Programming with Python

Lesson 5: Dictionaries and Tuples!

November 29th, 2016

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- We learnt about how we can iterate on lists with a for loop
- We learnt about some list operations
- We begun writing our own text based game!

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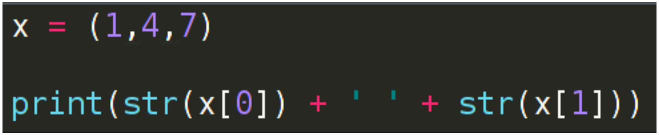
Once made, elements cannot be changed - You will not be able to do for example $x[0] = 4$. This means tuples are *immutable*.

Tuple syntax



```
x = (1,4,7)

print(str(x[0]) + ' ' + str(x[1]))
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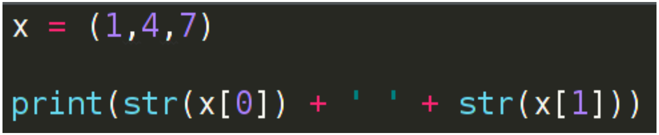

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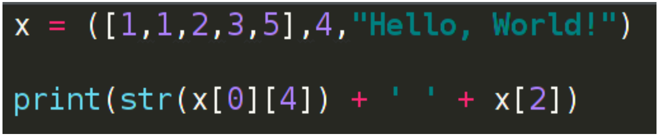

```
x = ([1,1,2,3,5],4,"Hello, World!")

print(str(x[0][4]) + ' ' + x[2])
```

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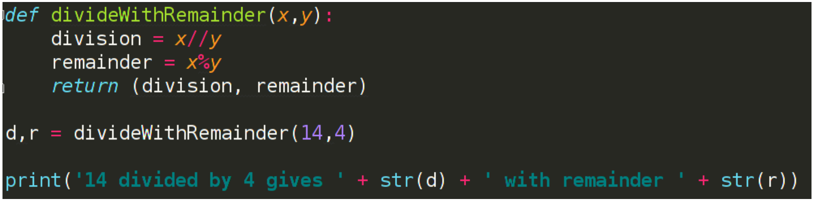
We can also use tuples if we want to return multiple values from a function.

Example involving functions

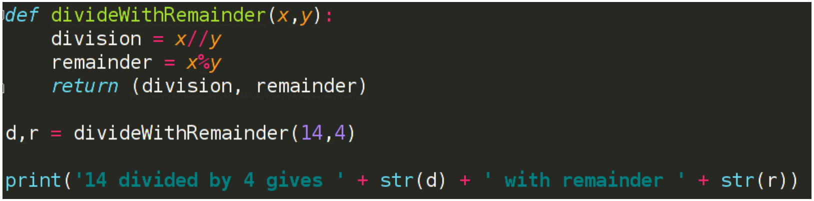


```
def divideWithRemainder(x,y):
    division = x//y
    remainder = x%y
    return (division, remainder)

d,r = divideWithRemainder(14,4)

print('14 divided by 4 gives ' + str(d) + ' with remainder ' + str(r))
```

Example involving functions



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Note the neat syntax on the left of the equals sign. You can kind of 'map' variables to the locations in a tuple.

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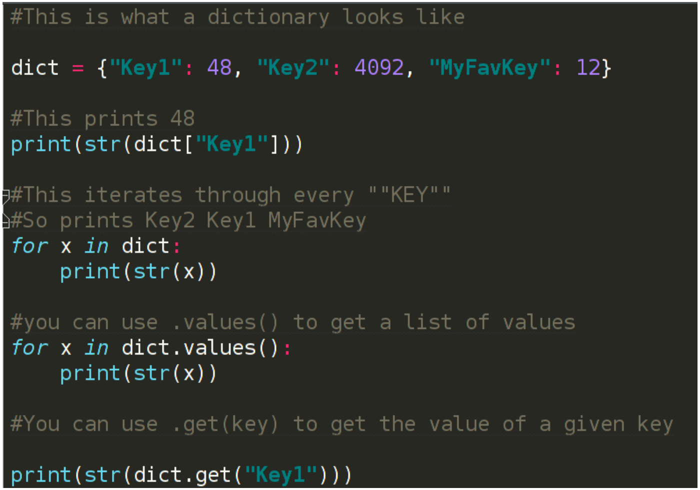
- Storing place name to coordinates for a GPS tracking app
- Storing weapon names to weapon stats for a game
- Translating something from english to german

An example of a dictionary



```
#This is what a dictionary looks like

dict = {"Key1": 48, "Key2": 4092, "MyFavKey": 12}

#This prints 48
print(str(dict["Key1"]))

#This iterates through every ""KEY""
#So prints Key2 Key1 MyFavKey
for x in dict:
    print(str(x))

#you can use .values() to get a list of values
for x in dict.values():
    print(str(x))

#You can use .get(key) to get the value of a given key

print(str(dict.get("Key1")))
```

Objects & classes

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An object is a physical version of a class - like if an object were a car, it's class would be it's blueprints
There's a tonne of stuff on objects and classes online, though they are not for the faint of heart!

Time for more games!

presentations!

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To summarise:

- We learnt about tuples and their uses in returning multiple values
- We learnt about dictionaries
- We discussed objects
- We finished writing our own text based game!

For next week

Source code plus lecture slides will be available online soon after the lesson.
If you are new to HackSocNotts, please join us on *http://hacksocnotts.slack.com*.
If you have any questions, feel free to ask now or over slack.