Computer Science G10 at The Dragon Academy Lessons summary Jan 9-18 2019

1 Wednesday, Jan 9

1.1 Review

- scp Win <-> RPI (From within Win10)
- ssh Win shell -> RPI

1.2 Installing Python

learning about MD5 and how to check in Win: CertUtil -hasfile <path2file> MD5

1.3 Installing Jupiter (via pip : python -m pip install jupiter)

- Test run: jupyter notebook
- print("hello world")

2 Thursday, Jan 10

2.1 Strings in Python

See Python notes on Lessons server (or Jupyter notebook copy below).

3 Friday, Jan 11

3.1 For-loops and while-loops

3.2 Arrays I

4 Appendix: Jupyter Notebook

Fri 11th Jan 2019

4.1 Loops

Let's see how we can do loops in Python.

1. FOR-LOOPS: Let's sum the first 10 integers. Here s will be then s = 1 + 2 + ... + 10 At the age of 4 years, Gauss discovered the general formula for getting the sum of the first N integers: N(N+1)/2. In this case, hence, it should be $s = 10 \cdot 11/2 = 55$.

```
In [19]: s = 0
         for i in range(11):
            s += i
         print(s)
55
In [20]: print( "s="+str(s) )
         print( "s="+str(s)+"\ni="+str(i) )
         print( "s=",str(s)," ","i=",str(i)) # In this case, we are providing 4 strings to the print
         print( "s=",str(s)," ","i=",str(i), sep=':') # option sep= allows us to change the string se
         print( "s=",str(s)," ","i=",str(i), sep='' ) # option sep= allows us to change the string sep
s=55
s=55
i=10
s= 55
      i= 10
s=:55: :i=:10
s=55 i=10
Remark:
  1.- In order to print a number concatenated to a string, we need to wrap the number within str(). The
  2.- The special code "\n" means newline
   3.- Notice the last value of i in that previous loop is 10
In [21]: for j in range(-2,7):
            print("%d, " % j ,end='')
-2, -1, 0, 1, 2, 3, 4, 5, 6,
In [1]: '''
         If you run this cell, you'll get an explanation on how to use the function print.
         You can use the same 'trick' with any other command, keyword, etc.
        111
       print?
  2.- WHILE-LOOPS:
In [2]: def f(x):
            This function calculates the square of x
           return x**2
In [3]: f?
In [23]: s=0
         i=0 #this will be the index of our loop. We initialize to 0
         while ( i<11):
             s += i
                     # UPDATE THE INDEX of the loop. If you miss this line, it runs forever and may fr
             i += 1
         print(s)
55
```

Remark:

If your code ends in a infinite loop, you can stop it by clicking in the menu Kernel->Interrupt

4.2 EXERCISES

- 1. Write a loop that calculates the following sum: $s = 1 + 4 + 9 + \cdots + 144$. Write it both ways, as a for-loop and as a while-loop. Print at the end the value of the sum.
- 2. Idem for the sum $s = \sum_{i=-4}^{i=30} (i+3)^2 = 1+0+1+4+9+16+25+36+49+\dots+1089$. 3. Modify question 2, such that the code prints the values of $(i+3)^2$ all in the same line separated by a comma and a space. Print at the end the value of the sum

DUE DATE: Mon 14th Jan 2019 Submission: Send the Jupyter notebook as attachment via email