Programming Questions:

1. Write code to find the maximum, avarage, and minimum price value for each category given a .csv file with the columns “Price”, “Category_SubCategory”
    a. Example:

| | Price | Category_SubCategory |
|---|---|---|
| i. | | |
| ii. | 234 | Tops_croptop |
| iii. | 282 | Tops_croptop |
| iv. | 222 | Tops_tshirt |
| v. | 382 | Tops_tshirt |
| vi. | 2382 | BottomWear_jeans |
| vii. | 2212 | BottomWear_jeans |
| viii. | 1282 | BottomWear_leggings |
| ix. | 212 | BottomWear_leggings |

    b. You need to print the minimum value of Tops and BottomWear
2. Run a Python program to do run length encoding example “abbcdd --> a1b3c1d2“
3. Check if a string is palindrome or not
4. Given a csv file with records.csv with columns “time”, “category”, “price”

| | time | category | price |
|---|---|---|---|
| a. | | | |
| b. | 12.00 | 1-2-3 | 23 |
| c. | 12.40 | 2-3 | 25 |
| d. | 12.45 | 2 | 29 |
| e. | 13.25 | 2-5-6 | 29 |

    Can you fix this formatting error to

| | time | category | price |
|---|---|---|---|
| a. | | | |
| b. | 12.00 | 1 | 23 |
| c. | 12.00 | 2 | 23 |
| d. | 12.00 | 3 | 23 |
| e. | 12.40 | 2 | 25 |
| f. | 12.40 | 3 | 25 |
| g. | 12.45 | 2 | 29 |
| h. | 13.25 | 2 | 29 |
| i. | 13.25 | 5 | 29 |
| j. | 13.25 | 6 | 29 |

5. Write a Python program to search for an element in a 2D matrix, given that the matrix elements are arranged in sorted order in both row-wise and column-wise

    [1 4 7 10 15]
    [3 5 8 15 19]
    [6 9 11 16 20]
    [12 19 21 26 30]
    Note: Assume each element is unique in the matrix

6. given a csv file with columns “order_id”, “price”, and “user_id” can you compute the sum of prices of users whose id is an odd number?

7. Given a list of N numbers, can you sample 10 elements from them, while sampling an element at an even index with 0.4 and an element at an odd index with a probability of 0.6

8. Can you plot a histogram of average ages of different genders across multiple counties

Assume you have the data

| Age | Gender | City |
|---|---|---|
| 45 | F | Hyd |
| 25 | M | Hyd |
| 42 | M | Blr |
| 12 | F | Blr |
| 21 | F | Kolkata |
| 22 | M | Kolkata |

9. Given a list of N elements and a number K, check if there is any sub-array whose sum is exactly K

A = [1, 4, 2, 7, 9, 10]  K=18 output: Yes, as the sum of sub array [2,7,9] is 18

10.  Assume you have given a dict with the following structure

```
{
    “elements_type1”: {
        “element_1”:[{“length”:200, “width”:400, “id”:1},
            {“length”:120, “width”:450, “id”:2},
            {“length”:203, “width”:470, “id”:3}]
        “element_2”:[{“length”:260, “width”:405, “id”:1},
            {“length”:178, “width”:147, “id”:5}]
        “element_3”:[{“length”:128, “width”:145, “id”:7},
            {“length”:178, “width”:147, “id”:2}]
            …
    }
    “elements_type2”: {
        “element_1”:[{“length”:123, “width”:221, “id”:6},
            {“length”:127, “width”:415, “id”:8},
            {“length”:203, “width”:170, “id”:1}]
        “element_2”:[{“length”:260, “width”:405, “id”:1},
            {“length”:189, “width”:147, “id”:15}]
        “element_3”:[{“length”:128, “width”:375, “id”:7},
            {“length”:108, “width”:368, “id”:10}]
            …
    }

}
```

Write a program to print all the elements whose with is more than 400, for the above input the output should be

elements_type1 → element_1 → 1
elements_type1 → element_1 → 2
elements_type1 → element_1 → 3
elements_type1 → element_2 → 1
elements_type2 → element_1 → 8
elements_type2 → element_2 → 1
elements_type2 → element_2 → 1