

# Ejercicio-1.R

Usuario

2025-08-21

```
# JAIRO ALBERTO LEAL GOMEZ
# 21/08/2025
# SEMANA 2

# EJERCICIO 1
```

```
temperatura <- read.csv("C:/JAIRO LEAL/Posgrado_Estadistica_2025/temperatura.csv")
temperatura
```

##	Año	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic
## 1	2000	22.5	18.9	19.4	14.0	16.0	22.0	15.0	13.4	18.8	12.4	22.9	21.1
## 2	2001	19.3	20.3	18.5	24.1	17.5	29.4	17.2	22.6	16.2	17.8	25.7	20.2
## 3	2002	23.2	12.9	12.6	26.8	24.6	20.9	20.5	21.5	15.6	24.3	24.8	16.7
## 4	2003	27.6	17.3	16.4	19.6	21.6	21.3	17.5	21.3	15.9	21.1	23.3	30.7
## 5	2004	18.8	20.6	17.7	25.0	17.4	19.6	12.2	21.7	19.6	13.8	18.4	23.2
## 6	2005	18.8	14.2	25.3	21.8	22.6	10.4	20.3	16.6	21.7	20.9	23.8	9.9
## 7	2006	27.9	21.9	21.7	16.8	20.5	19.9	14.7	21.2	21.4	21.9	16.1	20.9
## 8	2007	23.8	17.0	11.2	21.8	24.8	20.3	22.4	21.5	24.1	15.6	18.8	16.7
## 9	2008	17.7	18.5	21.6	27.7	16.5	32.3	15.4	16.4	20.1	20.8	17.6	24.3
## 10	2009	22.7	17.0	18.1	19.8	18.4	19.0	27.7	29.3	27.3	20.3	20.4	16.0
## 11	2010	17.7	29.3	16.6	27.8	18.0	21.5	16.1	22.4	18.7	14.3	31.6	19.4
## 12	2011	17.7	19.9	23.1	6.9	12.7	19.8	18.4	14.0	33.6	21.8	10.7	22.5
## 13	2012	21.2	14.7	25.2	24.1	21.5	14.2	24.1	23.3	23.1	22.8	23.4	24.3
## 14	2013	10.4	24.1	24.7	20.4	21.3	25.7	13.8	15.1	15.7	25.4	11.9	14.0
## 15	2014	11.4	13.9	15.8	18.5	20.0	23.8	21.1	23.9	14.6	25.3	17.6	18.3
## 16	2015	17.2	21.0	18.5	20.5	18.8	24.0	26.5	25.8	22.4	13.1	25.4	17.6
## 17	2016	14.9	10.2	21.7	10.1	12.9	15.5	12.0	15.9	18.9	15.3	20.3	16.7
## 18	2017	21.6	13.4	24.9	18.9	17.9	27.0	20.9	24.8	23.6	22.6	14.6	28.8
## 19	2018	15.5	21.0	17.6	21.8	18.3	13.0	21.3	22.1	22.4	22.6	16.4	22.0
## 20	2019	12.9	23.7	19.1	27.4	16.0	22.9	23.9	24.1	19.6	22.6	23.4	13.7
## 21	2020	27.3	20.9	14.5	17.4	19.2	31.0	13.8	29.5	15.8	39.3	16.3	24.6

```
temp <- temperatura
```

```
View(temp)
head(temp) #primeras 6 filas
```

