Sorting at Scale

Comparator

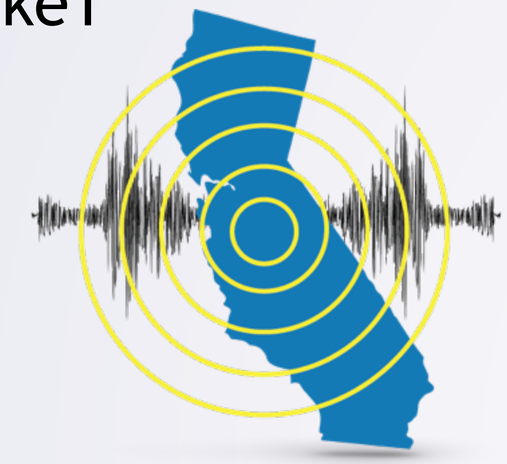
Comparator: Other Orderings

```
public interface Comparator <T> {
    public int compare(T o1, T o2);
}
```

- Compara**tor** : Other Orderings
  - Defines orderings for another type

Comparable vs Comparator

quake1



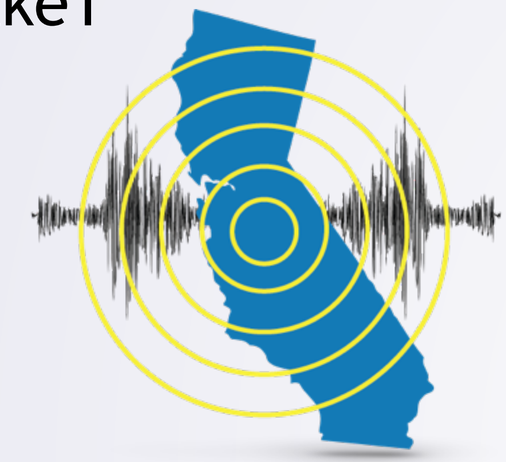
quake2

quake1.compareTo(quake2)

- Comparable and Comparator: difference?

Comparable vs Comparator

quake1



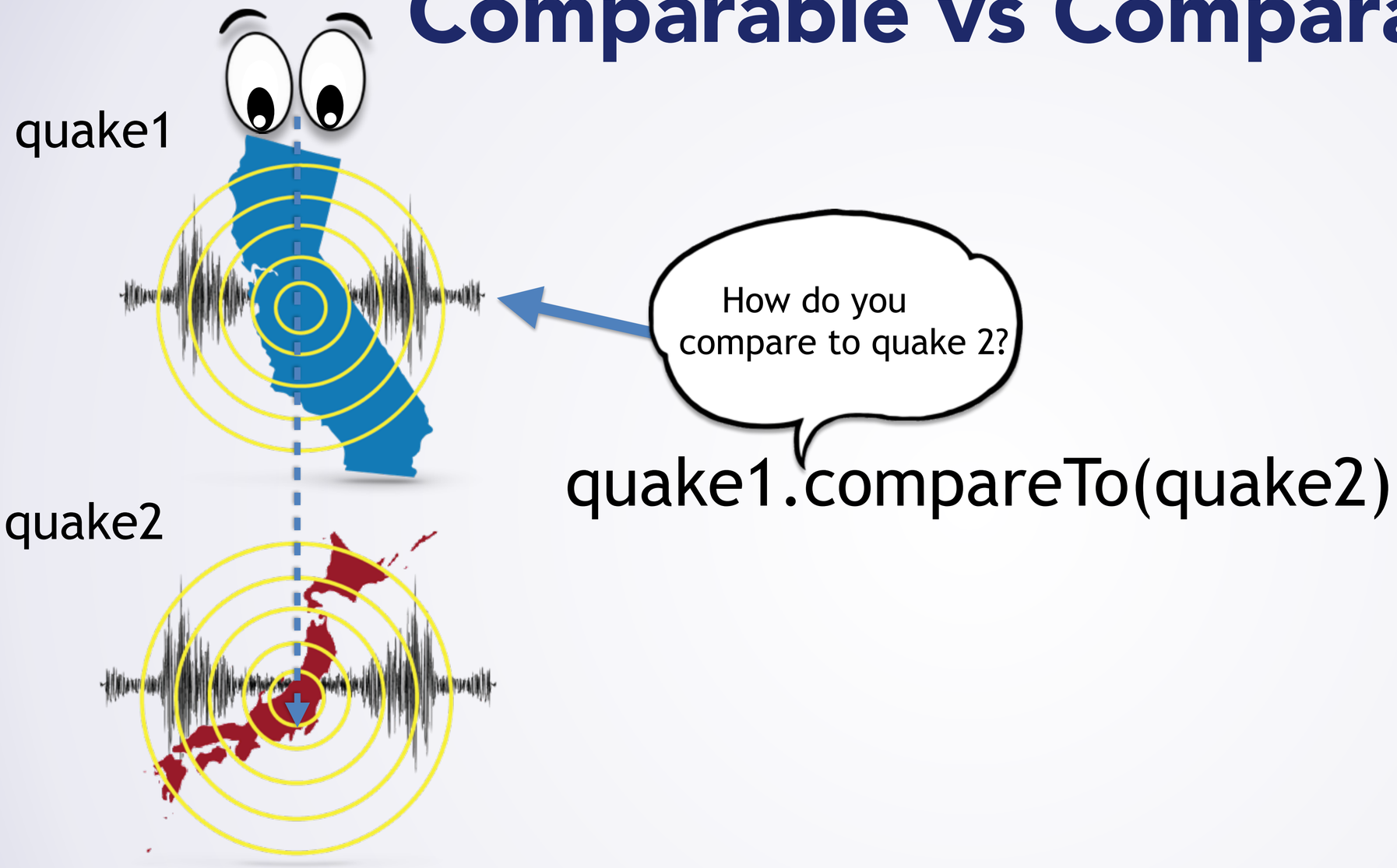
How do you compare to quake 2?

