Worksheet I

Get started with Jupyter Notebook. 1) Run Jupyter notebook and 2) click New (right side) and choose Python 3 option.



A new browser tap is created as shown in the example below.



Try rename your notebook and use the following naming convention.

 Yourid\_2\_2018\_worksheetX

For example,



In the Jupyter notebook cell, type print(“Hello IT students!!!!”) and click run button . The output will immediately be shown below the cell (where you put your code). For example,



**Complete the following exercises.**

1. At your screen (Jupyter notebook) cell, try the followings (enter in the cell and click “run”, one line at a time) and see the results.

2 + 2 - 3

50 – 5 \* 4

(50 – 5\*6) / 4

Do you observe any difference among the three results (hint: type of variable)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: Python supports various types of variables such as integer (int), floating point (float), string (str) etc.

1. Try

19 / 3 # classic division returns a float

19 // 3 # floor division discards the fractional part

19 % 3 # the % operator returns the remainder of the division

6 \* 3 + 1 # result \* divider + remainder

Search on the Internet to see what this sigh ‘#’ is for in Python. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Try

tax = 12.5 / 100

price = 200.50

tax \* price

1. Try

x = [3,20,41,710,-92,108] # x is a list containing Integer values

print (x)

Then try the followings to observe the results.

* print (x[0])
* print (x[1], x[3], x[5])

If you observe carefully, indexing in Python programming language starts at 0.

Fill in the blank (answer the following questions in this worksheet)

x[\_\_] = 710

x[1:] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

x[:4] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

x[\_\_:\_\_] = [20,41]

Note: x[1: ] # integers from position 1 (included) to the end

 x[:4 ] # integer from the beginning to position 4 (excluded)

1. Try each of the followings and click run.

 ‘Goodbye World’

“Goodbye World”

‘It isn’t’

‘It isn\’t’

What do you observe for the single quotation mark? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Try

s = 'First line. \nSecond Line'

print('First line. \nSecond Line')

print(s)

Try

print('C:\some\name')

What do you observe from the output? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Try

print(r'C:\some\name') or print(r'C:\some\\name')

1. Try

prefix = 'Hell' # prefix is a variable with string type. You can merge/join two strings using +

word = prefix + 'o'

print(word)

Try

print(word[:2])

print(word[2:5])

Try

print(word[:2] + word[2:5])

Try

print('J' + word[1:])

* Write a code to replace ‘llo’ with ‘at’ in the variable word. So the outcome should change from ‘Hello’ to ‘Heat’

myid = 6015555

print('My student ID is', myid)

1. y = ['hello', 'good', 'morning', 'bye', 'hi', 'afternoon'] # y is a list containing a number of strings

y[5]

print(y[5])

Observe the difference in the outputs? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

print (y[1],y[5])

Based on the above list, fill in the blank

y[ ] = 'hello'

y[2:] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

y[:4] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

y[ : ] = ['good', 'morning', 'bye']

1. Try

x = [3, 10, 41, 810, -92, 18]

for a in x:

 print (a)

Try putting ,either end=" " or end=", " after variable *a* (print(a, end = “ ”)). What do you observe? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What if **for a in x:** is changed to for a in x[1:5]: ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Try

x = [3, 10, 41, 810, -92, 18]

for a in x[1:3]:

 print (a)

for a in x:

 print(a)

Try

x = [3, 10, 41, 810, -92, 18]

for a in x[1:3]:

 print (a)

 for a in x:

 print (a)

What do you observe from the outputs?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Try

x = [3, 20, 41, 710, -92, 108]

for a in x:

 print (a)

- Adjust the program to print only the 2nd (20) to the 5th (-92) numbers in list x

- Adjust the program to print only the numbers in the odd positions (1st, 3rd, … )

1. Try

list(range(10)), and click run

list(range(0,10,2)), and click run

Fill in the blank

list(range(10)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

list(range(2,9)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

list(range(2,15,3)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

list(range(\_\_)) = [1,3,5,7,9,11,13]

list(range(\_\_,\_\_)) = [11,12,13,14,15]

list(range(\_\_,\_\_,\_\_)) = [9,11,13,15,17,19,21,23]

list(range(5,0,-2)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fill in the blank

list(range(15,11)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

list(range(\_\_,\_\_,\_\_)) = [15, 14, 13, 12, 11, 10]

1. y = [9,11,13,15,17,19,21,23]

print(len(y))

Fill in the blank

len(range(2,20,2)) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* What is the purpose of function len( )? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Try, list(range(len(y))) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

With the following exercises, you will learn how a Python takes inputs from the keyboard using input( ) function.

1. a = input('a = ')

b = input('b = ')

print (a, b)

print (a+b) # statement 1

a = int(input('a = '))

b = int(input('b = '))

print (a, b)

print (a+b) # statement 2

* What do you observe for the outputs from statement 1 and statement 2? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Try creating some other variables (x, y, Mynumber, etc.) and assign values to them.
1. Write a program that takes numbers *a* and *b*. Then print every number from *a* to *b*. Hint: use for-loop with range( ).
2. for i in range(10):

if i % 2 == 0:

print (i, end=” ”)

The above code prints all even numbers between 0 and 10. Which statement (code) does it tell that the number is an even number? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Write a program that prints every number from 0 to 50 that is a multiple of 5.
1. Write a program that takes numbers *a* and *b*. Then print every odd number from *a* to *b*.
2. Write a program that takes numbers *a* and *b*. Then print every number squared from *a* to *b*. (for powering, use \*\* operator)
3. Write a program that takes numbers *a* and *b*. The value of *a* must be greater than that of *b*. Then print every number from *a* down to *b*.
4. Write a program that takes your name and your student ID. Also takes the number of times you want to print your name and your student ID. Then print them out.