Web IDE – Python3 Environment

Accessing the IDE

1. Go to: <https://repl.it/>
2. Select Python3
3. Sign-up / Create an account
4. Make sure you can remember your account information for the rest of the course.

Using the IDE

* Use the black area like a calculator to try simple statements or commands
* Use the white area to create programs with multiple statements

Level 0: Basic Math & Strings

Accessing the Tutorial

* Go to: <http://www.letslearnpython.com/learn/>
* Skip directly to “Lesson 3: Math”

Questions

1. Complete “Lesson 3: Math – Math Basics” by typing the sample commands in the black area of the IDE.
   1. Create your own expression using 5 “+” and “-“ operators.
   2. List your expression and the result below.

**5+7-6**

=> 6

1. Complete “Lesson 3: Math – More Operators” by typing the sample commands in the black area of the IDE.
   1. Create your own expression using 5 “\*” and “/” operators.
   2. List your expression and the result below.

**5\*4/10**

=> 2.0

1. Complete “Lesson 3: Math – More Division” by typing the sample commands in the black area of the IDE.
   1. Create one division expression that gives a whole number answer
   2. And one division expression that gives a decimal number answer.
   3. List your expressions and the results below.

**20/4**

=> 5.0

**20/3**

=> 6.666666666666667

1. Complete “Lesson 3: Math – Floats” by typing the sample commands in the black area of the IDE.
   1. Use the “round()” function for the expressions you created in question #3 above.
   2. List your “round()” expressions and the results they return below.

**round(10/13)**

=> 1

1. Read through “Lesson 3: Math – Comparison Operators”.
   1. Why do you think Equals is “==” instead of “=”?
   2. What does “=” mean?

== means “equal to”

= means “sum of an equation”

1. Complete “Lesson 3: Math – Practice” and “Lesson 3: Math – Practice Answers” by typing the sample commands in the black area of the IDE.
   1. Create an expression using 5 different operators that returns a “True” result
   2. And an expression using 5 different operators that returns a “False” result.
   3. List your expressions and the results returned below.

**12 + 1 > 5 \* 4 / 2**

=> True

**12 + 5 < 1 \* 2 / 2**

=> False

1. Complete “Lesson 4: Strings – Strings” and “Lesson 4: Strings – Examples” by typing the sample commands in the black area of the IDE.
   1. Explain why typing “apple” works and why typing apple without quotes gives an error.

* Typing apple in quotes works because Python is able to read the string.
* Typing apple without quotes does not work because Python is unable to read the string.
  1. Also explain why “2 + 5” does not equal 7.
* The reason is because it’s in quotes and it’s referred as a string(it is not referred as an expression).

1. Complete “Lesson 4: Strings – Operators” by typing the sample commands in the black area of the IDE.
   1. Explain why typing “apple” + “e” works and why typing “apple” - “e” gives an error.

* The reason is because “-“ is an unsupported operator.
  1. Also explain why “Hello” \* 10 works but why “Hello” / 10 does work.
* The reason is because “/“ is an unsupported operator.

1. Complete “Lesson 4: Strings – Indexes” by typing the sample commands in the black area of the IDE.
   1. List the letters in your first name and the index for each letter in your first name.

* U D I S T A N

0 1 2 3 4 5 6

1. Complete “Lesson 4: Strings – Indexes Examples” by typing the sample commands in the black area of the IDE.
   1. Explain why print(“Hello!”[4]) does not print “!”.

* The reason is because 4 is the index of “o”.
  1. What does print(“Hay, Bob!”[4]) print? For a hint try print(“Hay, Bob!”[3]) and print(“Hay, Bob!”[5])
* Prints “ “.

1. Complete “Lesson 4: Strings – Rules” by typing the sample commands in the black area of the IDE.
   1. Explain why print(“Hello!”[7]) gives an error.

* The reason is because there are only 6 digits and the maximum digit is 6.

Level 1: Basic Math & Strings

Accessing the Tutorial

* Go to: <http://www.letslearnpython.com/learn/>
* Skip directly to “Lesson 5: Variables”

Questions

1. Complete “Lesson 5: Variables – Save a Value” by typing the sample commands in the black area of the IDE.
   1. What do you get if you type puppies / 3?

