Intro to Programming 2022, Assignment 4

Dates:

- Hand-out date: November 03
- Hand-in date: November 16, 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:

- You hand-in a ZIP file containing all the Python (`*.py`) files and all the text files that you create in the tasks below.
- 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 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.

General remarks

With this assignment, you will have received 6 additional files `dictionary.txt`, `reservations1.txt`, `reservations2.txt`, `marie.txt`, `leah.txt`, `task_1_program.py`. It doesn't matter if those files are part of your hand-in or not.

Problem 1 (2 Points)

Below you find a piece of code that works on the file `dictionary.txt` that came with this assignment. Below the code, you will find two questions. For

each question, write down the answer, which is either a single number or a single word, in a file called `1.txt`.

Unfortunately, each function has either a small mistake or doesn't provide the output needed, so you have to fix that first before you can solve the task.

```python
def find_longest_word(dictionary):
    """Return the longest word in the list of words."""
    longest_word = dictionary[0]
    for word in dictionary:
        if len(word) > len(longest_word):
            word = longest_word
    return longest_word


def find_word_with_most_z(dictionary):
    """Return the word that contains most z's"""
    word_with_most_z = dictionary[0]

    for word in dictionary:
        if word.count('z') < word_with_most_z.count('z'):
            word_with_most_z = word

    return word_with_most_z


# read dictionary.txt line-by-line into a list of strings.
content = open('dictionary.txt').readlines()

print("Longest word:", find_longest_word(content))
print("Word with most z:", find_word_with_most_z(content))
```

This program is also provided with the assignment as `task_1_program.py`.

Questions:

1. How long is the longest word in the dictionary?
2. Which word contains the most `z` characters in the dictionary?

Hint: Make sure that you don't include newline characters (`\n`) that might be present in `content` when counting characters. (Use the debugger if you are not sure.)

Problem 2 (2 Points)

You are in charge of a reservation system for a restaurant. The reservations for a day are stored in a text file. Each line in the file stands for a reservation and has the format: `Name, Time, Status`. Status is either CONFIRMED or

CANCELLED. Your task is to write a function `show_reservations` that takes as argument a string `filename`, reads the file with the name `filename` and prints all CONFIRMED reservations in order of the time. (You may assume that time is an integer, the order for a reservation in the same slot is not important). You may assume that all names are distinct.

Provide your solution in a file called `2.py`.

Example: Assuming the file consists of

```
Martin, 19, CONFIRMED
Julie, 18, CONFIRMED
Mette, 17, CANCELLED
```

your program should output:

```
Julie, 18
Martin, 19
```

Hint: Split the solution up into two logical steps: First, read the input line by line and put elements, for example, into a dictionary (the confirmed dates). Loop through the dictionary in a certain sorted order for printing the reservations.

To test your solution, you can find two files `reservations1.txt` and `reservations2.txt` with this assignment.

Problem 3 (2 Points)

Marie and Leah each put together a file in which they rated certain movies with a number from 1 to 10 (`marie.txt` and `leah.txt`). Each line in a file consists of the name of the movie and the rating (from 1 to 10), split up by a ";". Your task is to print out all the movies that Marie and Leah both rated with 8 or more.

Provide your solution in a file called `3.py`.

Suggested Approach: Read each file into a dictionary. Go through one of the dictionaries and check whether a key in there is also present in the other, and both ratings are high enough. To avoid code duplication, you can define a function `read_file(filename)` that reads a file and returns a dictionary.