

Software Development (Winter 25/26)

Assignment 04

Bonus points can be claimed until November 10th 2025, 09:25 AM

Exercise 1 (*List comprehensions II, 2 Points*)

- a) Consider the list `['H', 'P', 'E', 'E', 'L', 'T', 'L', 'E', 'O', 'R']`. This list contains the words 'Hello' and 'Peter' in mixed form. Store the original words in two lists (`['H', 'E', 'L', 'L', 'O']` and `['P', 'E', 'T', 'E', 'R']`) *using List comprehension*.

Tip: Use the `enumerate()` function.

- b) Imagine a parts list that lists the following information for each product: Item, part number, name, quantity and unit. Extract the names of all products from a list of tuples with all the information listed. *Use List comprehension to do this*.

Example: From the list `parts = [(1, '500-1', 'Hammer', 2, 'Pieces'), (2, '503', 'Screwdriver', 3, 'Pieces')]` the list `['Hammer', 'Screwdriver']` shall be extracted.

Exercise 2 (*Dictionaries, 2 Points*)

Look again at the parts list from exercise 1b). Expand the sample parts list to include additional products. Based on the the extended parts list, write a program that creates a dictionary that maps each part number to the quantity and unit of that product.

Example: From the list `parts = [(1, '500-1', 'Hammer', 2, 'Pieces'), (2, '503', 'Screwdriver', 3, 'Pieces'), (3, '555', 'Nail', 10, 'Pieces')]` the dictionary `inventory = {'500-1': (2, 'Pieces'), '503': (3, 'Pieces'), '555': (10, 'Pieces')}` is to be generated.

Exercise 3 (*Zip, 1 Points*)

Imagine that you need to manage the first and last names of people in a program. For this purpose you find already existing code, in which all first and last names are stored in separate lists (see example below). Briefly explain if this is an optimal solution or if a solution with tuples may be more appropriate. Then use `zip()` to merge the two lists into one list of tuples.

Example: From the lists `first_names = ['Jane', 'Max', 'Giannis', 'Juan']` and `last_names = ['Doe', 'Mustermann', 'Karamitros', 'Perez']` the list `names = [('Jane', 'Doe'), ('Max', 'Mustermann'), ('Giannis', 'Karamitros'), ('Juan', 'Perez')]` is to be generated.