quake1.compareTo(quake2)

quake2

- Comparable and Comparator: difference?

Comparable vs Comparator



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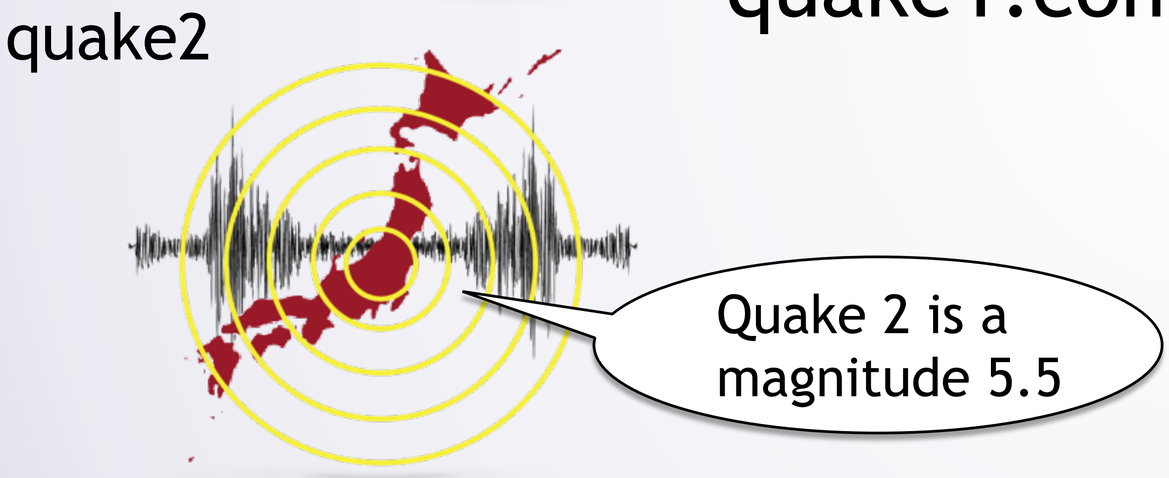

