Day 1 Homework

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Day 1 Homework: Python - Lists and For Loops

```
import numpy as np
```

For this assignment, we will be working with `inflammation-01.csv`, a simulated dataset representing the response of arthritis patients to a new drug. The data is sourced from here.

In this dataset, each row represents a different patient. Each column represents a different day. Each element in the dataset is the number of arthritis flare-ups that a patient has in a given day.

Basic Exercise 1: Reading in Data

Print the number of flare-ups that the fifth patient had on the first, tenth, and last day.

```
f = open("inflammation-01.csv","r")

# Read in data as list
inflammation = f.readlines()
# Split patient 5 info
patient5 = inflammation[4].strip().split(',')
print(patient5[0], patient5[9], patient5[-1])
```

```
## 0 4 1
```

or

```
f = open("inflammation-01.csv","r")

# List to store patient data
inflammation = []
for l in f:
  # split line and add to list
  inflammation.append(l.strip().split(','))

# subset to patient 5
patient5 = inflammation[4]
print(patient5[0], patient5[9], patient5[-1])
```

```
## 0 4 1
```

Basic Exercise 2: Caluclating Averages

For each patient, calculate the average number of flare-ups per day. Print the average values for the first 10 patients.

```
f = open("inflammation-01.csv","r")

inflammationAvg= []
for line in f:
    # split line (each line is one patient)
    line_list = line.strip().split(',')

    # sum up values in line
    total = 0
    for item in line_list:
        total += float(item)

    # calculate avg
    avg = total / len(line_list)
    # append to list
    inflammationAvg.append(avg)

for i in range(10):
  print(inflammationAvg[i])
```

```
## 5.45
## 5.425
## 6.1
## 5.9
## 5.55
## 6.225
## 5.975
## 6.65
## 6.625
## 6.525
```

Basic Exercise 3: Finding Maximum and Minimum Values

Print the highest average and lowest number of flare-ups per day.

```
print("Maximum Value:\n" + str(np.max(inflammationAvg)))
```

```
## Maximum Value:
## 7.225
```

```
print("Minimum Value:\n" + str(np.min(inflammationAvg)))
```

```
## Minimum Value:
## 5.225
```

Basic Exercise 4: Differences Between Patients

For each day, print the difference in number of flare-ups between patients 1 and 5.

```
# extract patients 1 & 5 from list
patient1 = inflammation[0]
patient5 = inflammation[4]

# get difference in inflammation values
differences = []
for i in range(len(patient1)):
```

```
    diff = float(patient5[i]) - float(patient1[i])
    differences.append(diff)

print(differences)
```

[0.0, 1.0, 0.0, 0.0, 2.0, -1.0, -1.0, -2.0, -6.0, 1.0, 1.0, 4.0, -4.0, 0.0, -4.0, 6.0, 1.0, 3.0, -6.0

Grading:

- Exercise 1:
  - 1 pt. Printed out first and last days
- Exercise 2:
  - 1 pt. Calculate averages for all patients
  - 1 pt. Printed out first 10 averages
- Exercise 3:
  - 1 pt. Printed out maximum
  - 1 pt. Printed out minimum
- Exercise 4:
  - 1 pt. Printed out differences between patients