IRanges assessment

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 ✔

126

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

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 ✔

120

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

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 ✔

150

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

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 ✔

15

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

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 ✔

130

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

Disjoint subranges

1/1 point (graded)

How many disjoint ranges are contained within the ranges in 'x' from the previous question? 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].

17 ✔

17

Submit You have used 1 of 5 attempts

✔ Correct (1/1 point)

Resizing

0/1 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 original 'x', and resize(x,1). You will have to set the xlim to make sure that the plots line up vertically. You can use plotRanges(x, xlim=c(0,600)) for example.

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.

Explanation

From the man page: resize resizes the ranges to the specified width where either the start, end, or center is used as an anchor. The default is fix="start", so resize(x,1) gives you the starting integer of each range in x.

Submit You have used 2 of 2 attempts

Answers are displayed within the problem