Çözümler — Dataframe'ler (Base R)

İndeksleme ▪ Filtreleme ▪ NA ▪ Sıralama ▪ Sütun İşlemleri

Setup

```
data(iris)
set.seed(42)
```

E1 — Hızlı İnceleme

Açıklama: Yapı, boyut ve isimler üzerinden tabloyu tanıyoruz.

```
str(iris)
```

```
'data.frame':   150 obs. of  5 variables:
 $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
 $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
 $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
 $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
 $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

```
head(iris, 6)
```

```
  Sepal.Length Sepal.Width Petal.Length Petal.Width Species
1          5.1         3.5          1.4         0.2  setosa
2          4.9         3.0          1.4         0.2  setosa
3          4.7         3.2          1.3         0.2  setosa
4          4.6         3.1          1.5         0.2  setosa
5          5.0         3.6          1.4         0.2  setosa
6          5.4         3.9          1.7         0.4  setosa
```

1

```
dim(iris); nrow(iris); ncol(iris)
```

```
[1] 150    5
```

```
[1] 150
```

```
[1] 5
```

```
names(iris)
```

```
[1] "Sepal.Length" "Sepal.Width"  "Petal.Length" "Petal.Width"  "Species"
```

E2 — Sütun Seçimi (drop)

```
# 1) Vektör
vec <- iris[, "Sepal.Length"]
is.vector(vec)
```

```
[1] TRUE
```

```
# 2) Tablo (drop = FALSE)
tab <- iris[, "Sepal.Length", drop = FALSE]
is.data.frame(tab); head(tab)
```

```
[1] TRUE
```

```
  Sepal.Length
1          5.1
2          4.9
3          4.7
4          4.6
5          5.0
6          5.4
```

E3 — İsim/konum/negatif

```r
# İsimle
iris[1:8, c("Sepal.Length","Species")]
```

```
  Sepal.Length Species
1          5.1  setosa
2          4.9  setosa
3          4.7  setosa
4          4.6  setosa
5          5.0  setosa
6          5.4  setosa
7          4.6  setosa
8          5.0  setosa
```

```r
# Konumla (Sepal.Length=1, Species=5)
iris[1:8, c(1,5)]
```

```
  Sepal.Length Species
1          5.1  setosa
2          4.9  setosa
3          4.7  setosa
4          4.6  setosa
5          5.0  setosa
6          5.4  setosa
7          4.6  setosa
8          5.0  setosa
```

```r
# Negatif (Sepal.Width hariç; Sepal.Width=2)
iris[1:8, -2]
```

```
  Sepal.Length Petal.Length Petal.Width Species
1          5.1          1.4         0.2  setosa
2          4.9          1.4         0.2  setosa
3          4.7          1.3         0.2  setosa
4          4.6          1.5         0.2  setosa
5          5.0          1.4         0.2  setosa
6          5.4          1.7         0.4  setosa
7          4.6          1.4         0.3  setosa
8          5.0          1.5         0.2  setosa
```

E4 — Koşullu filtreleme

```r
# a) Tek koşul
head(iris[ iris$Species == "setosa",
          c("Sepal.Length","Species") ], 6)
```

```
  Sepal.Length Species
1          5.1  setosa
2          4.9  setosa
3          4.7  setosa
4          4.6  setosa
5          5.0  setosa
6          5.4  setosa
```

```r
# b) Çoklu koşul
iris[ iris$Species != "setosa" & iris$Sepal.Length > 7,
      c("Sepal.Length","Species") ]
```

```
    Sepal.Length   Species
103          7.1 virginica
106          7.6 virginica
108          7.3 virginica
110          7.2 virginica
118          7.7 virginica
119          7.7 virginica
123          7.7 virginica
126          7.2 virginica
130          7.2 virginica
131          7.4 virginica
132          7.9 virginica
136          7.7 virginica
```

```r
# c) %in% ile iki tür
sel <- iris[ iris$Species %in% c("setosa","versicolor"), ]
head(sel)
```