**puppies = 6 \* 6**

**puppies**

=> 36

**puppies/3**

=> 12.0

* 1. Why doesn’t typing kittens / 3 work?
* Kittens don’t have a particular value.

1. Complete “Lesson 5: Variables – Assign a New Value” by typing the sample commands in the black area of the IDE.
   1. Explain how the following sequence of commands works:
      * puppies = 36
      * puppies = puppies / 6
      * puppies

Answer : “puppies” is equal to 36 – “puppies” is assigned a value(36).

“puppies” is divided by 6” – 36 is divided by 6.

“puppies” means 36.

1. Read through “Lesson 5: Variables – Rules”.
2. Complete “Lesson 5: Variables – Math Operators” by typing the sample commands in the black area of the IDE.
   1. Explain what happens for following sequence of commands:
      * colour = “red”
      * puppies = 36
      * colour + puppies

Answer : “colour” is equal to “red” – “colour” is assigned a value(red).

“puppies” is equal to 36 – “puppies” is assigned a value(36).

“colour + puppies” means “red + 36”.

1. Complete “Lesson 5: Variables – String Operators” by typing the sample commands in the black area of the IDE.
   1. Explain why the following commands give different results:
      * Color + day \* fishes

( Color + day ) \* fishes  
  
**Answer :** In the first command “colour + day” is not in brackets. Therefore the multiplication is done before adding.

In the second command “colour + day” is in brackets. Therefore the operation in the brackets is done first.

1. Complete “Lesson 5: Variables – Indexes” by typing the sample commands in the black area of the IDE.
   1. What is the index of ‘r’ in “watermelon”?

Answer : Fruit[4]

* 1. Write an expression using my number to return ‘r’  
     Answer : mynumber = 7

fruit[mynumber-3]

1. Complete “Lesson 5: Variables – Assignments or Comparisons” by typing the sample commands in the black area of the IDE.
   1. What is the difference between “=” and “==”?

“=” means equal

“==” means equal to

* 1. Create your own mnemonic to remember this difference.  
     fruit = “watermelon”

mynumber = 3

fruit[mynumber]

1. Complete “Lesson 6: Errors – Examples” by typing the sample commands in the black area of the IDE.
   1. Why doesn’t “friend” + 5 work?

The integer cannot be converted into a string.

* 1. What is the difference between int and str?

A string is in quotations and an integer is not in quotations.

1. Read through “Lesson 6: Errors – Parts of an Error Message”.
   1. Is “friend” + 5 an example of:
      1. A Syntax Error?
      2. A Runtime Error?
      3. A Logic Error?

Answer : Syntax Error/Type Error

1. Read through “Lesson 6: Errors – Fixing Errors”.
   1. Use the ‘print’ command to print your first name and last name.

**"udistan" + "anandkumar"**

=> 'udistananandkumar'

1. Complete “Lesson 7: Booleans – Types of Data” by typing the sample commands in the black area of the IDE.
   1. What is the value of: type(“True”)

**type("True")**

=> <class 'str'>

* 1. What is the value of: type( True )

**type(True)**

=> <class 'bool'>

* 1. Why is the result different?

One is a string and the other one is an integer.

1. Complete “Lesson 7: Booleans – What Is A Boolean” by typing the sample commands in the black area of the IDE.
   1. Why do you think that having a Boolean data type is important in computer programming?

Boolean data type is important in computer programming because we need to make decisions about what to do in our code. "If this expression is True, do something; if the expression is False, do something else instead."

1. Complete “Lesson 7: Booleans – Trying Out Booleans” by typing the sample commands in the black area of the IDE.
   1. Why do you think that there is no Maybe” Boolean data value in computer programming?

 Python knows that it should treat them like Booleans instead of strings or integers. Therefore, Python only includes True or False, not Maybe.

