

RWorsheet_Punay#4a

#1

#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")
```

```
daf <- data.frame(shoe_size, height, gender)
```

daf

```
## 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	65.0	66.0	F
----	----	------	------	---

```
## 21      75.0    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
----	----	------	------	---

The dataset contains 24 observations and 3 variables:

Shoe size: Numeric (range = 5.0 to 13.0)

Height: Numeric (range = 59.0 to 77.0 inches)

Gender: Categorical (F or M)

It represents shoe sizes and corresponding heights for male and female respondents.

```
#b.  
male_data <- subset(daf, gender == "M")  
female_data <- subset(daf, gender == "F")
```

```
male_data
```

```
##      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
```

```
female_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  
## 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         65.0   66.0      F  
## 21         75.0   64.0      F  
## 24          8.5   69.0      F
```

```
#c.  
mean_shoe <- mean(daf$shoe_size)  
mean_height <- mean(daf$height)
```

```
mean_shoe
```

```
## [1] 13.91071
```

```
mean_height
```

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

```
#d.  
cor(daf$shoe_size, daf$height)
```

```
## [1] -0.1622062
```

There is no significant relationship between shoe size and height based on this dataset ($r = -0.1622$).

```
#2
```

```
#d.
```

```
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_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
```

‘factor_months_vector’ shows frequency counts for each category while ‘months’ just tells you length/type.

```
#4
```

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

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

```
#5
```

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

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

```
#6
```

```

exhaustive_search <- function(x) {

  if (is.na(x)) {
    print("Invalid input")
    return(invisible(NULL))
  }

  if (x < 1 || x > 50) {

    cat("The number selected is beyond the range of 1 to 50\n")
    return(invisible(NULL))
  }

  found <- FALSE
  for (i in 1:50) {
    if (i == x) {
      found <- TRUE

      if (i == 20) {
        print(TRUE)
      } else {
        print(i)
      }
      break
    }
  }

  if (!found) {

    cat("Number not found in the set 1:50\n")
  }
}

user_in <- as.integer(readline(prompt = "Enter a number (can be any integer): "))

## Enter a number (can be any integer):
exhaustive_search(user_in)

## [1] "Invalid input"
#7
#Function
min_bills <- function(price) {

  if (is.na(price)) {
    print("Invalid input. Please enter a numeric value divisible by 50.")
    return()
  }

  # Check price
  if (price %% 50 != 0) {

```

```

    print("The price must be divisible by 50.")
  } else if (price < 50) {
    print("The price must be at least 50 pesos.")
  } else {
    # Initialize
    n1000 <- price %/% 1000
    price <- price %% 1000

    n500 <- price %/% 500
    price <- price %% 500

    n200 <- price %/% 200
    price <- price %% 200

    n100 <- price %/% 100
    price <- price %% 100

    n50 <- price %/% 50

    total_bills <- n1000 + n500 + n200 + n100 + n50

    cat("Minimum number of bills needed:", total_bills, "\n")
    cat("Breakdown:\n")
    cat("P1000:", n1000, "\n")
    cat("P500 :", n500, "\n")
    cat("P200 :", n200, "\n")
    cat("P100 :", n100, "\n")
    cat("P50  :", n50, "\n")
  }
}

# int main hahahaha
snack_price <- as.integer(readline(prompt = "Enter the price of the snack (divisible by 50): "))

## Enter the price of the snack (divisible by 50):
min_bills(snack_price)

## [1] "Invalid input. Please enter a numeric value divisible by 50."
## NULL
#8
#a
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)

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

##      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.
```

```
avg_Annie <- (df$Grade1[1] + df$Grade2[1] + df$Grade3[1] + df$Grade4[1]) / 4
if (avg_Annie >= 90) {
  print(paste(df$Name[1], "'s average grade this semester is", avg_Annie))
}

avg_Thea <- (df$Grade1[2] + df$Grade2[2] + df$Grade3[2] + df$Grade4[2]) / 4
if (avg_Thea >= 90) {
  print(paste(df$Name[2], "'s average grade this semester is", avg_Thea))
}

avg_Steve <- (df$Grade1[3] + df$Grade2[3] + df$Grade3[3] + df$Grade4[3]) / 4
if (avg_Steve >= 90) {
  print(paste(df$Name[3], "'s average grade this semester is", avg_Steve))
}

avg_Hanna <- (df$Grade1[4] + df$Grade2[4] + df$Grade3[4] + df$Grade4[4]) / 4
if (avg_Hanna >= 90) {
  print(paste(df$Name[4], "'s average grade this semester is", avg_Hanna))
}
```

```
## [1] "Hanna 's average grade this semester is 90"
```

```
#c.
```

```
avg_Test1 <- (df$Grade1[1] + df$Grade1[2] + df$Grade1[3] + df$Grade1[4]) / 4

avg_Test2 <- (df$Grade2[1] + df$Grade2[2] + df$Grade2[3] + df$Grade2[4]) / 4

avg_Test3 <- (df$Grade3[1] + df$Grade3[2] + df$Grade3[3] + df$Grade3[4]) / 4

avg_Test4 <- (df$Grade4[1] + df$Grade4[2] + df$Grade4[3] + df$Grade4[4]) / 4

msg <- c()

if (avg_Test1 < 80) msg <- c(msg, "The 1st test was difficult")
if (avg_Test2 < 80) msg <- c(msg, "The 2nd test was difficult")
if (avg_Test3 < 80) msg <- c(msg, "The 3rd test was difficult")
if (avg_Test4 < 80) msg <- c(msg, "The 4th test was difficult")

msg
```

```
## [1] "The 2nd test was difficult"
```

```
#d.
```

```
highest_Annie <- df$Grade1[1]
```

```

if (df$Grade2[1] > highest_Annie) highest_Annie <- df$Grade2[1]
if (df$Grade3[1] > highest_Annie) highest_Annie <- df$Grade3[1]
if (df$Grade4[1] > highest_Annie) highest_Annie <- df$Grade4[1]
if (highest_Annie > 90) print(paste(df$Name[1], "'s highest grade this semester is", highest_Annie))

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

highest_Thea <- df$Grade1[2]
if (df$Grade2[2] > highest_Thea) highest_Thea <- df$Grade2[2]
if (df$Grade3[2] > highest_Thea) highest_Thea <- df$Grade3[2]
if (df$Grade4[2] > highest_Thea) highest_Thea <- df$Grade4[2]
if (highest_Thea > 90) print(paste(df$Name[2], "'s highest grade this semester is", highest_Thea))

highest_Steve <- df$Grade1[3]
if (df$Grade2[3] > highest_Steve) highest_Steve <- df$Grade2[3]
if (df$Grade3[3] > highest_Steve) highest_Steve <- df$Grade3[3]
if (df$Grade4[3] > highest_Steve) highest_Steve <- df$Grade4[3]
if (highest_Steve > 90) print(paste(df$Name[3], "'s highest grade this semester is", highest_Steve))

highest_Hanna <- df$Grade1[4]
if (df$Grade2[4] > highest_Hanna) highest_Hanna <- df$Grade2[4]
if (df$Grade3[4] > highest_Hanna) highest_Hanna <- df$Grade3[4]
if (df$Grade4[4] > highest_Hanna) highest_Hanna <- df$Grade4[4]
if (highest_Hanna > 90) print(paste(df$Name[4], "'s highest grade this semester is", highest_Hanna))

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

```