

Advent of Code 2021 - Day 1

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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.

```
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.

```
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.

```
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 with 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.