Intro to Programming 2022, Mandatory Assignment 3

Dates:

- Hand-out date: October 12
- Hand-in date: November 2, 23:59

Rules:

- You hand in the solution before the hand-in date mentioned above.
- You hand in the solution individually.
- The hand-in is approved if at least 3 point are achieved.
- You can work on the assignment within your group. The hand-in must state all students that you have worked with.

Hand-in Format:

- Provide your answers by editing the files provided in the `answers-xxxx` directory.
  - You are not supposed to create any new files, nor change the names of the provided files in that directory.
  - Before handing in, replace the xxxx in the `answers-xxxx` directory with your ITU student ID.
    - For example, Helge's ITU login is `ropf` (as in the email address `ropf@itu.dk`)
    - So his assignment hand-in file would be `answers-ropf.zip`.
    - Similarly, Martin's file would be called `answers-maau.zip`.
  - That is, you **do not** hand-in plain text files only, no PDF files, no Word files, etc.

List of people that you have been working together with for this assignment

Edit the file called `collaborators.txt` in the template and add the names of the students with whom you have been working.

Problem 1 (2 Points)

For this task, we consider the following function and the following dictionary:

```
def stores_missing_goods(goods):
    for good in goods:
        for location in goods[good]:
            if goods[good][location] == 0:
                return location + " is missing " + good + "!"
```

```
store_goods = {
    'Beer' : {
        'Amager' : 12,
        'Indre By' : 24,
        'Valby' : 1
        },
    'Red Wine' : {
        'Amager' : 0,
        'Indre By' : 176,
        'Valby' : 12
       }
    }
```

What do the following expressions evaluate to? Write one value per line in a file `1.txt`.

- `store_goods['Beer']['Indre By']`
- `store_goods['Beer'].keys()`
- `store_goods['Red Wine'].items()`
- `len(store_goods['Red Wine'].items())`
- `stores_missing_goods(store_goods)`

Problem 2 (2 Points)

You are throwing a party and want to pair up people with similar interests. You have already collected data about each of your guest's favorite interest in a dictionary like so:

```
interests = {
    'Sophia' : 'Computer',
    'Anders' : 'Dancing',
    'Mette' : 'Dancing',
    'Hikari' : 'Computer',
    'Riko' : 'Rowing',
    'Troels' : 'Rowing',
    'Sarah' : 'Rowing'
}
```

To be able to quickly suggest topics at the party, you need to convert this dictionary into a different layout.

Your task is to write a function `transform_dictionary` that **takes as argument** a dictionary such as the one above and **returns a dictionary** in which each key is an interest and the value is a list of all the people that share this interest. For example, for the list above, the dictionary that is returned is (disregarding a particular order of elements)

```
{
  'Computer' : ['Sophia', 'Hikari'],
```

```
  'Dancing' : ['Anders', 'Mette'],
  'Rowing' : ['Riko', 'Troels', 'Sarah']
}
```

Edit the file `2.py` to solve this task.

Problem 3 (2 Points)

Your design company is known for a very distinct text style: all of the texts are written in title case! By title case we mean that each word in the string starts with an uppercase letter, and all other letters are lowercase. For instance, "This Is A String In Title Case" is in title case, while none of the three strings "TGIF", "Alice likes Bob" and "ScrollBar" are in title case.

Unfortunately, from time to time an employee forgets about this distinct feature. It's your task to provide them with an automatic way to check if a list of words has all words in title case or not.

Write a function `all_title_case` that takes as argument a list of strings `word_list`. The function returns `True` if each word in `word_list` is in title case; otherwise it returns `False`.

Hand in your code in file `3.py`.

A hint: It's very important to get the logic right. Let's say you assume that everything is in title case, for example by setting a variable `is_title_case = True` in the beginning. Let's say your last line in the function is `return is_title_case`. How do you set the variable correctly to `False` if the list contains a word that is not in title case?