

**School Nova Computer Science 201
Homework 2**

Save your code as lastname_homework2.py and submit on Google Classroom

Task 1

Create CB2, which is a deep copy of CB (from our previous work).
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'.
Verify CB2[0][3] is 'wQ' and CB2[7][4] is 'bK'.

Task 2

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'

Task 3

Start with the first three lines of the Zen of Python:

```
zen = "Beautiful is better than ugly. \n" \
      "Explicit is better than implicit. \n" \
      "Simple is better than complex."
```

Using list comprehension, create a list with the number of characters in each word. Your result should look like this:

```
[9, 2, 6, 4, 4, 8, 2, 6, 4, 8, 6, 2, 6, 4, 7].
```

Notice that these numbers also exclude punctuation (len("ugly") is 4; while len("ugly.") is 5!). Use string .replace() method to generate a new string without punctuation.

Task 4

Write a script to generate a nested list where each element of the primary list is a sentence, and each element of the secondary list is a word. Your resulting list should look like this:

```
[['Beautiful', 'is', 'better', 'than', 'ugly'], ['Explicit', 'is', 'better', 'than', 'implicit'], ['Simple', 'is', 'better', 'than', 'complex']]
```

The list has three elements. Once again notice the absence of punctuation.

Task 5

Using the zen variable from task 3 and dictionary comprehension (to remind you, simply start with your_dictionary = {key:value for ...}), generate a dictionary where each key the word and the value is the number of characters in the word. Your dictionary should look like this:

```
{'Beautiful': 9, 'is': 2, 'better': 6, 'than': 4, 'ugly': 4, 'Explicit': 8, 'implicit': 8, 'Simple': 6, 'complex': 7}
```

Why is the number of elements in your dictionary smaller than the total number of words in zen? (reply either using a comment # or print()).

Task 6

Using the zen variable from task 3 and set comprehension, generate a set of all words in zen. Convert all elements of the set to lower case using .lower() string method. Notice the number of elements in the set (is it the same as the number of elements in the dictionary above?)