Rworksheet_Espia4A

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2023-11-08

#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)
Height <- c(66.0, 68.0, 64.5, 65.0, 70.0, 71.0, 72.0, 64.0, 74.5, 67.0, 71.0, 71.0)

df <- data.frame(ShoeSize, Height)
print(df)
```

```
##    ShoeSize Height
## 1       6.5   66.0
## 2       9.0   68.0
## 3       8.5   64.5
## 4       8.5   65.0
## 5      10.5   70.0
## 6       7.0   71.0
## 7       9.5   72.0
## 8       9.0   64.0
## 9      13.0   74.5
## 10      7.5   67.0
## 11     10.5   71.0
## 12      8.5   71.0
```

#B

```
males <- subset(df, ShoeSize>=9)
females <- subset(df, ShoeSize<9)

print(males)
```

```
##    ShoeSize Height
## 2       9.0   68.0
## 5      10.5   70.0
## 7       9.5   72.0
## 8       9.0   64.0
## 9      13.0   74.5
## 11     10.5   71.0
```

```
print(females)
```

```
##    ShoeSize Height
## 1       6.5   66.0
## 3       8.5   64.5
## 4       8.5   65.0
## 6       7.0   71.0
## 10      7.5   67.0
```

```
## 12      8.5   71.0
```

#C

```
mean_ShoeSize <- mean(ShoeSize)
cat("Mean ShoeSize:", mean_ShoeSize, "\n")
```

```
## Mean ShoeSize: 9
```

```
mean_Height <- mean(Height)
cat("Mean Height:", mean_Height, "\n")
```

```
## Mean Height: 68.66667
```

#D # For instance,Taller people often have bigger feet and therefore tend to wear larger shoe sizes. #However, this isn't a fixed rule, as factors like genetics and individual foot structure can #influence the relationship between height and shoe size.

#2

```
months <- c("March", "April", "January", "November", "January", "September", "October", "September", "N

factor_months_vector <- factor(months)
print(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
```

```
#While months will give you a count of each occurrence of each month, factor_months_vector is more help
```

#4

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

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

levels(factor_data) <- frequency

new_order_data <- factor_data
print(new_order_data)
```

```
## [1] 1 4 3
## Levels: 1 4 3
```

#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: 27
```

```
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")
}
```

```
## 27
```

#7

```
calculate_minimum_bills <- function(price) {
  bill_denominations <- c(50, 100, 200, 500, 1000)
  num_bills <- 0

  for (bill in rev(bill_denominations)) {
    while (price >= bill) {
      price <- price - bill
      num_bills <- num_bills + 1
    }
  }

  cat("Minimum number of bills needed: ", num_bills, "\n")
}

price_of_snack <- 500
if (price_of_snack %% 50 == 0) {
  calculate_minimum_bills(price_of_snack)
} else {
  cat("Price of snack is not divisible by 50 pesos.\n")
}
```

```
## Minimum number of bills needed:  1
```

#8

#A

```r
data <- 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)
)

print(data)
```

```
##    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

```r
for (i in 1:nrow(data)) {
  name <- data$Name[i]
  average_score <- (data$Grade1[i] + data$Grade2[i] + data$Grade3[i] + data$Grade4[i]) / 4

  if (average_score > 90) {
    cat(name, "'s average grade this semester is", round(average_score, 2), "\n")
  }
}
```

#c

```r
for (i in 1:4) {
  test_scores <- data[, i + 1]
  test_average <- sum(test_scores) / nrow(data)

  if (test_average < 80) {
    cat("The", i, "test was difficult.\n")
  }
}
```

```
## The 2 test was difficult.
```

#D

```r
for (i in 1:nrow(data)) {
  name <- data$Name[i]
  max_score <- max(data[i, -1])

  if (max_score > 90) {
    cat(name, "'s highest grade this semester is", max_score, "\n")
  }
}
```

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