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Comparable vs Comparator

quake1

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quake2

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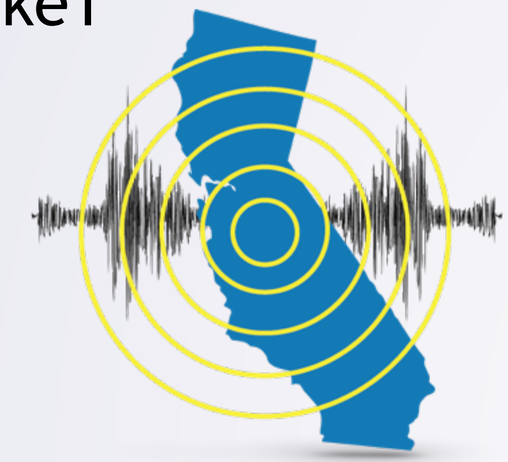


quake2

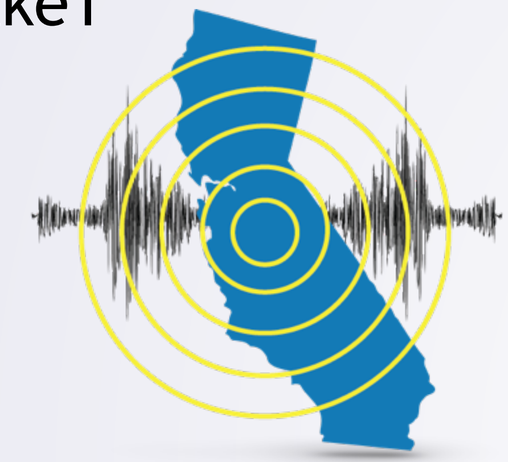
comparatorA

comparatorA.compare(quake1,quake2)

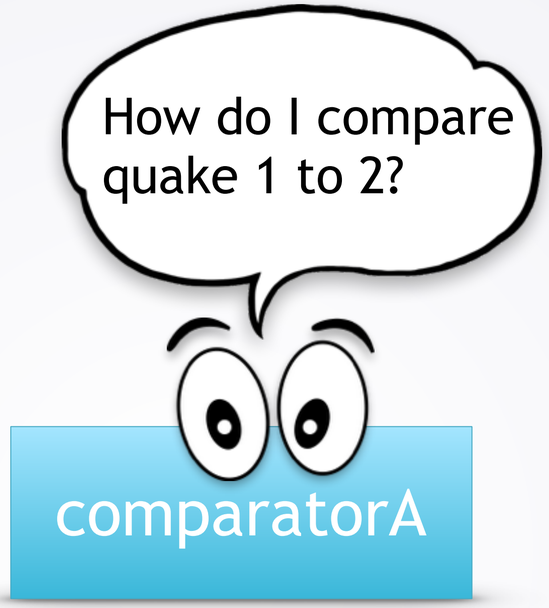
- Comparable and Comparator: difference?

Comparable vs Comparator

quake1



quake2



comparatorA.compare(quake1,quake2)

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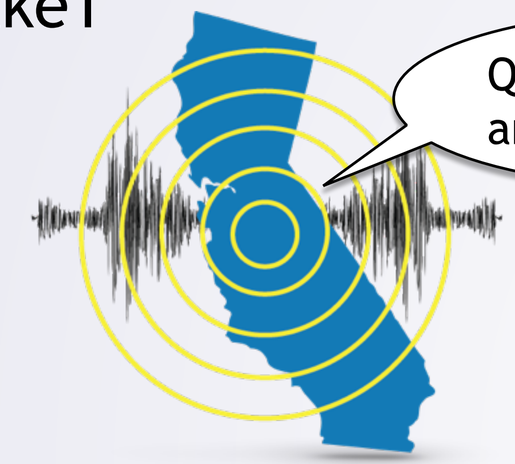
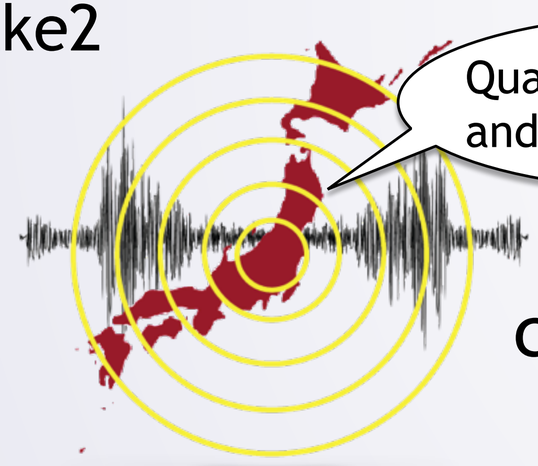
Comparable vs Comparator

