HW4_arflowers

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10/12/2021

Homework 4

Problem 3

Part A

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.5     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.1     v forcats 0.5.1
```

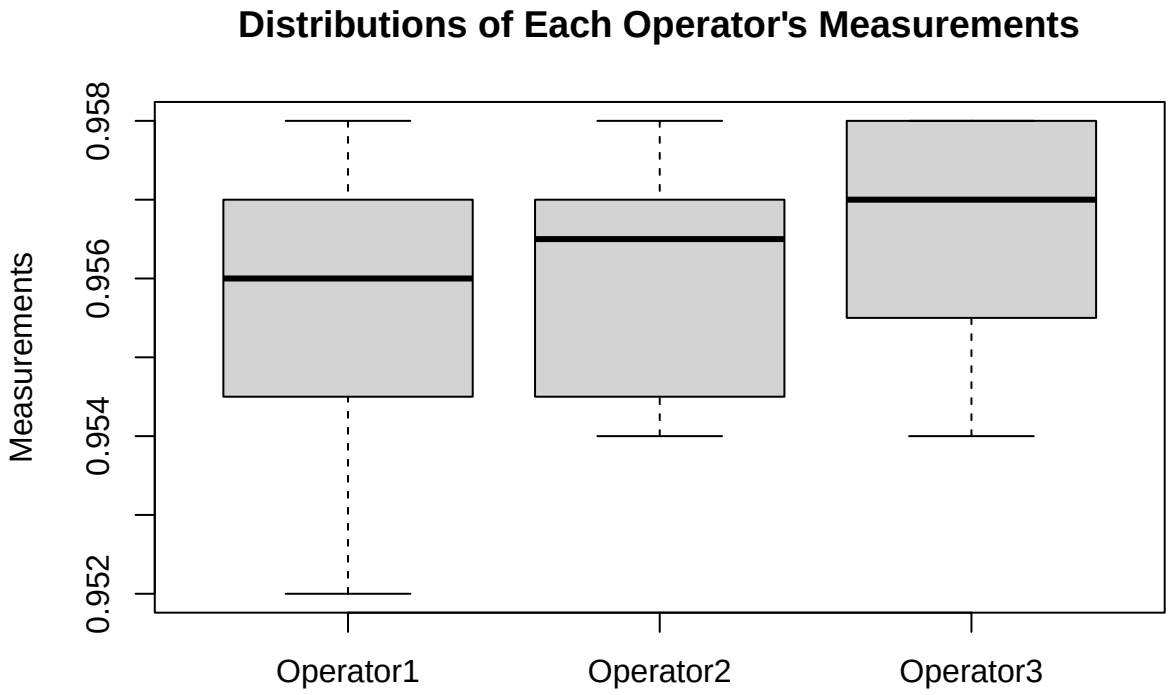
```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(tibble)
library(knitr)
setwd("~/Desktop/VT/StatProgPackages")
ThicknessGauge <- read.csv('ThicknessGauge.dat', sep = " ", header = FALSE)
tidy_thickness <- slice(ThicknessGauge, -c(1,2))
tidy_thickness <- bind_rows(tidy_thickness[,c(1,2,4,6)],
                            tidy_thickness[,c(1,3,5,7)])
tidy_thickness[is.na(tidy_thickness)] <- 0
tidy_thickness <- transmute(tidy_thickness,
                            Part = V1,
                            Operator1 = V2 + V3,
                            Operator2 = V4 + V5,
                            Operator3 = V6 + V7)
kable(head(tidy_thickness), caption = "Thickness Gauge Data")
```

Table 1: Thickness Gauge Data

Part	Operator1	Operator2	Operator3
1	0.953	0.954	0.954
2	0.956	0.956	0.958
3	0.956	0.956	0.957
4	0.957	0.958	0.957
5	0.957	0.957	0.958
6	0.958	0.957	0.958

