

# Recipe 0.1. Creating Interval

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## 1. Problem

You want to create an interval of numbers.

## 2. Definitions

Here lie some definitions for interval:

An interval is a set of reals with the property that any number that lies between two numbers is included in the set.

An interval is said to be opened (" $[]$ "), closed (" $][]$ ") or semi-opened (" $[["$  or " $]]$ ") depending on the possible inclusion of bounds. For example, the set of all numbers  $x$  satisfying  $0 \leq x < 1$  is a semi-opened interval  $[0, 1[$  which contains 0 and not 1, as well as all numbers between them.

In the JPL, all intervals by default are semi-opened.

## 3. Solution

Here is a code that build a default interval:

```
// default interval: [a, b[
Interval interval = new Interval.Builder(245.56, 310).build();

Assert.assertTrue(interval.contains(263));
```

It is also possible to include or exclude boundaries:

```
// interval: ]a, b]
Interval interval = new Interval.Builder(0, 10)
    .excludeLowerBound().includeUpperBound().build();

Assert.assertFalse(interval.contains(0));
```

## 4. Discussion

## 5. See Also

See also the recipe about creating [domain of definition](#).