

dec_02 AdventCode

JessicaK

2023-12-03

Day 2: Cube Conundrum

- Game 1: 3 blue, 4 red; 1 red, 2 green, 6 blue; 2 green
- Game 2: 1 blue, 2 green; 3 green, 4 blue, 1 red; 1 green, 1 blue
- Game 3: 8 green, 6 blue, 20 red; 5 blue, 4 red, 13 green; 5 green, 1 red
- Game 4: 1 green, 3 red, 6 blue; 3 green, 6 red; 3 green, 15 blue, 14 red
- Game 5: 6 red, 1 blue, 3 green; 2 blue, 1 red, 2 green

In game 1, three sets of cubes are revealed from the bag (and then put back again). The first set is 3 blue cubes and 4 red cubes; the second set is 1 red cube, 2 green cubes, and 6 blue cubes; the third set is only 2 green cubes.

The Elf would first like to know which games would have been possible if the bag contained only 12 red cubes, 13 green cubes, and 14 blue cubes?

In the example above, games 1, 2, and 5 would have been possible if the bag had been loaded with that configuration. However, game 3 would have been impossible because at one point the Elf showed you 20 red cubes at once; similarly, game 4 would also have been impossible because the Elf showed you 15 blue cubes at once. If you add up the IDs of the games that would have been possible, you get 8.

Part I

Determine which games would have been possible if the bag had been loaded with only 12 red cubes, 13 green cubes, and 14 blue cubes. What is the sum of the IDs of those games?

`read.table` does not work here.

```
library(readr)
library(tibble)
dec02 <- read_lines("dec_02.txt")
dec02 <- as.tibble(dec02)
```

It looks super messy. but we have tidyverse god.

```
library(tidyverse)

dec02_edited <- dec02 %>%
  separate(value, into = c("GameID", "subsets"), sep = ":", fill = "warn") %>%
  tidyr::separate_rows(subsets, sep = ";") %>%
  group_by(GameID) %>%
  mutate(sets = row_number()) %>%
  tidyr::separate_rows(subsets, sep = ",")

## extract color
```

```
dec02_edited$color <- sapply(strsplit(dec02_edited$subsets, "\\s+"), `[, 3)`

## and number of the colored cubes
dec02_edited$Num <- as.numeric(gsub("\\D", "", dec02_edited$subsets))

dec02_edited <- dec02_edited[,c("GameID", "sets", "color", "Num")]
```

Impossible? Possible?

Remember. the bag contained only 12 red cubes, 13 green cubes, and 14 blue cubes.

```
dec02_edited <- dec02_edited %>%
  mutate(possible = ifelse(
    color == "red" & Num <= 12, 1,
    ifelse(
      color == "green" & Num <= 13, 1,
      ifelse(
        color == "blue" & Num <= 14, 1, 0
      )
    )
  ))
```

What is the sum of the IDs of those games?

```
dec02_summary <- dec02_edited %>%
  group_by(GameID) %>%
  summarise(sum_bygameId = sum(possible),
            count = n()) %>%
  mutate(diff = count - sum_bygameId) %>%
  dplyr::filter(diff == 0)
```

And sum the group IDs.

```
dec02_summary$IDNUM <- parse_number(dec02_summary$GameID)
sum(dec02_summary$IDNUM)
```

```
## [1] 2006
```

Part II

The Elf poses a second question: in each game you played, what is the fewest number of cubes of each color that could have been in the bag to make the game possible?

For each game, find the minimum set of cubes that must have been present. What is the sum of the power of these sets?

Reuse the dataset from earlier.

```
dec02_part2 <- dec02_edited[,c("GameID", "sets", "color", "Num")]

dec02_part2 <- dec02_part2 %>%
  group_by(GameID, color) %>%
  summarise(max = max(Num)) %>%
  pivot_wider(names_from = color, values_from = max) %>%
  mutate(power = blue * green * red)
```

`summarise()` has grouped output by 'GameID'. You can override using the

```
## `.groups` argument.  
sum(dec02_part2$power)  
  
## [1] 84911
```