

Exercises 4

Functions

TO SOLVE THESE YOU CAN **GOOGLE, COLLABORATE AND ASK** THE TEACHERS AS MUCH AS YOU WANT!!!!

1. Write a **function** that takes radius and returns diameter.
2. Write a **function** that takes diameter and returns circle circumference. Write this **function** in a different file.
3. Use **function** from exercise 1. and **function** from exercise 2. to return a circle circumference. Write this code in a third file.
4. Write a **function** that takes a **list** of animals and returns a **dictionary** where **key** is an **int** and the **value** is an animal.
 - a. **HINT** Input: ["cow", "dog", "cat"]
Output: {1: "cow", 2: "dog", 3: "cat"}
 - b. **HINT** Use **for loop**
5. Write a **function** that takes an **int** and returns different messages saying in what **range** the **int** is in. For example: the **function** takes **5** and returns "**Your int is in range 0-10**", or if the **function** takes **11** it could return "**Your int is in range 11-20**". Return at least 3 different messages.
 - a. **HINT** What happens if you, in the python **interpreter**, write the following code:

```
if 1 in range(0, 2):  
    print("1 is in range 0-2")
```

What happens if you change **1** to **3**?
 - b. **HINT** Use **if, else, elif** statements.
6. This is a **bigger** exercise that will consist of 4 parts. Imagine that you are

going on a road trip to Eastern Europe and you want to estimate how long the whole trip will take. You know approximately how many hours it will take you to drive from point a to point b, but you also want to account for staying the night at a hotel/resting.

- a. Write a **function** that takes four **parameters** *departure*, *destination*, *duration* (in hours), *overnight* (this parameter should be a boolean). The **function** should return a dictionary that looks something like this:
- b. Write a **function** that takes a **list** of travel plans like this:

```
{'departure': 'sthlm', 'destination': 'oslo', 'duration': 10, 'overnight': True}
```

```
['sthlm', 10, True, 'oslo', 11, True, 'copenhagen', 15, False, 'krakow']
```

The list basically says “I travel from Stockholm. I will drive for 10 hours. I will sleep when I get to Oslo. I travel from Oslo. I will drive for 11 hours... etc...”

Use **function** a. within **function** b. (the one you are writing) to return a list like this:

```
[{'departure': 'sthlm', 'destination': 'oslo', 'duration': 10, 'overnight': True}, {'departure': 'oslo', 'destination': 'copenhagen', 'duration': 11, 'overnight': True}, {'departure': 'copenhagen', 'destination': 'krakow', 'duration': 15, 'overnight': False}]
```

That is, a list containing **dictionaries**.

HINT Think about how you will get the information from the input **list** - how will you use it in the **function**? Is there some sort of a pattern to the values that are in the list? For example, that every value after the departure value is duration and after duration comes overnight. (The pattern is actually 3 value that are repeating: *departure*, *duration*, *overnight*... How can we get *destination*?)

HINT You could use **range** in a **for loop** to go through the **list**. Do you

remember how to get the **length** length of a list (that is how many values are in the list)? If you decide to use **range**, could you use the information that the patterns repeats every 3 values? (Remember **step** in **range**?)

HINT Remember how you can add something to a list?

- c. Write a **function** that takes what **function** b. returns and itself returns the sum of hours the whole trip will take. Make sure that if you sleep at some hotel on the way to some destination then 10 hours will be added to the whole trip.

So if the input is:

```
[{'departure': 'sthlm', 'destination': 'oslo',  
'duration': 10, 'overnight': True}]
```

The output should be: 20

And if the input is:

```
[{'departure': 'sthlm', 'destination': 'oslo',  
'duration': 10, 'overnight': False}]
```

The output should be: 10

- d. Write a **function** that takes what **function** b. returns. Inside this function use **function** c. to return this:

sthlm -> oslo, will take: 20 hours including sleep ->

oslo -> copenhagen, will take: 21 hours including sleep ->

copenhagen -> krakow, will take: 15 hours ->

The whole trip will take: 56

HINT Remember string concatenation? Remember how you can add a new empty line in a string?

Last 10 minutes round the table what was hardest/most fun

