1. You have sensor recording temperature data on 24 hour in an array.
   - Display temperature of 12 PM.
   - You found that data of 2 PM was recorded as faulty value. Store its value as -1
   - Display temperature from 10 AM to 6 PM.
   - Delete temperature of 2 PM
   - Insert the missing value of 2PM with median value of data

2. You have data of stock price of day in NumPy array. After end of trading hour, you need add min, max & average price at end of array.

3. You are running a supermarket & cost price of your goods are stored as NumPy array. Create SP array by increasing price of each item by 30%

4. Price of stock over the time is stored as 1-D NumPy array. Write a function that accepts 1-D array of stock price and gives return array over the time.

$$r[i] = \frac{p[i]-p[i-1]}{p[i-1]} * 100$$

5. Write a function named **remove_outlier** that accepts 1-D array as an input and returns result excluding outliers. (i.e. value $x = \mu \pm 2\sigma$)

6. Runner track the distance run by him over the week in NumPy array. Calculate total distance covered by him over the period of time.

7. You have a sensor that records data over the time. Invalid data are recorded as -1. Write a function that **clean_data** that takes input of NumPy array and remove -1 with mean of surrounding

8. Write a function named **fix_invalid_data** that takes 2D NumPy array as an input. Array can contain invalid value represented as -999. Function has to substitute this invalid value with mean of data. Optionally function has to have axis argument. If axis=0, replacement has to be done by mean of column and if axis=1, replace by row mean. [Hint: np.**apply_along_axis**(fn, axis, data)]

9. Your image processing function requires image to be of size 2X2 but you have image of size 3X3. Adjust your image such that you can you this image processing function

10. You have a 2-D array if data in which first column is age, second column is salary, third column is year of experience for 4 people. We need to pass this data to ML algorithm but it expects features to be in row instead of column. Modify your array data for making it ready to feed in ML algorithm

11. Write a function named **increment_salary** that takes 1D NumPy array of salary and returns the new increased salary. (if salary < Q1 increase it by 20%, if its between Q1 & median increase by 10%, if its between median and Q3, increase by 15000 else increase by 20000)

12. Convert 2x2 image into 3x3 such that **a**. excess element to left & top are filled with zero, **b**. element starts to repeat again after filling up

13. Convert the 2x2 image of question 12 into 1-D.

14. You have a temperature recording as [25, 27, 30, 24, 28]. Normalize this reading such that the values will be between 0 and 1

15. You are required to generate sample csv data for 200 student. For this, Initialize list **first_name** & **last_name** with 10 custom values. Generate File with fields: **RollNo** (from 1 to 200), **FirstName**, **LastName** (randomly select from above lists), **Height** (mean 160, std 20), **Age** (mean 22 and std 5), **Rating Given** (randomly 1 to 5). [Hint: Generate array, store as dict & use csv.DictWriter]

16. In above data, print FirstName & LastName of tallest student before dump

17. Ram & Shyam are doing survey on KTM & POKHARA on pollution. CO2 & Temp reading for them are [[.5, 22], [.3, 20], [.7, 25]], [[.3, 20], [.2, 23], [.24, 21]]. What is max and min value for CO2 and Temperature. (Combine vertically first), Combine data horizontally & display readings for day – 2 (both city)

18. Practice Hacker Rank questions