Exercise #1

arr[4,0]

Exercise #2

heights\_and\_ages\_arr[:, 1]

Exercise #3

lst = [1,-1,1,-1]

lst\_arr = np.array(lst)

print(lst\_arr)

Exercise #4

arr = np.array([1,2,3])

print(arr.shape)

Exercise #5

arr.sum(axis = 0)

Exercise #6

import numpy as np

arr = np.array([[ 1, 2, 3], [2, 4, 6]])

print(arr.min(axis=0))

Exercise #7

arr[0] \* 3

arr[0,:]\*3

Exercise #2

[170 61]

Exercise #3

[ 1 -1 1 -1]

Exercise #4

(3,)

Exercise #5

if you want to obtain the sum inside each column, specify axis=0.

Exercise #6

[1 2 3]

Exercise #8

print("the age of the 44th president (Obama) when he took office was", heights\_and\_ages\_arr[1,43], "years old")

Exercise #9

print("number of presidents taller than 188cm is", (heights\_and\_ages\_arr[0, :] > 188).sum())

Exercise #10

print("number of presidents exactly 183cm is", (heights\_and\_ages\_arr[0, :] == 183).sum())

Exercise #11

print(presidents\_df[45-6:]) or

print(presidents\_df.tail(6))

Exercise #12

print(presidents\_df.shape[0])

Exercise #13

print("the median height and age of the 45 presidents are", presidents\_df[['height','age']].median())

Exercise #8

the age of the 44th president (Obama) when he took office was 47 years old

Exercise #9

number of presidents taller than 188cm is 5

Exercise #10

number of presidents taller than 183cm is 8

Exercise #11

order age height party

name

Ronald Reagan 40 69 185 republican

George H. W. Bush 41 64 188 republican

Bill Clinton 42 46 188 democratic

George W. Bush 43 54 182 republican

Barack Obama 44 47 185 democratic

Donald J. Trump 45 70 191 republican

Exercise #12

45

Exercise #13

the median height and age of the 45 presidents are height 182.0

age 55.0

Exercise #14

plt.plot(x, np.sin(x), color='blue', label="sin function")

plt.plot(x, np.cos(x), color='green', linestyle ='--', label="cos function")

Exercise #15

import pandas as pd

presidents\_df = pd.read\_csv('presidents.csv', index\_col='name')

presidents\_df.age.plot(kind='hist',bins=10)

Exercise #14

Chart

Description automatically generated

Exercise #15

Chart, histogram

Description automatically generated