

RWorksheet_Soldevilla#4a

Ariane Soldevilla

2023-10-25

#1

```
df <- data.frame (
  Shoe_size = c(6.5, 9.0, 8.5, 8.5, 10.0, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 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, 70.0, 72.0),
  Gender = c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M",
             "F", "M", "M", "M", "M", "F", "F", "M", "F", "F", "M", "M", "F", "M", "M", "M", "M")
)
```

##	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	10.0	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

```
male_subset <- df[df$Gender == "M", c("Shoe_size", "Height")]
female_subset <- df[df$Gender == "F", c("Shoe_size", "Height")]
```

```
male_subset
```

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

```
female_subset
```

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

```
#c
```

```
mean(df$Shoe_size)
```

```
## [1] 9.392857
```

```
mean(df$Height)
```

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

```
#d #Yes, there is a relationship between the height and shoe size, the taller they are, the longer their shoe size.
```

```
#Number2
```

```
months <- c("March", "April", "January", "November", "January",  
            "September", "October", "September", "November", "August",  
            "January", "November", "November", "February", "May", "August",  
            "July", "December", "August", "August", "September", "November", "February", "April")  
factor_months <- factor(months)  
factor_months
```

```
## [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)
```

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

#4

```
direction_vector <- c("East", "West", "North")
frequency_vector <- c(1, 1, 3)
factor_data <- factor(c(direction_vector, frequency_vector))
new_order_data <- factor(factor_data, levels =
                          c("East", "West", "North"))
print(new_order_data)
```

```
## [1] East West North <NA> <NA> <NA>
## Levels: East West North
```

#5

```
student_table <- read.table(file = 'import_march.csv', header = TRUE, sep = ',')
student_table
```

```
##      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.

```
random_number <- sample(1:50, 1)

cat("The chosen number is:", random_number, "\n")
```

```
## The chosen number is: 48
```

```
if (random_number == 20) {
  cat("TRUE\n")
} else if (random_number < 1 || random_number > 50) {
  cat("The number selected is beyond the range of 1 to 50\n")
} else {
  cat(random_number, "\n")
}
```

```
## 48
```

```
#7.
```

```
calculate_min_bills <- function(price_of_snack) {  
  bill_denominations <- c(1000, 500, 200, 100, 50)  
  total_bills <- 0  
  
  for (bill in bill_denominations) {  
    num_bills_needed <- price_of_snack %/% bill  
    price_of_snack <- price_of_snack %% bill  
    total_bills <- total_bills + num_bills_needed  
  }  
  
  cat("Minimum number of bills needed to purchase the snack:", total_bills, "\n")  
}  
  
price_of_snack <- 1350  
calculate_min_bills(price_of_snack)
```

```
## Minimum number of bills needed to purchase the snack: 4
```

```
#8. #A.
```

```
students <- data.frame(  
  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)  
)  
students
```

```
##      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
```

```
#B.
```

```
students$Average <- (students$Grade1 + students$Grade2 + students$Grade3 + students$Grade4) / 4  
  
for (i in 1:nrow(students)) {  
  average <- (students$Grade1[i] + students$Grade2[i] + students$Grade3[i] + students$Grade4[i]) / 4  
  count <- 0  
  total_average <- 0  
  if (students$Grade4[i] > 90) {  
    cat(students$Name[i], "'s average grade this semester is", average, ".\n")  
    total_average <- total_average + average  
    count <- count + 1  
  }  
}
```

```
## Annie 's average grade this semester is 83.75 .
```

```
if (count > 0) {  
  overall_average <- total_average / count
```

```

    cat("The overall average for high-achieving students is", overall_average, ".\n")
  } else {
    cat("No high-achieving students found.\n")
  }
}

```

No high-achieving students found.

#C.

```

test1_average <- sum(students$Grade1) / nrow(students)
test2_average <- sum(students$Grade2) / nrow(students)
test3_average <- sum(students$Grade3) / nrow(students)
test4_average <- sum(students$Grade4) / nrow(students)

```

```

if (test1_average < 80) {
  cat("The 1st test was difficult.\n")
}
if (test2_average < 80) {
  cat("The 2nd test was difficult.\n")
}

```

The 2nd test was difficult.

```

if (test3_average < 80) {
  cat("The 3rd test was difficult.\n")
}
if (test4_average < 80) {
  cat("The 4th test was difficult.\n")
}

```

#D.

```

for (i in 1:nrow(students)) {
  highest_grade <- students$Grade1[i]
  if (students$Grade2[i] > highest_grade) {
    highest_grade <- students$Grade2[i]
  }
  if (students$Grade3[i] > highest_grade) {
    highest_grade <- students$Grade3[i]
  }
  if (students$Grade4[i] > highest_grade) {
    highest_grade <- students$Grade4[i]
  }
  if (highest_grade > 90) {
    cat(students$Name[i], "'s highest grade this semester is", highest_grade, "\n")
  }
}

```

Annie 's highest grade this semester is 100

Hanna 's highest grade this semester is 100