

School Nova Computer Science 202
Homework 1 (due 09/26/2020)

Save your code as lastname_homework1.py and submit on Google Classroom

Note: **This homework is not supposed to be easy!** It is more of a benchmark. Try to complete as much as possible. If something does not work, add comments to your code about what you actually tried. (Also, please, check class policies with respect to homework, especially, if you are getting help from anyone).

Task 1

Manually create a Python list of integers from 1 to 8. Let's call it Y.

Can you do it using range()?

Can you do it using list comprehension?

Manually create a list of strings from "a" to "h". Let's call it X. Verify that X has eight elements.

Task 2

Using X and Y from Task 1 and "for" loops, create a nested list CB that would look like this:

```
[[ 'a1', 'b1', 'c1', 'd1', 'e1', 'f1', 'g1', 'h1'],  
 [ 'a2', 'b2', 'c2', 'd2', 'e2', 'f2', 'g2', 'h2'],  
 [ 'a3', 'b3', 'c3', 'd3', 'e3', 'f3', 'g3', 'h3'],  
 [ 'a4', 'b4', 'c4', 'd4', 'e4', 'f4', 'g4', 'h4'],  
 [ 'a5', 'b5', 'c5', 'd5', 'e5', 'f5', 'g5', 'h5'],  
 [ 'a6', 'b6', 'c6', 'd6', 'e6', 'f6', 'g6', 'h6'],  
 [ 'a7', 'b7', 'c7', 'd7', 'e7', 'f7', 'g7', 'h7'],  
 [ 'a8', 'b8', 'c8', 'd8', 'e8', 'f8', 'g8', 'h8']]
```

(These are chess board coordinates).

Note: there are multiple ways to do it. Avoid manual entry.

Verify that CB[0][0] is 'a1' and CB[1][1] is 'b2'.

Task 3

Using CB above, create a dictionary CD1 that would look like this:

```
{(0, 0): 'a1',  
 (0, 1): 'b1',  
 ...  
 (7, 6): 'g8',  
 (7, 7): 'h8'}
```

Verify: CD1 must have 64 elements.

Task 4

Create CB2, which is a deep copy of CB.

Modify CB2 so that it would look like this:

```
[[ 'wR', 'wN', 'wB', 'wQ', 'wK', 'wB', 'wN', 'wR'],
 [ 'wP', 'wP', 'wP', 'wP', 'wP', 'wP', 'wP', 'wP'],
 [ ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' '],
 [ ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' '],
 [ ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' '],
 [ ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' '],
 [ 'bP', 'bP', 'bP', 'bP', 'bP', 'bP', 'bP', 'bP'],
 [ 'bR', 'bN', 'bB', 'bQ', 'bK', 'bB', 'bN', 'bR']]
```

(The strings represent chess pieces, for example, 'wQ' is 'white queen').
Try to minimize manual entry.

Verify CB2[0][3] is 'wQ' and CB2[7][4] is 'bK'.

Task 5

Using CB and CB2 create a dictionary CD2 that looks like this:

```
{ 'a1': 'wR',
  'b1': 'wN',
  'c1': 'wB',
  ...
  'a3': ' ',
  'b3': ' ',
  'c3': ' ',
  ...
  'f8': 'bB',
  'g8': 'bN',
  'h8': 'bR' }
```

Verify: CD2 must have 64 elements.

Verify: CD2['d1'] = 'wQ'