```
  Sepal.Length Sepal.Width Petal.Length Petal.Width Species
1          5.1         3.5          1.4         0.2  setosa
2          4.9         3.0          1.4         0.2  setosa
3          4.7         3.2          1.3         0.2  setosa
4          4.6         3.1          1.5         0.2  setosa
5          5.0         3.6          1.4         0.2  setosa
6          5.4         3.9          1.7         0.4  setosa
```

E5 — which() ile seçim

```r
rows <- which(iris$Sepal.Length > 7 & iris$Species != "setosa")
iris[ rows, c("Sepal.Length","Species") ]
```

```
    Sepal.Length   Species
103          7.1 virginica
106          7.6 virginica
108          7.3 virginica
110          7.2 virginica
118          7.7 virginica
119          7.7 virginica
123          7.7 virginica
126          7.2 virginica
130          7.2 virginica
131          7.4 virginica
132          7.9 virginica
136          7.7 virginica
```

E6 — NA Yönetimi

```r
na_df <- data.frame(
  id  = 1:6,
  grp = c("A","A","B","B","B","C"),
  x   = c(10, NA, 13, 9, 12, NA),
  y   = c(5, 7, NA, 4, 6, 3)
```

```
)

# is.na: mantıksal vektör
is.na(na_df$x)
```

```
[1] FALSE  TRUE FALSE FALSE FALSE  TRUE
```

```
# Tam satırlar
na_df[ complete.cases(na_df), ]
```

```
  id grp  x y
1  1   A 10 5
4  4   B  9 4
5  5   B 12 6
```

```
# na.omit: NA içeren satırları düşürür
na_omit <- na.omit(na_df)
na_omit
```

```
  id grp  x y
1  1   A 10 5
4  4   B  9 4
5  5   B 12 6
```

```
# Basit doldurma: x için ortalama ile (eğitim amaçlı)
x_mean <- mean(na_df$x, na.rm = TRUE)
na_fill <- na_df
na_fill$x[ is.na(na_fill$x) ] <- x_mean
na_fill
```

```
  id grp  x  y
1  1   A 10  5
2  2   A 11  7
3  3   B 13 NA
4  4   B  9  4
5  5   B 12  6
6  6   C 11  3
```

E7 — Sütun işlemleri

```r
mini <- data.frame(
  id  = 1:5,
  grp = c("A","A","B","B","C"),
  x   = c(10, NA, 13, 9, 12)
)

# Ekleme
mini$ratio <- mini$x / 2

# Yeniden adlandırma
names(mini)[ names(mini) == "x" ] <- "x_val"

# Sıra değiştirme
mini <- mini[c("id","grp","x_val","ratio")]

# Silme
mini$ratio <- NULL

mini
```

```
  id grp x_val
1  1   A    10
2  2   A    NA
3  3   B    13
4  4   B     9
5  5   C    12
```

E8 — Sıralama (order)

```r
# a) Her ikisi artan
ord1 <- order(iris$Sepal.Length, iris$Species)
head( iris[ord1, c("Sepal.Length","Species")], 10 )
```

```
   Sepal.Length Species
```

```
14          4.3  setosa
9           4.4  setosa
39          4.4  setosa
43          4.4  setosa
42          4.5  setosa
4           4.6  setosa
7           4.6  setosa
23          4.6  setosa
48          4.6  setosa
3           4.7  setosa
```

```r
# b) Sepal.Length azalan, Species artan
ord2 <- order(-iris$Sepal.Length, iris$Species)
head( iris[ord2, c("Sepal.Length","Species")], 10 )
```

```
    Sepal.Length    Species
132          7.9  virginica
118          7.7  virginica
119          7.7  virginica
123          7.7  virginica
136          7.7  virginica
106          7.6  virginica
131          7.4  virginica
108          7.3  virginica
110          7.2  virginica
126          7.2  virginica
```

```r
# c) Her ikisi azalan (karakter/faktör için xtfrm)
ord3 <- order(-iris$Sepal.Length, -xtfrm(iris$Species))
head( iris[ord3, c("Sepal.Length","Species")], 10 )
```

```
    Sepal.Length    Species
132          7.9  virginica
118          7.7  virginica
119          7.7  virginica
123          7.7  virginica
136          7.7  virginica
106          7.6  virginica
131          7.4  virginica
108          7.3  virginica
110          7.2  virginica
126          7.2  virginica
```