task-1

June 12, 2024

1. Our First NumPy Array

```
[2]: import numpy as np

     baseball = [180, 215, 210, 210, 188, 176, 209, 200]

     np_baseball = np.array(baseball)

     print(type(np_baseball))

     print(np_baseball)
```

```
<class 'numpy.ndarray'>
[180 215 210 210 188 176 209 200]
```

2. Baseball players' height

```
[3]: height_in = [72, 74, 69, 71, 68, 77, 70, 74]

     np_height_in = np.array(height_in)

     print("Heights in inches:", np_height_in)

     np_height_m = np_height_in * 0.0254

     print("Heights in meters:", np_height_m)
```

```
Heights in inches: [72 74 69 71 68 77 70 74]
Heights in meters: [1.8288 1.8796 1.7526 1.8034 1.7272 1.9558 1.778  1.8796]
```

3. Baseball player's BMI

```
[6]: weight_lb = [180, 215, 210, 195, 170, 160, 200, 190]

     np_weight_lb = np.array(weight_lb)

     np_weight_kg = np_weight_lb * 0.453592

     bmi = np_weight_kg / (np_height_m ** 2) # np_height_m is defined in the above
      ↪cell
```

```python
print("BMI values:", bmi)
```

```
BMI values: [24.41211827 27.60406069 31.01123531 27.19667848 25.84812523
18.97302091
 28.69669413 24.39428619]
```

4. Lightweight baseball players

```python
[9]: light = bmi < 21

     print("Boolean array:", light)

     bmi_below_21 = bmi[light]
     print("BMIs of players with BMI below 21:", bmi_below_21)
```

```
Boolean array: [False False False False False  True False False]
BMIs of players with BMI below 21: [18.97302091]
```

```python
[10]: np.array([True, 1, 2]) + np.array([3, 4, False])
```

```
[10]: array([4, 5, 2])
```

```python
[11]: np.array([4, 3, 0]) + np.array([0, 2, 2])
```

```
[11]: array([4, 5, 2])
```

5. Blend it all together

```python
[12]: positions = ['GK', 'M', 'A', 'D']
      heights = [191, 184, 185, 180]


      np_positions=np.array(positions)
      np_heights=np.array(heights)


      gk_heights = np_heights[np_positions == 'GK']

      other_heights=np_heights[np_positions!='GK']

      print("Median height of goalkeepers: " + str(np.median(gk_heights)))

      print("Median height of other players: " + str(np.median(other_heights)))
```

```
Median height of goalkeepers: 191.0
Median height of other players: 184.0
```