Advent of Code 2021 - Day 1

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12/1/2021

Solutions to the Day 1 tasks of the Advent of code

Part 1

The first order of business is to figure out how quickly the depth increases, just so you know what you're dealing with - you never know if the keys will get carried into deeper water by an ocean current or a fish or something.

To do this, count the number of times a depth measurement increases from the previous measurement. (There is no measurement before the first measurement.)

Reading in the input data

The hardest part of this question is actually to use `read.csv` correctly. Since default setting will use the first value as header of the column, it will be missing from the data unless `header=FALSE` is specified.

```r
depths <- read.delim("day_1_input.txt",header=FALSE)[,1]
summary(depths)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##     149    2352    4260    4412    6497    8895
```

Get the number of times the depth increases

`diff` determines the difference of two successive measurements, `>0` converts the output into a vector of Boolean values and `sum` will count all `TRUE` values.

```r
sum(diff(depths)>0)
```

```
## [1] 1616
```

So for my data, 1616 measurements increased.

Part 2

Considering every single measurement isn't as useful as you expected: there's just too much noise in the data. Instead, consider sums of a three-measurement sliding window.

```r
library("zoo")
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
sum(diff(rollapply(depths,3,mean))>0)
```

[1] 1645

To solve the same task will a rolling window, the depth observations can be wrapped into a `rollapply` window from the `zoo` package. In the simplest case this is an integer specifying the window width (in numbers of observations) which is aligned to the original sample according to the align argument.

So for my data, 1645 observations increased within a rolling window.