Level 2: Lists & Logic

Accessing the Tutorial

* Go to: <http://www.letslearnpython.com/learn/>
* Skip directly to “Lesson 7: Booleans”

Questions

1. Complete “Lesson 7: Booleans – AND Comparisons” by typing the sample commands in the black area of the IDE.
   1. Try the following Python statements and record the results.
      1. True and True - True
      2. True and False - False
      3. False and True - False
      4. False and False - False
   2. Explain if there are any other combinations of True / False.

* There are no more other combinations.
  1. Explain how the AND operator is similar to a math operator and how it is different.
* The ‘AND’ operator and the math operators are used in between two comparisons but math operators are in between two values, and used to solve operations.

1. Complete “Lesson 7: Booleans – OR Comparisons” by typing the sample commands in the black area of the IDE.
   1. Try the following Python statements and record the results.
      1. True or True – True
      2. True or False – True
      3. False or True - True
      4. False or False - False
   2. Explain how the combination of the NOT & OR operators is similar to the AND operator by itself and how it is different.

All combinations use comparisons. The ‘NOT’ operator increments the ‘OR’ operator between its comparisons. They are different from the ‘NOT’ operator that is in front of a comparison while as an ‘OR/AND’ is between the comparison. The ‘NOT’ and ‘OR’ operators have opposite results.

1. Complete “Lesson 7: Booleans – Expressions” by typing the sample commands in the black area of the IDE.
   1. Explain why the following two Python statements give different results.
      1. not (True or True)
      2. not True or True

One statement has a bracket and the other statement does not have a bracket.

* 1. Explain why the following two Python statements give the same results.
     1. not (True and True)
     2. not True and True

There is an ‘AND’ operator between them.

1. Complete “Lesson 7: Booleans – Practice” by typing the sample commands in the black area of the IDE.
   1. Create three more practice expressions similar to those in the tutorial.
   2. Provide the results for your practice expressions

“Jump” and “Jump”

= ‘Jump’

“Hop” and “Hop”

= ‘Hop’

“Hop” and “Jump”

= ‘Jump’

1. Complete “Lesson 8: Lists – A Collection of Objects” by typing the sample commands in the black area of the IDE.
   1. Create a list of your favorite sports teams.
   2. Assign your list to a variable.
   3. Confirm that your variable and your list are the same.

teams = ["blue jays", "maple leafs", "toronto raptors"]

1. Complete “Lesson 8: Lists – List Indexes” by typing the sample commands in the black area of the IDE.
   1. What is the list index of the last team in your list of favorite sports teams.

['blue jays', 'maple leafs', 'toronto raptors']

0 1 2

The answer is teams [2]

* 1. In the tutorial, the error produced by typing “fruit[3]” is an example of:
     1. A Syntax Error?
     2. A Runtime Error?
     3. A Logic Error?

A syntax error known as index error that list index out of range

1. Complete “Lesson 8: Lists – Practice” and “Lesson 8: Lists – Practice Answers” by typing the sample commands in the black area of the IDE.

Done

NOTE: Starting with Lesson 9 you should use the WHITE area of the IDE for entering example code with multiple statements.

1. Complete “Lesson 9: Logic – Making Decisions” by typing the sample commands in the white area of the IDE.
   1. Modify the tutorial code to print “Hi Alfred!” based on a decision using numbers

myname = "Alfred"

if myname == "Alfred":

print("Hi Alfred!")

1. Complete “Lesson 9: Logic – Adding A Choice” by typing the sample commands in the white area of the IDE.
   1. Modify the tutorial code to print your first name or your last name based on a choice (using “else”).

myname = "Udistan"

if myname == "Anandkumar":

print("Hi Udistan!")

else:

print("Hi Anandkumar!")

1. Complete “Lesson 9: Logic – Adding Many Choices” and “Lesson 9: Logic – Practice” by typing the sample commands in the white area of the IDE.
   1. Modify the tutorial code and “elif” statements to make a choice using at least 4 of your friends names.

if myname == "Nutan":

print("Hi Nutan!")

elif myname == "Manveer":

print("Hi Manveer!")

if myname == "Harkushal":

print("Hi Harkushal!")

elif myname == "Rahman":

print("Hi Rahman!")

else:

print("Who are you?!?")