Numpy 入門

```
1
```

```
# 二つのリストを作成 height, weight
height = [1.87,  1.87, 1.82, 1.91, 1.90, 1.85]
weight = [81.65, 97.52, 95.25, 92.98, 86.18, 88.45]

# Import the numpy package as np
import numpy as np

#  height,weightを用いて二つのnumpy配列を作成
np_height = np.array(height)
np_weight = np.array(weight)
```

```
print(type(np_height))
```

```
<class 'numpy.ndarray'>
```

```
# bmiを計算する
bmi = np_weight / np_height ** 2

# 出力
print(bmi)
```

```
[23.34925219 27.88755755 28.75558507 25.48723993 23.87257618 25.84368152]
```

```
# 条件
bmi > 23

# 23以上のbmiのみを出力する
bmi[bmi > 23]
```

```
array([23.34925219, 27.88755755, 28.75558507, 25.48723993, 23.87257618,
       25.84368152])
```

- 演習

```
weight_kg = [81.65, 97.52, 95.25, 92.98, 86.18, 88.45]

import numpy as np

#  weight_kgのリストからnumpy配列の np_weight_kg を作成する


# numpy配列の np_weight_kgからnumpy配列の np_weight_lbsを作成する (1kg = 2.2 lbs)

# np_weight_lbs 出力

```

Pandas 入門

```
dict1 = {"country": ["Brazil", "Russia", "India", "China", "South Africa"],
       "capital": ["Brasilia", "Moscow", "New Dehli", "Beijing", "Pretoria"],
       "area": [8.516, 17.10, 3.286, 9.597, 1.221],
       "population": [200.4, 143.5, 1252, 1357, 52.98] }

import pandas as pd
brics = pd.DataFrame(dict1)
print(brics)
```

```
# Set the index for brics
brics.index = ["BR", "RU", "IN", "CH", "SA"]

# Print out brics with new index values
print(brics)
```

```
# Import pandas as pd
import pandas as pd

```

```
# Import the cars.csv data: cars
cars = pd.read_csv('cars.csv')

# Print out cars
print(cars)
```

```
  Unnamed: 0  cars_per_cap        country   drives_right
0         US           809  United States           True
1        AUS           731      Australia          False
2        JAP           588          Japan          False
3         IN            18          India          False
4         RU           200         Russia           True
5        MOR            70        Morocco           True
6         EG            45          Egypt           True
```

```
cars.columns
```

```
Index(['Unnamed: 0', 'cars_per_cap', 'country', ' drives_right'], dtype='object')
```

```
cars.shape
```

```
(7, 4)
```

```
type(cars)
```

```
pandas.core.frame.DataFrame
```

```
cars
```

	Unnamed: 0	cars_per_cap	country	drives_right
0	US	809	United States	True
1	AUS	731	Australia	False
2	JAP	588	Japan	False
3	IN	18	India	False
4	RU	200	Russia	True
5	MOR	70	Morocco	True
6	EG	45	Egypt	True

```
# Import pandas and cars.csv
#import pandas as pd
#cars = pd.read_csv('cars.csv')

# Print out country column as Pandas Series
print(cars['cars_per_cap'])

# Print out country column as Pandas DataFrame
print(cars[['cars_per_cap']])

# Print out DataFrame with country and drives_right columns
print(cars[['cars_per_cap', 'country']])
```

```
0    809
1    731
2    588
3     18
4    200
5     70
6     45
Name: cars_per_cap, dtype: int64
   cars_per_cap
0           809
1           731
2           588
3            18
4           200
5            70
6            45
   cars_per_cap        country
0           809  United States
1           731      Australia
2           588          Japan
3            18          India
4           200         Russia
5            70        Morocco
6            45          Egypt
```

```
# Print out first 4 observations
print(cars[0:4])

# Print out fifth and sixth observation
print(cars[4:6])
```

```
  Unnamed: 0  cars_per_cap        country   drives_right
0         US            809  United States           True
1        AUS            731      Australia          False
2        JAP            588          Japan          False
3         IN             18          India          False
  Unnamed: 0  cars_per_cap   country   drives_right
4         RU            200    Russia           True
5        MOR             70   Morocco           True
```

```
# Print out observation for Japan
print(cars.iloc[2])

```

```
Unnamed: 0          JAP
cars_per_cap        588
country           Japan
 drives_right     False
Name: 2, dtype: object
```

```
# Print out observations for Australia and Egypt
print(cars.iloc[1][0]=='AUS')
```

```
True
```

```
1
```

```
1
```