```
boxplot(tidy_thickness[,2:4], ylab = "Measurements", main = "Distributions of Each Operator's Measureme
```



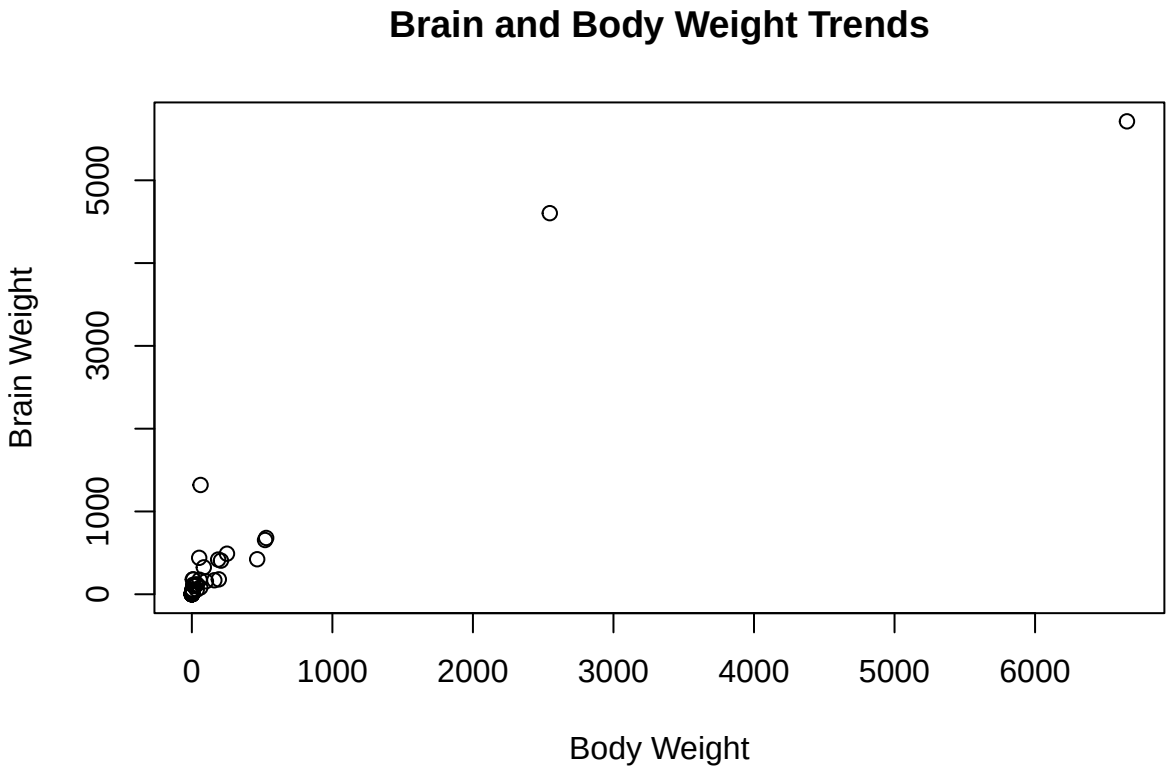
Part B

```
BrainAndBodyWeight <- read.csv('BrainandBodyWeight.dat', sep = " ")
tidy_weight <- bind_rows(BrainAndBodyWeight[,1:2], BrainAndBodyWeight[,3:4], BrainAndBodyWeight[,5:6])
tidy_weight[is.na(tidy_weight)] <- 0
tidy_weight <- transmute(tidy_weight, BodyWeight = Body + Brain + Body.1, BrainWeight = Wt + Wt.1 + Wt.
tidy_weight <- slice(tidy_weight, -63)
kable(head(tidy_weight), caption = "Brain and Body Weight Data")
```

Table 2: Brain and Body Weight Data

BodyWeight	BrainWeight
3.385	44.5
0.480	15.5
1.350	8.1
465.000	423.0
36.330	119.5
27.660	115.0

```
plot(tidy_weight$BodyWeight, tidy_weight$BrainWeight, xlab = "Body Weight", ylab = "Brain Weight", main
```



Part C

