

RWorksheet_Cahutay#4a

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1. Data Frame about shoe size and height.

```
#A.  
shoe_size <- 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  
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, 7  
gender <- c('F', 'F', 'F', 'F', 'M', 'F', 'F', 'F', 'M', 'F', 'M', 'F', 'M', 'M', 'M', 'M', 'F', 'F', 'I  
  
shoe_data <- data.frame(  
  Shoe_Size = shoe_size,  
  Height = height,  
  Gender = gender  
)  
shoe_data
```

##	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

```
#output shows the tabular data of shoe size, height, and gender.
```

```
#B. Subset by males and females
```

```
males <- subset(shoe_data, Gender == "M", select = c(Shoe_Size, Height))  
males
```

```
##      Shoe_Size Height  
## 5          10.5   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
```

```
females <- subset(shoe_data, Gender == "F", select = c(Shoe_Size, Height))  
females
```

```
##      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 of the shoe size and height.
```

```
mean_shoe <- mean(shoe_data$Shoe_Size)  
mean_shoe
```

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

```
mean_height <- mean(shoe_data$Height)  
mean_height
```

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

#D. Yes, there is a relationship between the shoe size and height of the respondent because when the re

2. Factor a character vector months

```
months_vector <- 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_vector <- factor(months_vector)
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
```

```
levels(factor_months_vector)
```

```
## [1] "April"      "August"      "December"    "February"    "January"     "July"
## [7] "March"      "May"         "November"    "October"     "September"
```

3. Check summary() of the months_vector and factor_months_vector

```
summary(months_vector)
```

```
##      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
```

#The summary of the months_vector data shows the structure about its length, class, and mode.

#The summary of the factor_months_vector shows the frequency of the months appearing in the dataset.

#Both of the results shows relationship and useful information with each other. The summary of the mont

4. Create vector and factor for direction table

```
direction <- c("East", "West", "North")
frequency <- c(1, 4, 3)

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

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

5. Import excel file

```
#A. Import using read.table()
my_file <- read.table("import_march.csv", header = TRUE, sep = ",")
```

```
#b. View the dataset. Write the R scripts and its result.
print(my_file)
```

```
## Students Strategy.1 Strategy.2 Strategy3
## 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. Full Search

```
#A.
exhaustive_search <- function(user_input){
  if (user_input < 1 | user_input > 50){
    print("The number selected is beyond the range of 1 to 50")
  }else if (user_input == 20){
    print("TRUE")
  }else {
    print(user_input)
  }
}
user_input <- readline(prompt = "Select a number from 1 - 50: ")
```

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

```
exhaustive_search(user_input)
```

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

7. Change

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

  for (bill in bills) {
    count <- floor(price / bill)
    price <- price - count * bill
    total_bills <- total_bills + count
  }
}
```

```

    return(total_bills)
}

price <- as.numeric(readline(prompt = "Enter the price of the snack: "))

## Enter the price of the snack:

print(paste("Minimum number of bills needed to purchase a snack:", min_bills(price)))

## [1] "Minimum number of bills needed to purchase a snack: NA"

```

8. Data Frame of Student's Grade

```

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)

```

#A. data frame of student grades

```

student_grade <- data.frame(
  Name = name,
  Grade1 = grade1,
  Grade2 = grade2,
  Grade3 = grade3,
  Grade4 = grade4
)
student_grade

```

```

##      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. Output the average score of student with an average over 90

```

for (i in 1:4) {
  total <- sum(student_grade[i, 2:5])
  average <- total / 4

  if (average > 90){
    print(paste0(student_grade[i, 1], "'s average grade this semester is ", average))
  }
}

```

#C. output as follows for the tests in which the average score was less than 80 out of 4 tests

```

for (i in 2:4){
  total <- 0
  for (j in 1:4){
    total <- total + student_grade[j, i]
  }
}

```

```

}

average <- total / 4

if (average < 80){
  print(paste("The", colnames(student_grade[i]), "test was difficult"))
}
}

```

```
## [1] "The Grade2 test was difficult"
```

```

#D. Students whose highest score for a semester exceeds 90 points.
for (j in 1:nrow(student_grade)) {
  highest <- student_grade[j, 2]

  for (i in 3:ncol(student_grade)) {
    if (student_grade[j, i] > highest) {
      highest <- student_grade[j, i]
    }
  }

  if (highest > 90){
    print(paste0(student_grade[j, 1], "'s grade this semester is ", highest))
  }
}

```

```
## [1] "Annie's grade this semester is 100"
## [1] "Hanna's grade this semester is 100"
```