

RWorksheet_Gerona#3b

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1. Create a data frame using the table below

a. Create a data frame

```
df <- data.frame(  
  Name = c("John", "Alice", "Peter", "Emma", "Mark"),  
  Siblings = c(4, 5, 3, 6, 5),  
  Sex = c("Male", "Female", "Male", "Female", "Male"),  
  Father_Occupation = c("Farmer", "Driver", "Farmer", "Others", "Farmer"),  
  Type_of_House = c("Wood", "Concrete", "Semi-Concrete", "Wood", "Concrete"))
```

b. Get structure and summary of the data

```
str(df)
```

```
## 'data.frame':    5 obs. of  5 variables:  
##  $ Name          : chr  "John" "Alice" "Peter" "Emma" ...  
##  $ Siblings       : num  4 5 3 6 5  
##  $ Sex            : chr  "Male" "Female" "Male" "Female" ...  
##  $ Father_Occupation: chr  "Farmer" "Driver" "Farmer" "Others" ...  
##  $ Type_of_House  : chr  "Wood" "Concrete" "Semi-Concrete" "Wood" ...
```

```
summary(df)
```

```
##      Name          Siblings      Sex          Father_Occupation  
## Length:5          Min.    :3.0   Length:5          Length:5  
## Class :character  1st Qu.:4.0   Class :character  Class :character  
## Mode  :character  Median :5.0   Mode  :character  Mode  :character  
##                               Mean  :4.6  
##                               3rd Qu.:5.0  
##                               Max.   :6.0  
## Type_of_House  
## Length:5  
## Class :character  
## Mode  :character  
##  
##  
##
```

c. Check if the mean number of siblings is 5

```
mean_siblings <- mean(df$Siblings)
mean_siblings == 5
```

```
## [1] FALSE
```

d. Extract the first two rows and all columns using the subsetting functions

```
first_two_rows <- df[1:2, ]
print(first_two_rows)
```

```
##   Name Siblings Sex Father_Occupation Type_of_House
## 1  John         4 Male           Farmer           Wood
## 2 Alice         5 Female          Driver       Concrete
```

e. Extract 3rd and 5th rows with 2nd and 4th columns

```
selected_rows_cols <- df[c(3, 5), c(2, 4)]
print(selected_rows_cols)
```

```
##   Siblings Father_Occupation
## 3         3           Farmer
## 5         5           Farmer
```

f. Select the variable “Type of Houses” then store the vector that results as types_houses

```
types_houses <- df$Type_of_House
```

g. Select only all male respondents whose father’s occupation was farmer

```
males_farmers <- df[df$Sex == "Male" & df$Father_Occupation == "Farmer", ]
print(males_farmers)
```

```
##   Name Siblings Sex Father_Occupation Type_of_House
## 1  John         4 Male           Farmer           Wood
## 3 Peter         3 Male           Farmer Semi-Concrete
## 5  Mark         5 Male           Farmer       Concrete
```

h. Select only all female respondents that have greater than or equal to 5 number of siblings attending schools

```
females_siblings <- df[df$Sex == "Female" & df$Siblings >= 5, ]
print(females_siblings)
```

```
##      Name Siblings    Sex Father_Occupation Type_of_House
## 2 Alice          5 Female           Driver      Concrete
## 4 Emma           6 Female           Others        Wood
```

2. Create an empty data frame and describe the result

```
df_empty <- data.frame(
  Ints = integer(),
  Doubles = double(),
  Characters = character(),
  Logicals = logical(),
  Factors = factor(),
  stringsAsFactors = FALSE)
```

Display the structure of the empty dataframe

```
print("Structure of the empty dataframe:")
```

```
## [1] "Structure of the empty dataframe:"
```

```
str(df_empty)
```

```
## 'data.frame':    0 obs. of  5 variables:
## $ Ints      : int
## $ Doubles   : num
## $ Characters: chr
## $ Logicals  : logi
## $ Factors   : Factor w/ 0 levels:
```

3. Save the data frame to CSV

```
write.csv(df, "HouseholdData.csv", row.names = FALSE)
```

a. Import the CSV file into the R environment

```
df_import <- read.csv("HouseholdData.csv")
```

b. Convert the Sex into factor using factor() function and change it into integer.

```
df_import$Sex <- factor(df_import$Sex, levels = c("Male", "Female"), labels = c(1, 2))
print(df_import)
```

```
##      Name Siblings Sex Father_Occupation Type_of_House
## 1 John          4  1           Farmer      Wood
## 2 Alice          5  2           Driver      Concrete
## 3 Peter          3  1           Farmer Semi-Concrete
## 4 Emma           6  2           Others        Wood
## 5 Mark           5  1           Farmer      Concrete
```

c. Convert the Type of Houses into factor and change it into integer.

```
df <- data.frame(Type_of_Houses = c("Wood", "Concrete", "Semi-Concretes", "Wood", "Concrete"))
df$Type_of_Houses <- factor(df$Type_of_Houses, levels = c("Wood", "Concrete", "Semi-Concretes"), labels = c("1", "2", "3"))
df$Type_of_Houses <- as.integer(df$Type_of_Houses)
print(df)
```

```
##   Type_of_Houses
## 1              1
## 2              2
## 3              3
## 4              1
## 5              2
```

d. Convert “Father__Occupation” to factor with Farmer = 1, Driver = 2, Others = 3

```
df_import$Father_Occupation <- factor(df_import$Father_Occupation, levels = c("Farmer", "Driver", "Others"), labels = c("1", "2", "3"))
print(df_import)
```

```
##   Name Siblings Sex Father_Occupation Type_of_House
## 1  John      4   1              1           Wood
## 2 Alice      5   2              2           Concrete
## 3 Peter      3   1              1 Semi-Concrete
## 4  Emma      6   2              3           Wood
## 5  Mark      5   1              1           Concrete
```

e. Select all Female respondents whose father is a Driver

```
female_driver <- subset(df_import, Sex == 2 & Father_Occupation == 2)
print(female_driver)
```

```
##   Name Siblings Sex Father_Occupation Type_of_House
## 2 Alice      5   2              2           Concrete
```

f. Select respondents with 5 or more siblings attending school

```
siblings_5_or_more <- subset(df_import, Siblings >= 5)
print(siblings_5_or_more)
```

```
##   Name Siblings Sex Father_Occupation Type_of_House
## 2 Alice      5   2              2           Concrete
## 4  Emma      6   2              3           Wood
## 5  Mark      5   1              1           Concrete
```

4. Interpret the graph

```
df <- data.frame(
  Name = c("Alice", "Bob", "Charlie", "David"),
  Siblings = c(2, 3, 1, 4))
```

```
barplot(df$Siblings, names.arg = df$Name,  
        main = "Number of Siblings per Respondent",  
        xlab = "Name", ylab = "Siblings",  
        col = "blue", las = 2)
```

