

# PHOT 110: Introduction to programming

## Practical 5: Sequences and special string operations

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### 1. Making a tuple

Tuples are similar to lists but are immutable, i.e. they cannot be changed. You can create a tuple (list) using round (square) brackets.

- Make a tuple containing the odd elements: 1, 3, 5
- Make a list containing even elements: 2, 4, 6
- Use the `extend()` method on the list to add the elements of the tuple to the list. Print the extended list. There is no extend method for tuples, why not?
- Order the elements in the list from small to large using the `sort()` method on the list. Print the ordered list. Example output:

Extended list: [2, 4, 6, 1, 3, 5]

After sorting the elements of the list: [1, 2, 3, 4, 5, 6]

### 2. String chemistry

Take a long word such as “Dimethylaminophenyltrimethylpyrazoline” and apply the following string operations (print the result every time):

- Make all letters capital
- Inverse the order of the letters in the word
- Split the word into a list of strings whenever you encounter the letter “y” or “Y”.
- Sort the letters alphabetically within each string of the splitted word.
- Print the second string of the list to the screen
- Create a string: “Chemistry is hard”, add three exclamation marks “!” to the end, and repeat it 20 times (use the multiplication operator). Example output:

DIMETHYLA  
MINOPHENYLTRIMETHYLPYRAZOLINE

['DIMETH', 'LAMINOPHEN', 'LTRIMETH', 'LP', 'RAZOLINE']

['DEHIMT', 'AEHILMNNOP', 'EHILMRTT', 'LP', 'AEILNORZ']

AEHILMNNOP

chemistry is hard!!!chemistry is hard!!!chemistry is hard!!!chemistry is hard!!!chemistry is h

### 3. Yoda-talk

Prompt the user to give a sentence. Change the order of the words and print the new sentence. You can use following technique:

- Split the sentence in words.
- Mix up the order of the words (list of strings) by flipping every two word
- Use the `join()` method on the list of words to concatenate all strings in the list, so you obtain a single (mixed up) sentence again.

- Print this mixed up sentence to the screen.
- Try to mix up the order of the words more by using the shuffle function of the random module instead, see the example below:

```
import random

words = ["The", "force", "is", "strong", "in", "him"]
random.shuffle(words)
print(words)

['force', 'him', 'in', 'strong', 'is', 'The']
```

Example output:

```
Enter a sentence: The force is strong in him
The him in force strong is
```