2018-05: Alchemical Reduction

```
library(stringi)
library(tidyverse)
```

```
-- Attaching packages --------------------------------------- tidyverse 1.3.2 --
v ggplot2 3.3.6      v purrr   0.3.4
v tibble  3.1.8      v dplyr   1.0.10
v tidyr   1.2.0      v stringr 1.4.1
v readr   2.1.2      v forcats 0.5.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```
library(data.table)
```

```
Attaching package: 'data.table'

The following objects are masked from 'package:dplyr':

    between, first, last

The following object is masked from 'package:purrr':

    transpose
```

```
dt <- readLines("input.txt")
dt <- unlist(strsplit(dt, ""))
```

Part 1

```
reduced <- TRUE
while(reduced) {
  old <- length(dt)
  for (x in 1:(old - 1)) {
    if (dt[x] != dt[x + 1] & toupper(dt[x]) == toupper(dt[x + 1])) {
      dt[c(x, x + 1)] <- ""
      reduced <- TRUE
    }
  }
  dt <- dt[dt != ""]
  if(old == length(dt)) {
    reduced <- FALSE
  }
}
length(dt)
```

```
[1] 10598
```

Part 2

```
sapply(1:26, function(l) {
  tmp <- stri_replace_all_regex(dt, paste0(letters[l], "|", LETTERS[l]), "")
  reduced <- TRUE
  while (reduced) {
    old <- length(tmp)
    for (x in 1:(old - 1)) {
      if (tmp[x] != tmp[x + 1] & toupper(tmp[x]) == toupper(tmp[x + 1])) {
        tmp[c(x, x + 1)] <- ""
        reduced <- TRUE
      }
    }
    tmp <- tmp[tmp != ""]
    if (old == length(tmp)) {
      reduced <- FALSE
    }
  }
  length(tmp)
```

```
  }) |>
    min()
```

```
[1] 5312
```