Exercise 2

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```
age    <- c(50, 21, 35, 45, 28, 31, 42, 33, 57, 62)
weight <- c(70.8, 67.9, 75.3, 61.9, 72.4, 69.9,
            63.5, 71.5, 73.2, 64.8)

firstName  <- c("Adam", "Eve", "John", "Mary",
                "Peter", "Paul", "Joanna", "Matthew",
                "David", "Sally")
secondName <- c("Jones", "Parker", "Evans", "Davis",
                "Baker","Daniels", "Edwards", "Smith",
                "Roberts", "Wilson")

consent <- c(TRUE, TRUE, FALSE, TRUE, FALSE,
             FALSE, FALSE, TRUE, FALSE, TRUE)

sex <- c("Male", "Female", "Male", "Female", "Male",
         "Male", "Female", "Male", "Male", "Female")

patients <- data.frame(First_Name = firstName,
                       Second_Name = secondName,
                       Full_Name = paste(firstName,
                                         secondName),
                       Sex = factor(sex),
                       Age = age,
                       Weight = weight,
                       Consent = consent,
                       stringsAsFactors = FALSE)
patients
```

```
##    First_Name Second_Name      Full_Name    Sex Age Weight Consent
## 1        Adam       Jones     Adam Jones   Male  50   70.8    TRUE
## 2         Eve      Parker     Eve Parker Female  21   67.9    TRUE
## 3        John       Evans     John Evans   Male  35   75.3   FALSE
## 4        Mary       Davis     Mary Davis Female  45   61.9    TRUE
## 5       Peter       Baker    Peter Baker   Male  28   72.4   FALSE
## 6        Paul     Daniels   Paul Daniels   Male  31   69.9   FALSE
## 7      Joanna     Edwards Joanna Edwards Female  42   63.5   FALSE
## 8     Matthew       Smith  Matthew Smith   Male  33   71.5    TRUE
## 9       David     Roberts  David Roberts   Male  57   73.2   FALSE
## 10      Sally      Wilson   Sally Wilson Female  62   64.8    TRUE
```

- Write R code to print the following subsets of the patients data frame
- The first and second rows, and the first and second colums

```
patients[1:2,1:2]
```

```
##   First_Name Second_Name
## 1       Adam       Jones
## 2        Eve      Parker
```

- All rows, but in the order 10 to 1.

```
patients[10:1,]
```

```
##    First_Name Second_Name      Full_Name    Sex Age Weight Consent
## 10      Sally      Wilson   Sally Wilson Female  62   64.8    TRUE
## 9       David     Roberts  David Roberts   Male  57   73.2   FALSE
## 8     Matthew       Smith  Matthew Smith   Male  33   71.5    TRUE
## 7      Joanna     Edwards Joanna Edwards Female  42   63.5   FALSE
## 6        Paul     Daniels   Paul Daniels   Male  31   69.9   FALSE
## 5       Peter       Baker    Peter Baker   Male  28   72.4   FALSE
## 4        Mary       Davis     Mary Davis Female  45   61.9    TRUE
## 3        John       Evans     John Evans   Male  35   75.3   FALSE
## 2         Eve      Parker     Eve Parker Female  21   67.9    TRUE
## 1        Adam       Jones     Adam Jones   Male  50   70.8    TRUE
```

- All rows except the first row, all columns

```
patients[-1,]
```

```
##    First_Name Second_Name      Full_Name    Sex Age Weight Consent
## 2         Eve      Parker     Eve Parker Female  21   67.9    TRUE
## 3        John       Evans     John Evans   Male  35   75.3   FALSE
## 4        Mary       Davis     Mary Davis Female  45   61.9    TRUE
## 5       Peter       Baker    Peter Baker   Male  28   72.4   FALSE
## 6        Paul     Daniels   Paul Daniels   Male  31   69.9   FALSE
## 7      Joanna     Edwards Joanna Edwards Female  42   63.5   FALSE
## 8     Matthew       Smith  Matthew Smith   Male  33   71.5    TRUE
## 9       David     Roberts  David Roberts   Male  57   73.2   FALSE
## 10      Sally      Wilson   Sally Wilson Female  62   64.8    TRUE
```

- Use logical indexing to select the following patients from the data frame:
  1. Patients under 40
  2. Patients who give consent to share their data
  3. Men who weigh as much or more than the average European male (70.8 kg)

```
patients[patients$Age < 40,]
```

```
##   First_Name Second_Name     Full_Name    Sex Age Weight Consent
## 2        Eve      Parker    Eve Parker Female  21   67.9    TRUE
## 3       John       Evans    John Evans   Male  35   75.3   FALSE
## 5      Peter       Baker   Peter Baker   Male  28   72.4   FALSE
## 6       Paul     Daniels  Paul Daniels   Male  31   69.9   FALSE
## 8    Matthew       Smith Matthew Smith   Male  33   71.5    TRUE
```

```
patients[patients$Consent,]
```

```
##    First_Name Second_Name     Full_Name    Sex Age Weight Consent
## 1        Adam       Jones    Adam Jones   Male  50   70.8    TRUE
## 2         Eve      Parker    Eve Parker Female  21   67.9    TRUE
## 4        Mary       Davis    Mary Davis Female  45   61.9    TRUE
## 8     Matthew       Smith Matthew Smith   Male  33   71.5    TRUE
## 10      Sally      Wilson  Sally Wilson Female  62   64.8    TRUE
```

```
patients[patients$Sex == "Male" & patients$Weight >= 70.8,]
```

```
##   First_Name Second_Name     Full_Name  Sex Age Weight Consent
## 1       Adam       Jones    Adam Jones Male  50   70.8    TRUE
## 3       John       Evans    John Evans Male  35   75.3   FALSE
```

```
## 5      Peter       Baker   Peter Baker Male  28   72.4   FALSE
## 8    Matthew       Smith Matthew Smith Male  33   71.5    TRUE
## 9      David     Roberts David Roberts Male  57   73.2   FALSE
```