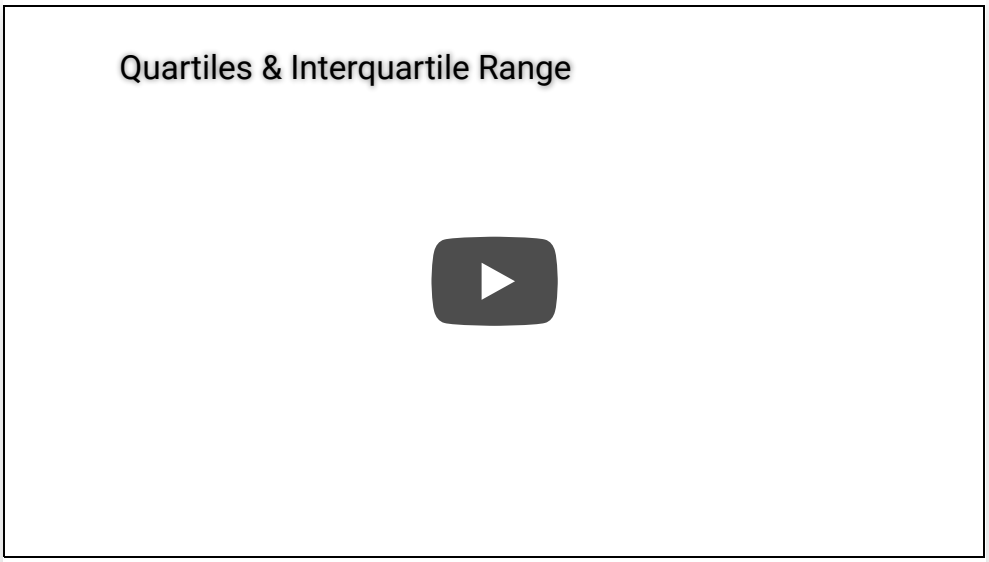
Day 1: Quartiles



Terms you'll find helpful in completing today's challenge are outlined below.

Quartile

The quartiles of an ordered data set are the 3 points that split the data set into 4 equal groups. The 3 quartiles are defined as follows:

1. Q_1: The first quartile is the middle number between the smallest number in a data set and its median.
2. Q_2: The second quartile is the median (50^{th} percentile) of the data set.
3. Q_3: The third quartile is the middle number between a data set's median and its largest number.

Computing the First and Third Quartile

We will use the first method described in the Wikipedia:

We will split the data into two halves, lower half and upper half:

- If there are an odd number of data points in the original ordered data set, do not include the median (the central value in the ordered list) in either half.
- If there are an even number of data points in the original ordered data set, split this data set exactly in half.

The value of the first quartile (Q_1) is the median of the lower half and the value

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of the third quartile (Q_3) is the median of the upper half.

Example 1

We will consider the following ordered dataset for this example:

> 6, 7, 15, 36, 39, 40, 41, 42, 43, 47, 49

The median of the dataset is 40. As there are an odd number of data points, we do not include the median (the central value in the ordered list) in either half:

> Lower half: 6, 7, 15, 36, 39
>
> Upper half: 41, 42, 43, 47, 49

The median of the lower half is 15, so the value of the first quartile is 15, and the median of the upper half is 43, so the value of the third quartile is 43.

Example 2

We will consider the following ordered dataset for this example:

> 7, 15, 36, 39, 40, 41

As there are an even number of data points in the original ordered data set, we will split this data set exactly in half:

> Lower half: 7, 15, 36
>
> Upper half: 39, 40, 41

The median of the lower half is 15, so the value of the first quartile is 15, and the median of the upper half is 40, so the value of the third quartile is 40.

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