HGSS_workshop_Feb2019

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0.1 Python Workshop

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Acknowledgement :???, HGSS

```
In [166]: import sys
          print(sys.version)
```

```
2.7.14 |Anaconda, Inc.| (default, Dec  7 2017, 11:07:58)
[GCC 4.2.1 Compatible Clang 4.0.1 (tags/RELEASE_401/final)]
```

Note

1. Pre install anaconda 3
2. Test Editor, Os specific: Mac/Windows: Sublime.
3. Give primer for basic UniX/Linux Command. echo $SHELL

1. Unix/Linux command *ls*
cd ..
mkdir
Create a workspace/Directory/Project for the Workshop
End Goal:

- You should be able to open a notebook /TextEditor. Type commands
  - Yeah! My first text file. what is a file extension ? Prefix/suffix significance
- File name etiquettes.
  - Use meaning names for prefix. Added py to the suffix if its a python file.

2. First Python code in TextEditor *Note: make sure syntax highlighting is ON. difference for each version of TextEditor.*

- Open the editor and type *print('Hello World')*
- Save the file as .py

- Open a Terminal/Console/cmd/ and run the following command

End Goal:

- You should to run a simple one line python code.
  - python my_first_python_code.py
  - See what happend if you add # in front of the print line. What is commenting?

```
In [167]: %run my_first_python_code.py

          # You just ran your first python code.
```

```
Hello World
```

3. Variables and Casting

```
In [168]: #Variables
          var1 = "Some characters/strings"
          var2 = 5 #integer
          var3 = 4.5 # float
          var10 = True #logical

          var4= 9.999999
          #Casting
          print(var3)

          print(int(var3))

          print (float(var2))

          var5 = str(var2)

          print(var2 + var3)

          #print(var5 + var3) #error why?


          var6= " Appended"
          print(var1 + var6) #concatenating strings
```

```
4.5
4
5.0
9.5
Some characters/strings Appended
```

4. Lists

```
In [169]: list1 = [var1, var2 , var3, var4 ]
          print(list1)

          print(list1[1]) # Zero based index. Indexing starts at "0"

          print(list1[0])

          #print (list[4]) # error!

          print(list1[-1]) #
```

```
['Some characters/strings', 5, 4.5, 9.999999]
5
Some characters/strings
9.999999
```

Questions: 1. Whats the last but one variable? 2. Is the reverse zero indexed?

5. Slicing and Subsetting

```
In [170]: list1 = [var1, var2 , var3, var4, var5, var6]
          print(list1)

          list2 = list1[0:3]
          # list2 = list1[:3]
          #list2 = list1[2:]

          list2 = list1[2:-1] # What is upperbound lowerbound?
          list2 = list1[1:3] # includes bottom but not top
          print (list2)
```

```
['Some characters/strings', 5, 4.5, 9.999999, '5', ' Appended']
[5, 4.5]
```

6. Dictionaries

```
In [171]: students1 = {29940:'David', 3459:'Marco'}
          #print('David')# error
          print(students1[29940])

          #Example 2
          released = {
                          "iphone" : 2007,
                          "iphone 3G" : 2008,
                          "iphone 3GS" : 2009,
```

```
                    "iphone 4" : 2010,
                    "iphone 4S" : 2011,
                    "iphone 5" : 2012
                }
        print(released['iphone 5'])

        #example3 : ID,[Name, Age]
        students3 = {'2990':['David', 35],'3459':['Marco',25]}
        #print('David')# error
        print(students3['2990'])

        #example4
        #example3 : ID,[Name, Age, address]
        students4 = {2990:['David', 35, "23, Rue Berri, QC "],3459:['Marco',25, '34, St Benove
        #print(David)# error
        print(students4[3459])
```

```
David
2012
['David', 35]
['Marco', 25, '34, St Benovel st., MTL']
```

Note: 1. Can added any type of data to the key:value pair.