quake1



Quake 1 is Lat 37°N
and Long 120°W

quake2



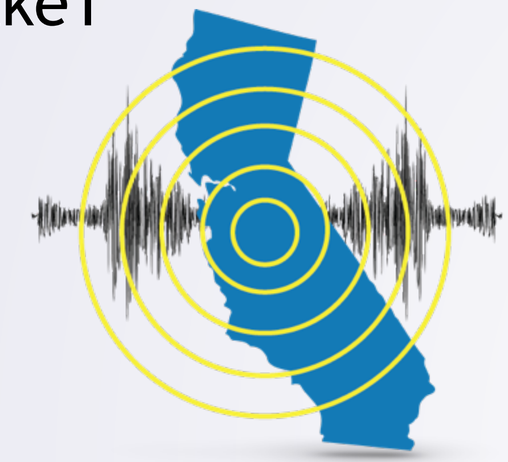
Quake 2 is Lat 35.68°N
and Long 139.76°E

comparatorA.compare(quake1,quake2)

- Comparable and Comparator: difference?

Comparable vs Comparator

quake1



quake2

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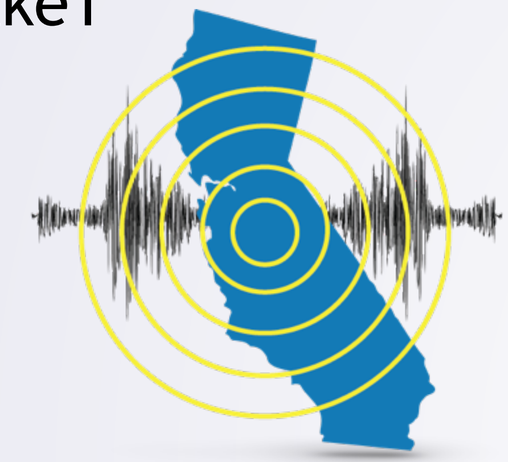
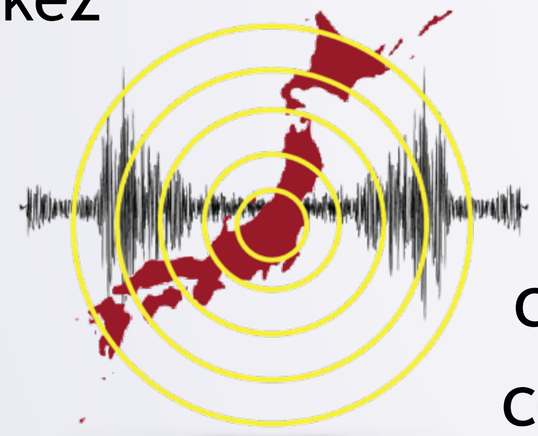
Comparable vs Comparator

quake1



quake2



comparatorA

comparatorB

comparatorA.compare(quake1,quake2)

comparatorB.compare(quake1,quake2)

