Assessment: IRanges

Q1: Operating on ranges: zooming with *

1/1 point (graded)

In the previous video we saw a number of functions for manipulating interval ranges:

`shift()` `narrow()` `flank()` `*` `+` `-` `range()` `reduce()` `gaps()` `disjoin()`

This is just a subset of all the possible operations, and remember, the rest are documented in the help pages mentioned in the video and in the book page. We will first do a simple review of these operations, so that you get a sense of using them in your R console. Then we will have a few questions which require more thought.

Load the **IRanges** package. Define an integer range starting at 101 and ending at 200. If we use the operation `*2`, this will zoom in, giving us a range with half the width. What is the starting point of the resulting range?

126 ✔

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Q2: Narrowing

1/1 point (graded)

Define an integer range starting at 101 and ending at 200. If we use the operation `narrow(x, start=20)`, what is the new starting point of the range?

120 ✔

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Q3: Expanding with +

1/1 point (graded)

Define an integer range starting at 101 and ending at 200. If we use the operation `+25`, what is the width of the resulting range?

150 ✔

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Q4: Range widths, vectorized

1/1 point (graded)

Define an *IRanges* with starts at 1,11,21 and ends at 3,15,27. `width()` gives the widths for each range.

What is the sum of the widths of all the ranges?

15 ✔

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Q5: Visualizing and projecting ranges

1/1 point (graded)

Define an *IRanges* object, `x`, with the following set of ranges:

Starts at 101,106,201,211,221,301,306,311,351,361,401,411,501

Ends at 150,160,210,270,225,310,310,330,390,380,415,470,510

Plot these ranges using the `plotRanges()` function in the **ph525x** package. You can install this library, if you have not done so already, with the command `install_github("genomicsclass/ph525x")`.

What is the total width from 101 to 510 which is not covered by ranges in x?

130 ✔

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Q6: Disjoint subranges

1/1 point (graded)

By "disjoint ranges", we mean the following: for two ranges [1,10] and [6,15], there are three disjoint ranges contained within: [1,5], [6,10], and [11,15].

How many disjoint ranges are contained within the ranges in `x` from the previous question?

17 ✔

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Q7: Resizing

1/1 point (graded)

An intra-range function we didn't show in the video is `resize()`.

Set up a grid of 2 stacked plots:

```
par(mfrow=c(2,1))
```

Now use `plotRanges()` to plot the `x` from last question, as well as `resize(x,1)`. You will have to set the xlim to make sure that the plots line up vertically. For example, you can use `plotRanges(x, xlim=c(0,600))`.

What is the best description for the operation `resize(x,1)`?

- (●) It gives you just the starting point of each range.
- ( ) It resizes x so that each range in x can only overlap 1 other range in x.
- ( ) It resizes x into 1 large range.
- ( ) It gives you the ranges in x which are covered by more than 1 range.

✔

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