Statistics

Ex 1

Create an array of 20 random numbers from 1-100, and calculate the array's:

* 1. mean
  2. median
  3. standard deviation

### Operations

## Ex1

* 1. create an array with 15 float values between 4-5
  2. create an array with 20 float values from 5-7

### Sorting

## Ex 1

* 1. Create an array with 15 random floats (decimal numbers) in the range of 10-20.
  2. Sort the array in a descending order.

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Filters

1. Ex 1
   1. Create a 6x6 matrix with random integers from 1-100.
   2. Extract all odd numbers from that matrix.
   3. Create a new matrix that replaces all the odd numbers in the matrix with -1, without changing the original matrix.
   4. Create a 20 items array with 1's and 0's and replace all 1's in it with -1
2. Ex 2

Here are prices of some fruit purchases.

Each column represents a different fruit: apples, peaches, bananas, cherries.

Each row represents the price a fruit was purchased in a specific day.

[[10, 12, 3, 12],

[ 3, 5, 19, 14],

[ 4, 3, 5, 4],

[ 7, 15, 13, 10],

[15, 4, 4, 9],

[11, 5, 9, 8],

[10, 16, 9, 4],

[14, 15, 8, 6],

[12, 10, 19, 17],

[ 3, 12, 13, 9],

[ 6, 17, 16, 17],

[12, 19, 15, 18],

[ 6, 13, 16, 13],

[ 9, 9, 19, 9],

[ 5, 10, 5, 19],

[15, 16, 13, 17],

[ 5, 5, 7, 3],

[16, 7, 10, 16],

[11, 19, 5, 14],

[15, 14, 12, 4]]

Start by storing this data in a NumPy array.

Now answer the following questions:

* 1. What are the max prices for each one of the fruits?
  2. How many times where cherries or apples purchased in less than 6$?
  3. Which fruit has the second highest average price? return the index of the relevant column
  4. On the last 3 days (last 3 rows) there was a 10% discount for all the fruits, that was not calculated in the original data. Modify the matrix so that it will show the discount. **Note** that all the prices so far were integers. What do you need to do so that you can add the discount?
  5. Add another column to the matrix - the prices for a melon:

[16, 4, 18, 19, 14, 9, 11, 3, 18, 4, 17, 7, 5, 4, 5, 16, 10,

11, 13, 16]

and calculate the standard deviation for all the fruit prices, except for the bananas.

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