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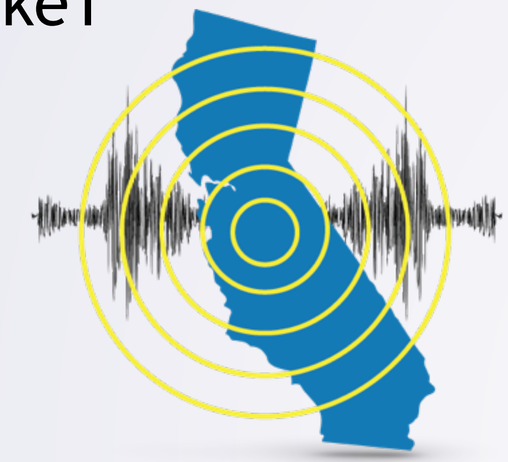
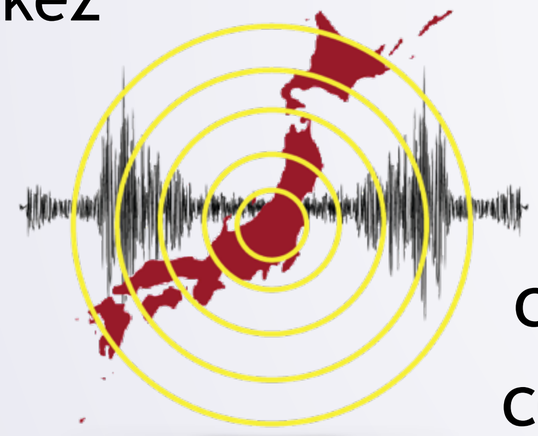
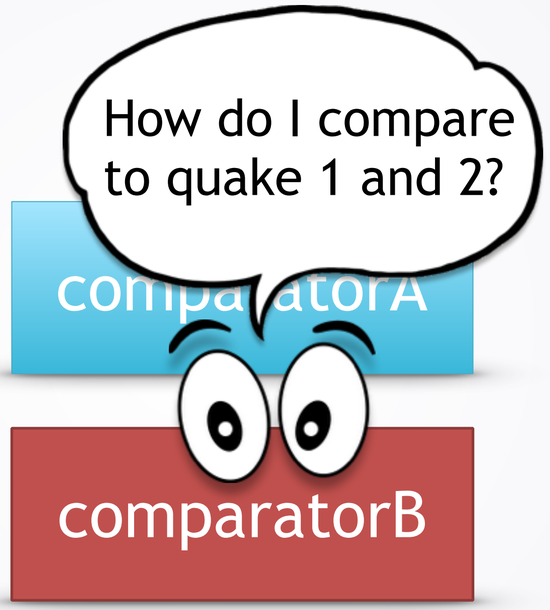
Comparable vs Comparator

quake1



quake2





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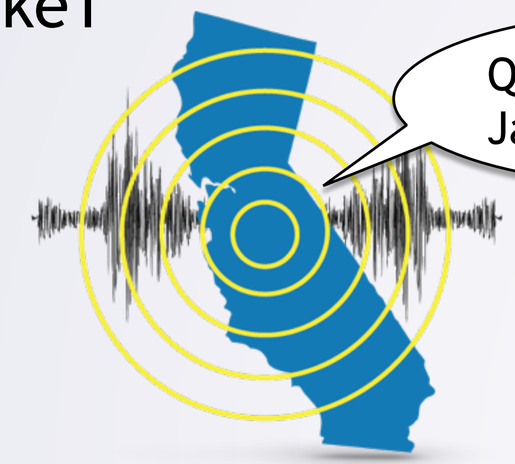
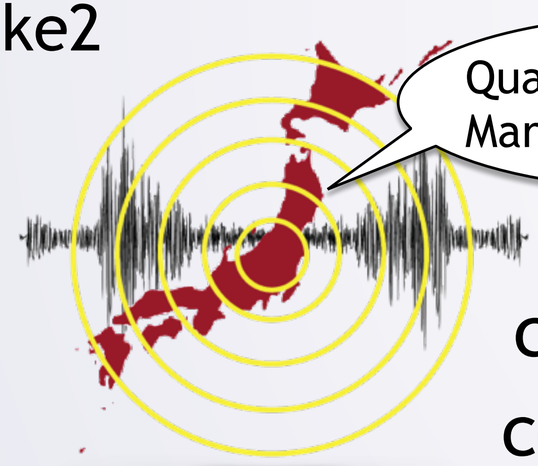
Comparable vs Comparator