7. Booleans

```
In [172]: # Booleans

        x = True
        y = False
        x = 5 == 1
        print(x)


        #Boolean values respond to logical operators and / or

        # True and False = False

        # True and True = True

        # False and True = False

        # False or True = True

        # False or False = False
        comparison = "Apples" == "Intergenic" # False
```

```
print("----------")
print(comparison)
```

```
False
----------
False
```

8. Conditionals

```
In [173]: if True:
              print("Yes, TRUE")
          if False:
              print("Yes, False")

          x = 4
          if x > 3:
              print("Yes, Its greater than 3 ")

          if x < 3:
              print("Nope")

          print (x)

          print("-------------")
          #else

          if True:
              print("Its  True")
          else:
              print("Not True")
          #-------------
          if x > 2 and x <4:
              print("Its  True")
          else:
              print("Not True")
          #-------------

          if x > 2 or x <5:
              print("Its  4")
          else:
              print("Not True")
```

```
Yes, TRUE
Yes, Its greater than 3
4
-------------
```

```
Its  True
Not True
Its  4
```

9. Loops

```
In [174]: #example1
          print("#Example1 : ")
          for i in range(0,10):
                  print(i)



          #example2
          print("#Example2 : ")
          for i in range(0,10):
                  if i % 3 == 0:
                      print("Fizz",i)
                  else:
                      print("Buzz",i)

          #example3
          print("#Example3 : ")
          for i in range(0,10):
                  print("")
```

```
#Example1 :
0
1
2
3
4
5
6
7
8
9
#Example2 :
('Fizz', 0)
('Buzz', 1)
('Buzz', 2)
('Fizz', 3)
('Buzz', 4)
('Buzz', 5)
('Fizz', 6)
('Buzz', 7)
('Buzz', 8)
```

```
('Fizz', 9)
#Example3 :
```

ASSIGNEMENT:

```
In [175]: # Assignment 1

          #Draw a Rectangle os size h = 25, w =20

          w =30*"*"
          h = "*" +28*" " + "*"

          for i in range (0,25):
              if i == 0 or i == 24 :
                  print(w)
              else:
                  print(h)
```

```
******************************
*                            *
*                            *
*                            *
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*                            *
```

```
*                            *
*                            *
*                            *
*                            *
*                            *
******************************
```

10. Dataframe

```
In [176]: #example 1
          import pandas as ps
          df = ps.read_csv("sample_data.csv")
          df = ps.DataFrame(df)

          #Explore Data
          #print(df.head(3))


          #print(df.feature)

          print(df.info)
```

```
<bound method DataFrame.info of             feature sample_A  sample_B  log2(exprA)  log2(exprB)
0    c1091186_g4_i1      arm  blastema     0.335712     7.688236  -7.35
1    c1088792_g2_i5      arm  blastema     0.000000     4.772202  -4.77
2    c1089919_g4_i6      arm  blastema     0.000000     4.948648  -4.95
3    c1047730_g1_i1     Cart       arm     0.028569     0.709291  -0.68
4    c1078993_g1_i1     Cart       arm     0.000000     1.514501  -1.51
5    c1075446_g5_i3     Cart       arm     0.554834     2.792439  -2.24
6   c1087416_g10_i1     Cart       arm     0.556797     0.014355   0.54
7     c876107_g1_i1     Test    muscle     0.420078     2.094236  -1.67
8    c1074311_g2_i1     Test    muscle     0.146655     2.087802  -1.94
9    c1002566_g2_i1     Test    muscle     0.000000     0.372952  -0.37
10   c1054854_g2_i2     Test    muscle     2.283626     0.652601   1.63
11   c1083042_g3_i4     Test    muscle     8.419370     5.719895   2.70
12   c1046447_g3_i1     Test    muscle     9.088181     6.389670   2.70

              FDR
0   1.590000e-57
1   8.160000e-48
2   9.590000e-45
3   3.170000e-07
4   3.170000e-07
5   3.180000e-07
6   3.180000e-07
7   2.600901e-02
8   2.601393e-02
```

```
9   2.601420e-02
10  2.602190e-02
11  2.602885e-02
12  2.603476e-02  >
```

```
In [177]: import matplotlib.pyplot as plt
          plt.close('all')
          plt(df.feature)
```

```
        ---------------------------------------------------------------------------

        TypeError                                 Traceback (most recent call last)

        <ipython-input-177-1c672d0ecf0c> in <module>()
          1 import matplotlib.pyplot as plt
          2 plt.close('all')
    ----> 3 plt(df.feature)


        TypeError: 'module' object is not callable
```

```
In [ ]: hgjhjhjl
```

0.1.1 example

__ #### example