢s1 = '34' ➢s2 = '12' ➢n1 = int(s1) # int() takes away quotes ➢n2 = int(s2) ➢print(s1 + s2) ➢print(n1 + n2)	➢ 3412 ➢ 46

Going from an integer to a string

- To convert an integer to a string→ use str() function

Script	Shell/Terminal
➢s = 'Number = ' ➢n = 123 ➢print(s + n + '.')	➢ Error! (Does not work.)

- The above does not work because we cannot "add" (concatenate) a string and an integer since they are different types!

Script	Shell/Terminal
➢s = 'Number = ' ➢n = 123 ➢n = str(n) ➢print(s + n + '.')	➢ Number = 123.

One more type: float

- In simple words, a float is a decimal number.
  - `f = 1.23243235345`
- To convert to a string from a float:
  - `s = str(f)`
- To convert to an integer from a float:
  - `n = int(f) # this cuts off the numbers after the decimal point`
- To convert to a float from a string:
  - `s = '12.2'`
  - `f = float(s)`

- Note : You can add a float and integer mathematically.

Problem:

- Input: Ask user for their age.
- Output: Print out what their age will be in 10 years.

Solution will be posted after class!