

4-12-18

April 12, 2018

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In [1]: # Outline
        # Booleans (Expressions)
            # Operations (not, and, or)
            # Operations (<, >, <=, >=, ==)

        # If statements
            # if <boolean condition>:
                # code
            # elif <boolean condition>:
                # code
            # else # This will execute if none of the conditions above were true
                # code

        # Conditional Statement Exercises
            # Have user create account with username and password
            # Have user login and check that their information was correct

        # Recap loops
            # For Loops
                # for i in range():
                # for item in iterable:
                # Integrate if statements

            # For Loop Exercises
                # Sum up the numbers from 1 - 10
                # Calculate 5! (factorial)
                # Generate 10 random test scores between 0 and 100
                # Calculate the average test score

        # While loops
            # while <boolean condition>:
                # Do something
            # Integrate if statements

        # Conditional Loop Exercises
            # Create a list of (even numbers > 1) until your list has 10 elements
            # Remove random items from the list above until it only has 1 element left
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    # BONUS
    # Dictionaries? - ON TEST
    # Sets?
    # Classes?

In [48]: # Booleans
if (False and True): # if <condition>
    print('hi')

# Logical Operators
# not, and, or

# Relational Operators
# <, >, <=, >=, ==, !=
x = 10
x != 10
x == 10

name = "ryan"
upperName = "Ryan"

name == upperName.lower()
name != upperName

l1 = [1,2,3]
l2 = [1,2,3]
l3 = [3,4,5]
l4 = [1,2,4]

l1 == l4

Out[48]: False

In [60]: if 7: # For numbers: 0 == False, Every other number == True
    print('7 is True')

    if (0):
        print('woo')

    if (not 0):
        print('hoo')

7 is True
hoo

In [68]: # Conditional Statement Exercises
    # Have user create account with username and password
    # Have user login and check that their information was correct

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# Get user's username and password (create account)

username = input("username: ")
password = input("password: ")

# Get user's input(to login)
login_username = input("username: ")
login_password = input("password: ")

# Check if input was correct (check login info)

if username==login_username and password==login_password:
    print ("You have logged in")
else:
    print ("incorrect login")

incorrect login

In [ ]: # For loops
        # Two ways
        # 1. for num in range(0,9) # working with numbers
        # list1 = [1, 2, 3]
        # working with an "iterable" (list, string, or dictionary usually)
        # 2. for item in list1

In [78]: list1 = [1, 2, 3]
list2 = [4, 5, 6]
list3 = []
# Add 1 to everything in list2
for item in list2:
    list3.append(item+1) # Says 4=5, then 5 = 6, then 6 = 7
    # Want list[0] = 5, list[1] = 6, list[2] = 7
    # list[0] = list[0]+1, list[1] = list[1] + 1, list[2] = list[2] + 1
    # should be [5, 6, 7]
print(list3)

[5, 6, 7]

In [ ]: # Datetime
        # datetime
        # date
        # time

countries = {"USA": "America"}
# dict.get(key) returns value of that key (if it exists), otherwise returns None

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# If this key doesn't exist, print
if countries.get("USSR") == "None":
    print('Key does not exist')

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In [82]: #For Loop Exercises
         #1. Sum up the numbers from 1 - 10
         #2. Calculate 5! (factorial)
         #3. Generate 10 random test scores between 0 and 100
         # Calculate the average test score

#1. Sum up the numbers from 1 - 10
total=0
for num in range(1,11):
    total+=num
print(total)

