# Exercise 01

This should be completed individually.

All functions should be in a single notebook, please use the function names suggested. Please commit your solution to your github branch in addition to submitting it through Canvas.

## Section 1: General programming

1. Write a function ***DateOffset*** that takes 2 parameters, a string ***d*** in the format YYYY-MM-DD and an integer ***n***. The function should return the date that is ***n*** days before (if n is negative) or after (if n is positive) d.
   Hint: Use the python documentation on date and time functions and formatting
   Expected output:

```
>>>print(DateOffset('2022-12-31',1))
2023-01-01
>>>print(DateOffset('2022-09-01',-1))
2022-08-31
```

2. Write a function ***Factorial***, that takes a positive integer n and returns n factorial (n!)
   Hint: This was mentioned on one of the slides
   Expected output:

```
>>>print(Factorial(3))
6
>>>print(Factorial(-1))
undefined
```

3. Write a function ***LongestString***, that takes a list of strings and returns a list with the longest strings. You can assume that the list will have 10 or fewer elements and the strings will be 10 or fewer characters.
   Hint: Use the python documentation on list functions
   Expected output:

```
>>>print(LongestStrings(["aba", "aa", "ad", "vcd", "aba"])
["aba", "vcd", "aba"]
```

4. Write a function ***IsPalindrome***, that takes a string and checks if it is a palindrome. The function should return a Boolean value of true or false.
   Hint: A string is an iterable object
   Expected output:

```
>>>print(IsPalindrome(“racecar”)
true
>>>print(IsPalindrome(“racecars”)
false
```

5. Write a function ***MakeChange*** that takes 1 parameter, an integer c, between 1 and 99. Using US coins of denominations $0.01, $0.05, $0.10, $0.25, $0.50 determine the combination needed to make c cents using the fewest coins. Return a dictionary where the key is the coin type and the value is how many of that coin are needed.
   Hint: It’s ok to be Greedy
   Expected output:

```
>>>print(MakeChange(26)
{‘$0.01”:1, “$0.05”:0, “$0.10”:0, “$0.25”:1, “$0.50”:0}
```