IT2154: Practical 9 - Imperative vs Functional Programming in Python

Learning Outcomes

By the end of this lesson, you should be able to

- Apply functional programming models in Python application development
- Apply functional programming models in Python data science application

Exercise 1

Given the following Python program written in functional style, can you rewrite it using imperative style?

```
from functools import *
vals = [1,2,3,4,5,6,7,8,9,10]
print(reduce(lambda x,y: x + y, filter(lambda x:x % 3 ==0, map(lambda x:x+2,
vals))))
```

Exercise 2

Given the following Python program written in imperative style, can you rewrite it using functional programming style?

```
student_db = [
    {"first_name": "adam", "last_name": "wong",
        "gender": "m",  "admin_no": "190001"},
    {"first_name": "betty", "last_name": "tan",
        "gender": "f", "admin_no": "190002"}
]

def mailing_list(input, gender):
    students_by_gender = []
    for student in input:
        if student["gender"] == gender:
            students_by_gender.append(student)

    mailing_list = []
    for student in students_by_gender:
        mailing_list.append(student["admin_no"] + "@mymail.nyp.edu.sg")
    return mailing_list
```

You are not allowed to use for loop. You can only use `map`, `filter` and `reduce`.

Exercise 3

Take the `wc()` implementation you have in the previous practical (Week 8), re-write it using `map`, `filter` and `reduce`.