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K-means Clustering

In this exercise, you will implement the K-means algorithm and use it for image compression.

- You will start with a sample dataset that will help you gain an intuition of how the K-means algorithm works.
- After that, you will use the K-means algorithm for image compression by reducing the number of colors that occur in an image to only those that are most common in that image.

Outline

NOTE: *To prevent errors from the autograder, you are not allowed to edit or delete non-graded cells in this lab. Please also refrain from adding any new cells.* ***Once you have passed this assignment*** *and want to experiment with any of the non-graded code, you may follow the instructions at the bottom of this notebook.*

```
In [1]: import numpy as np
        import matplotlib.pyplot as plt
        from utils import *

        %matplotlib inline
```

1 - Implementing K-means

The K-means algorithm is a method to automatically cluster similar data points together.

- Concretely, you are given a training set $\{x^{(1)}, \ldots, x^{(m)}\}$ and you want to group