Assignment 10 INFORMATION ARCHITECTURE, FALL 2019

DUE : 10:00 AM SATURDAY, DECEMBER 7

Problem 1. Write a Pandas program to calculate the mean score for qualified students in DataFrame. Use the following data:

```
exam_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James',
'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
'score': [12.5, 9, 16.5, 17.3, 9, 20, 14.5, 25.1, 8, 19],
'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no',
'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
```

Problem 2. Suppose you have the following list of numbers to sort: `[19, 1, 9, 7, 3, 10, 13, 15, 8, 12]` What list represents the partially sorted list after three complete passes of bubble sort?

Problem 3. Given the following list of numbers `[14, 17, 13, 15, 19, 10, 3, 16, 9, 12]`. What is the list after the first partitioning according to the quicksort algorithm?

Problem 4. Given an array of integers, create a Python function that uses the bubble sort algorithm and returns an array of the squares of each number in sorted non-decreasing order.
Example:

- `[-1, 3, 0, 10, -4]` $\rightarrow$ `[0, 1, 9, 16, 100]`