quake1

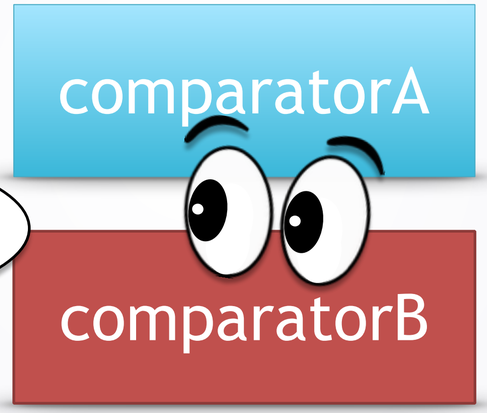


Quake 1 occurred
January 1, 2012

quake2



Quake 2 occurred
March 30, 2015



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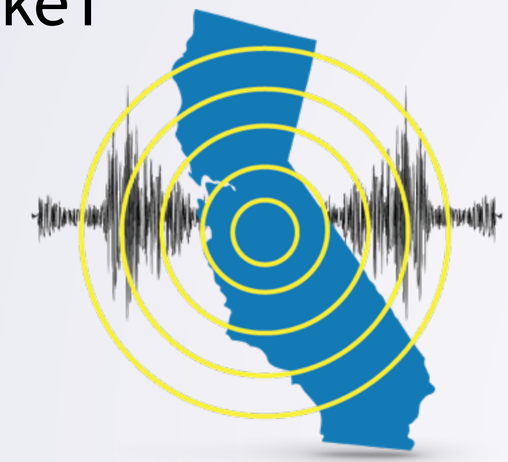
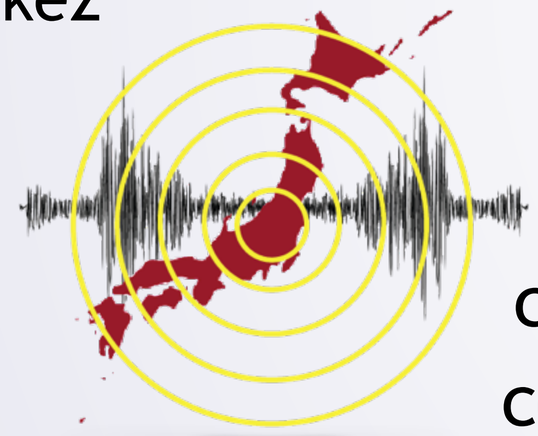
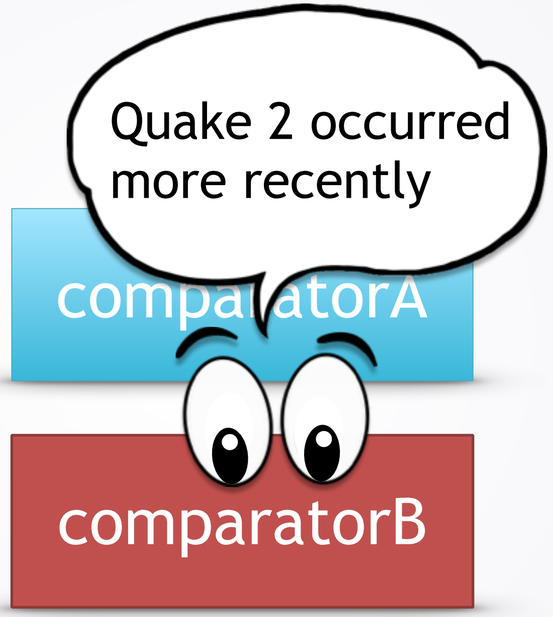


quake2





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comparatorB.compare(quake1,quake2)

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MagnitudeComparator: Order by Magnitude

```
public class MagnitudeComparator
             implements Comparator<QuakeEntry> {

    public int compare(QuakeEntry qe1, QuakeEntry qe2) {
        return Double.compare(qe1.getMagnitude(),
                              qe2.getMagnitude());
    }
}
```

- Comparator Example:
  - MagnitudeComparator

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Using a Comparator to Sort

```
Collections.sort(list, new MagnitudeComparator());
```

- Collections.sort can take a Comparator
  - Will use ordering defined by Comparator

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  - Remember: can use object as interface type