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55

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In [84]: #2. Calculate 5! (factorial)
factorial=1
for num in range(5,0,-1):
    factorial*=num
fact = 1
for num in range(1, 6):
    fact *= num
print(factorial)
print(fact)

```

120

120

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In [88]: # Generate 10 random test scores between 0 and 100
         # Calculate the average test score

import random
# random.randint(0, 100)

# If you want a loop to execute N times
# i = 0, 1, 2, ..., N-1
# for i in range(N): # for i in range(0, N): # IDENTICAL
#     do anything here (doesn't have to use 'i')

# If i wanted to print "hello" 10 times
for i in range(10):
    print("hello")

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# for i in range(6):
    # i = 0
    # i = 1
    # i = 2
    # ...
    # i = 6
    # now think about what he asked you to do

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scores=[]
for i in range(10):
    score=random.randint(0,100)
    scores.append(score)

print(scores)
print(len(scores))

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[6, 22, 5, 41, 72, 100, 25, 56, 90, 1]
10

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In [92]: # Example of when you want 'i'
        # Doing something with numbers in given range
        # Print the numbers from 7 - 15
for i in range(7, 16):
    print(i)

    # Accessing indexes of a list or string
    # Add 1 to every value in list called 'xyz'
xyz = [1, 2, 3]
for i in range(len(xyz)):
    xyz[i] += 1 # xyz[i] = xyz[i] + 1
print(xyz)

```

```

7
8
9
10
11
12
13
14
15
[2, 3, 4]

```

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In [97]: # Example of when you don't care about 'i'
        # Do something N times
        # Print "hello" 5 times

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for i in range(5):
    print("hello")

    # Generate 7 random numbers between 50 and 100
import random

for i in range(7):
    print(random.randint(50, 100))

    # Generate 5 random numbers between 50 and 100 and print the average (mean)
random_numbers = []
for i in range(5):
    random_numbers.append(random.randint(50, 100))
print(random_numbers)

total = 0
# for item in iterable
for number in random_numbers:
    total += number
average = total / len(random_numbers)
print("Average with iterable =", average)

total = 0
# for item in range
for i in range(len(random_numbers)):
    total += random_numbers[i]
average = total / len(random_numbers)
print("Average with range() =", average)

```

```

hello
hello
hello
hello
hello

```

```

85
90
76
59
100
73
79

```

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[63, 66, 85, 55, 74]
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Average with iterable = 68.6
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```
Average with range() = 68.6
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In [105]: # Print numbers from 9 - 18
          for i in range(9,19):

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        print(i)

# Print "Python" 7 times
for i in range(7):
    print("Python")

# Print every number in list called "xyz" with range()
xyz = [4, 5, 6]
for index in range(len(xyz)):
    print(xyz[index])

# Print every number in list called "xyz" with iterable
xyz = [4, 5, 6]
for num in xyz:
    print(num)

```

```

9
10
11
12
13
14
15
16
17
18
Python
Python
Python
Python
Python
Python
Python
1
2
3
1
2
3

```

```

In [106]: # While loops
          # while <boolean condition>:
            # Do something
          # Integrate if statements

          # Conditional Loop Exercises
            # Create a list of (even numbers > 1) until your list has 10 elements

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        # Remove random items from the list above until it only has 1 element

# While loop looks like this:
# while <condition>:
#     do something

# Conceptually while loop looks like this:
# for i in range(infinity):
#     if <condition> == False:
#         break

# Two general outlines of while loops (ways to get out of them)
"""
while (variable == ?):
    print(7)
    if something:
        variable = different

while True:
    psodkfsd
    psdofkpdsof

    if something:
        break
    or
    exit()
"""

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Out[106]: '\nwhile (variable == ?): \n    print(7)\n    if something:\n        variable = differ

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In [109]: # Conditional Loop Exercises
           # Create a list of (even numbers > 1) until your list has 10 elements
           # Remove random items from the list above until it only has 1 element

#1. Create a list of random numbers until your list has 10 elements
import random #random.randint(min, max)
numbers = []
while len(numbers)<10:
    num=random.randint(1,100)
    numbers.append(num)
print(numbers)

#2. Remove random items from the list above until it only has 1 element left

while len(numbers)>1:
    index=random.randint(0,len(numbers)-1)
    numbers.pop(index)
print (numbers)

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[38, 2, 96, 37, 23, 95, 50, 38, 26, 55]
[2]