

RWorksheet_Aposaga#4a

John Philipp Aposaga

2024-10-14

#1 #a

```
shoeSize <- c(6.5, 9.0, 8.5, 8.5, 10.5, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 10.5, 13.0, 11.5, 8.5, 10.5, 13.0, 11.5, 8.5)
Height <- c(66.0, 68.0, 64.5, 65.0, 70.0, 64.0, 70.0, 71.0, 72.0, 64.0, 74.5, 67.0, 71.0, 71.0, 77.0, 71.0, 66.0, 68.0, 64.5, 65.0, 70.0)
Gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "M", "F", "F", "F", "F", "F")
SHG <- data.frame(shoeSize, Height, Gender)
names(SHG) <- c("Shoe Size", "Height", "Gender")
SHG
```

##	Shoe Size	Height	Gender
## 1	6.5	66.0	F
## 2	9.0	68.0	F
## 3	8.5	64.5	F
## 4	8.5	65.0	F
## 5	10.5	70.0	M
## 6	7.0	64.0	F
## 7	9.5	70.0	F
## 8	9.0	71.0	F
## 9	13.0	72.0	M
## 10	7.5	64.0	F
## 11	10.5	74.5	M
## 12	8.5	67.0	F
## 13	12.0	71.0	M
## 14	10.5	71.0	M
## 15	13.0	77.0	M
## 16	11.5	72.0	M
## 17	8.5	59.0	F
## 18	5.0	62.0	F
## 19	10.0	72.0	M
## 20	6.5	66.0	F
## 21	7.5	64.0	F
## 22	8.5	67.0	M
## 23	10.5	73.0	M
## 24	8.5	69.0	F
## 25	10.5	72.0	M
## 26	11.0	70.0	M
## 27	9.0	69.0	M
## 28	13.0	70.0	M

#b

```
SHG_male <- subset(SHG, Gender == "M")
SHG_male
```

```
##      Shoe Size Height Gender
## 5      10.5   70.0      M
## 9      13.0   72.0      M
## 11     10.5   74.5      M
## 13     12.0   71.0      M
## 14     10.5   71.0      M
## 15     13.0   77.0      M
## 16     11.5   72.0      M
## 19     10.0   72.0      M
## 22       8.5   67.0      M
## 23     10.5   73.0      M
## 25     10.5   72.0      M
## 26     11.0   70.0      M
## 27       9.0   69.0      M
## 28     13.0   70.0      M
```

```
SHG_female <- subset(SHG, Gender == "F")
SHG_female
```

```
##      Shoe Size Height Gender
## 1       6.5   66.0      F
## 2       9.0   68.0      F
## 3       8.5   64.5      F
## 4       8.5   65.0      F
## 6       7.0   64.0      F
## 7       9.5   70.0      F
## 8       9.0   71.0      F
## 10      7.5   64.0      F
## 12      8.5   67.0      F
## 17      8.5   59.0      F
## 18      5.0   62.0      F
## 20      6.5   66.0      F
## 21      7.5   64.0      F
## 24      8.5   69.0      F
```

```
#c
```

```
mean(shoeSize)
```

```
## [1] 9.410714
```

```
mean(Height)
```

```
## [1] 68.57143
```

#d #There is no relationship between the two variables, since a person's shoe size is different from their height, although they are both attributes of a respondent.

```
#2
```

```
months <- c("March", "April", "January", "November", "January", "September", "October", "September", "November")
factor_months_vector <- factor(months)
factor_months_vector
```

```
## [1] March    April     January  November January  September October
## [8] September November August   January  November November February
## [15] May       August    July     December August   August   September
## [22] November February April
## 11 Levels: April August December February January July March May ... September
```

#3

```
summary(months)
```

```
##      Length      Class      Mode
##         24 character character
```

```
summary(factor_months_vector)
```

```
##      April      August  December  February  January      July      March      May
##         2         4         1         2         3         1         1         1
## November  October September
##         5         1         3
```

#4

```
factor_data <- c("East", "West", "North")
freq <- c(1,4,3)

new_order_data <- factor(factor_data, levels = c("East", "West", "North"))
new_order_data
```

```
## [1] East West North
## Levels: East West North
```

```
fdata <- data.frame(Direction = factor_data, Frequency = freq)
fdata
```

```
##      Direction Frequency
## 1         East         1
## 2         West         4
## 3         North         3
```

#5

```
importmarch <- read.table("import_march.csv", header = TRUE, sep = ",", stringsAsFactors = FALSE)
importmarch
```

```
## Students Strategy.1 Strategy.2 Strategy.3
## 1 Male 8 10 8
## 2 4 8 6
## 3 0 6 4
## 4 Female 14 4 15
## 5 10 2 12
## 6 6 0 9
```

#6

```
selnum <- as.numeric(readline(prompt = "Select a number from 1 to 50: "))
```

```
## Select a number from 1 to 50:
```

```
if (is.na(selnum) || selnum < 1 || selnum > 50) {
  print("The number selected is beyond the range of 1 to 50.")
} else if (selnum == 20) {
  print("TRUE")
} else {
  print(paste("The selected number is", selnum))
}
```

```
## [1] "The number selected is beyond the range of 1 to 50."
```

#7

```
min_bills <- function(price){
  bills <- c(1000, 500, 200, 100, 50)
  count <- 0

  for(bill in bills) {
    if(price >= bill) {
      count <- count + price %/% bill
      price <- price %% bill
    }
  }

  cat("Minimum number of bills needed to purchase a snack:", count, "\n")
}

min_bills(1550)
```

```
## Minimum number of bills needed to purchase a snack: 3
```

#8a

```
Name <- c("Annie", "Thea", "Steve", "Hanna")
Grade1 <- c(85, 65, 75, 95)
Grade2 <- c(65, 75, 55, 75)
Grade3 <- c(85, 90, 80, 100)
Grade4 <- c(100, 90, 85, 90)

grades <- data.frame(Name, Grade1, Grade2, Grade3, Grade4)
grades
```

```
##      Name Grade1 Grade2 Grade3 Grade4
## 1 Annie      85      65      85      100
## 2 Thea       65      75      90      90
## 3 Steve      75      55      80      85
## 4 Hanna      95      75     100      90
```

#8b

```
ave_grades <- apply(grades[,2:5], 1, function(x) sum(x) / length(x) )
ave_grades
```

```
## [1] 83.75 80.00 73.75 90.00
```

```
high_achievers <- grades$Name[ave_grades > 90]
high_achiever_averages <- ave_grades[ave_grades > 90]

for (i in 1:nrow(grades)) {
  if (ave_grades[i] > 90) {
    cat(grades$Name[i], "'s average grade this semester is ", ave_grades[i], ".\n", sep = "")
  }
}
```

#8c

```
for (j in 2:5) {
  test_average <- sum(grades[, j]) / nrow(grades)
  if (test_average < 80) {
    cat("The ", names(grades)[j], " test was difficult.\n", sep = "")
  }
}
```

```
## The Grade2 test was difficult.
```

#8d

```
for (i in 1:nrow(grades)) {

  highest_grade <- sort(as.numeric(grades[i, 2:5]), decreasing = TRUE)[1]
  if (highest_grade > 90) {
    cat(grades$Name[i], "'s highest grade this semester is ", highest_grade, ".\n", sep = "")
  }
}
```

```
## Annie's highest grade this semester is 100.
```

```
## Hanna's highest grade this semester is 100.
```