

# Introduction to Python: Exercise I

Digital Urban Visualization. Understanding Dynamics  
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Please hand in all your Python files in a zip file until the next lecture. You have to solve all but one of the problems of exercise 1 and the full exercise 2 to complete the exercise.

## 1 Loops

In this section print the following patterns using *for* and/or *while* loops. You should not use more than one *print* statement per exercise. The usage of hard coded lists is not allowed.

- |                             |                                    |                                    |
|-----------------------------|------------------------------------|------------------------------------|
| a) #####<br>#####<br>#####  | c) #<br>##<br>###<br>####<br>##### | e) #0#0#0#<br>0#0#0#0<br>#0#0#0#   |
| b) ###<br>000<br>###<br>000 | d) #0#0#0#<br>#0#0#0#<br>#0#0#0#   | f) #<br>0#<br>0#0<br>#0#0<br>#0#0# |

## 2 Basic Data Structures

We will work with Tuples and Lists in this exercise. You will have to write small pieces of code which mutate one to the other. Please *print* the variable you changed after every step.

- a) Tuple to List

```
# Convert the following tuple  
foo = (1, 2, 3, 4, 5, 6, 7, 8, 9)  
# to this list  
bar = [1, 2, 3, 4, 5, 6, 7, 8, 9]
```

- b) Append a zero to *bar*.

```
# Printing bar should give the following
print (bar)
[1, 2, 3, 4, 5, 6, 7, 8, 9, 0]
```

c) Remove the second element of *bar*.

```
# Printing bar should give the following
print (bar)
[1, 3, 4, 5, 6, 7, 8, 9, 0]
```

d) Reverse the list and store it to *foo*.

```
# They should afterwards look the following
print (bar)
[1, 3, 4, 5, 6, 7, 8, 9, 0]
print (foo)
[0, 9, 8, 7, 6, 5, 4, 3, 1]
```

e) Put the elements of *bar* into a dictionary called *bardict*. The key of the dictionary should be their index in *foo*.

```
# Printing bardict should yield the following
{0: 0, 1: 9, 2: 8, 3: 7, 4: 6, 5: 5, 6: 4, 7: 3, 8: 1}
```