```
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
```

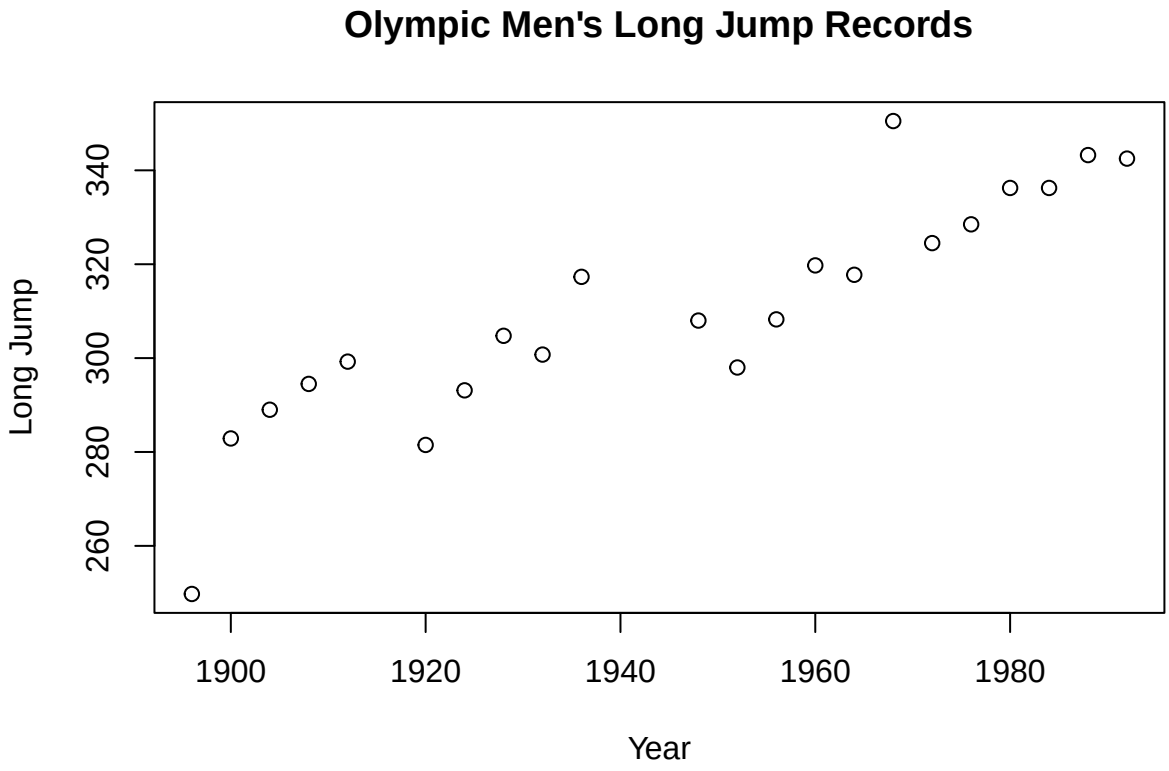
```
LongJump <- fread('LongJumpData.dat', header = FALSE, fill = TRUE)
tidy_jump <- slice(LongJump, -1)
tidy_jump <- bind_rows(tidy_jump[,1:2], tidy_jump[,3:4], tidy_jump[,5:6], tidy_jump[,7:8])
tidy_jump[is.na(tidy_jump)] <- 0
tidy_jump <- slice(tidy_jump, -c(23,24))
tidy_jump <- as.data.frame(apply(tidy_jump, c(1,2), as.numeric))
tidy_jump <- transmute(tidy_jump, Year = V1 + V3 + V5 + V7, LongJump = V2 + V4 + V6 + V8)
tidy_jump$Year <- tidy_jump$Year + 1900
kable(head(tidy_jump), caption = "Olympic Long Jump Data")
```

Table 3: Olympic Long Jump Data

Year	LongJump
1896	249.75
1900	282.88

Year	LongJump
1904	289.00
1908	294.50
1912	299.25
1920	281.50

```
plot(tidy_jump$Year, tidy_jump$LongJump, xlab = "Year", ylab = "Long Jump", main = "Olympic Men's Long
```



Part D

```
tomato <- fread('tomato.dat', header = FALSE)
```

Part E

```
LarvaeControl <- fread('LarvaeControl.dat')
tidy_larvae <- bind_cols(c(LarvaeControl$Block,LarvaeControl$Block), bind_rows(LarvaeControl[,2:6], Lar
```

```
## New names:
## * NA -> ...1
```

```
tidy_larvae[is.na(tidy_larvae)] <- 0
tidy_larvae <- transmute(tidy_larvae, Block = ...1, `1` = `1`+` 1`, `2` = `2`, `3` = `3`, `4` = `4`, `5
tidy_larvae <- mutate(tidy_larvae, Age = c(rep(1,8), rep(2,8)))
tidy_larvae <- gather(tidy_larvae, key = "Treatment", value = "Counts", `1`, `2`, `3`, `4`, `5`)
kable(head(tidy_larvae), caption = "Larvae Counts")
```

Table 4: Larvae Counts

Block	Age	Treatment	Counts
1	1	1	13
2	1	1	29
3	1	1	5
4	1	1	5
5	1	1	0
6	1	1	1

```
boxplot(Counts ~ Age, tidy_larvae, main = "Counts of Larvae at Two Ages")
```