##	Año	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic
## 1	2000	22.5	18.9	19.4	14.0	16.0	22.0	15.0	13.4	18.8	12.4	22.9	21.1
## 2	2001	19.3	20.3	18.5	24.1	17.5	29.4	17.2	22.6	16.2	17.8	25.7	20.2
## 3	2002	23.2	12.9	12.6	26.8	24.6	20.9	20.5	21.5	15.6	24.3	24.8	16.7

```
## 4 2003 27.6 17.3 16.4 19.6 21.6 21.3 17.5 21.3 15.9 21.1 23.3 30.7
## 5 2004 18.8 20.6 17.7 25.0 17.4 19.6 12.2 21.7 19.6 13.8 18.4 23.2
## 6 2005 18.8 14.2 25.3 21.8 22.6 10.4 20.3 16.6 21.7 20.9 23.8 9.9
```

```
dim(temp) #numero de filas y columnas
```

```
## [1] 21 13
```

```
names(temp) #nombre de las columnas
```

```
## [1] "Año" "Ene" "Feb" "Mar" "Abr" "May" "Jun" "Jul" "Ago" "Sep" "Oct" "Nov"
## [13] "Dic"
```

```
str(temp) #ver estructura del dataframe 21 obs. of 13 variables
```

```
## 'data.frame': 21 obs. of 13 variables:
## $ Año: int 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 ...
## $ Ene: num 22.5 19.3 23.2 27.6 18.8 18.8 27.9 23.8 17.7 22.7 ...
## $ Feb: num 18.9 20.3 12.9 17.3 20.6 14.2 21.9 17 18.5 17 ...
## $ Mar: num 19.4 18.5 12.6 16.4 17.7 25.3 21.7 11.2 21.6 18.1 ...
## $ Abr: num 14 24.1 26.8 19.6 25 21.8 16.8 21.8 27.7 19.8 ...
## $ May: num 16 17.5 24.6 21.6 17.4 22.6 20.5 24.8 16.5 18.4 ...
## $ Jun: num 22 29.4 20.9 21.3 19.6 10.4 19.9 20.3 32.3 19 ...
## $ Jul: num 15 17.2 20.5 17.5 12.2 20.3 14.7 22.4 15.4 27.7 ...
## $ Ago: num 13.4 22.6 21.5 21.3 21.7 16.6 21.2 21.5 16.4 29.3 ...
## $ Sep: num 18.8 16.2 15.6 15.9 19.6 21.7 21.4 24.1 20.1 27.3 ...
## $ Oct: num 12.4 17.8 24.3 21.1 13.8 20.9 21.9 15.6 20.8 20.3 ...
## $ Nov: num 22.9 25.7 24.8 23.3 18.4 23.8 16.1 18.8 17.6 20.4 ...
## $ Dic: num 21.1 20.2 16.7 30.7 23.2 9.9 20.9 16.7 24.3 16 ...
```

```
summary(temp) #resumen estadístico
```

```
##      Año      Ene      Feb      Mar      Abr
## Min.   :2000   Min.   :10.40   Min.   :10.2   Min.   :11.20   Min.   : 6.90
## 1st Qu.:2005   1st Qu.:17.20   1st Qu.:14.7   1st Qu.:16.60   1st Qu.:18.50
## Median :2010   Median :18.80   Median :18.9   Median :18.50   Median :20.50
## Mean   :2010   Mean   :19.53   Mean   :18.6   Mean   :19.25   Mean   :20.53
## 3rd Qu.:2015   3rd Qu.:22.70   3rd Qu.:21.0   3rd Qu.:21.70   3rd Qu.:24.10
## Max.    :2020   Max.    :27.90   Max.    :29.3   Max.    :25.30   Max.    :27.80
##      May      Jun      Jul      Ago      Sep
## Min.   :12.70   Min.   :10.4   Min.   :12.0   Min.   :13.40   Min.   :14.60
## 1st Qu.:17.40   1st Qu.:19.6   1st Qu.:15.0   1st Qu.:16.60   1st Qu.:16.20
## Median :18.40   Median :21.3   Median :18.4   Median :21.70   Median :19.60
## Mean   :18.88   Mean   :21.6   Mean   :18.8   Mean   :21.26   Mean   :20.43
## 3rd Qu.:21.30   3rd Qu.:24.0   3rd Qu.:21.3   3rd Qu.:23.90   3rd Qu.:22.40
## Max.    :24.80   Max.    :32.3   Max.    :27.7   Max.    :29.50   Max.    :33.60
##      Oct      Nov      Dic
## Min.   :12.40   Min.   :10.70   Min.   : 9.90
## 1st Qu.:15.60   1st Qu.:16.40   1st Qu.:16.70
## Median :21.10   Median :20.30   Median :20.20
## Mean   :20.67   Mean   :20.16   Mean   :20.08
## 3rd Qu.:22.60   3rd Qu.:23.40   3rd Qu.:23.20
## Max.    :39.30   Max.    :31.60   Max.    :30.70
```

```
names(temp) <- c("Anual", "Ene", "Feb", "Mar", "Abr", "May", "Jun", "Jul", "Ago", "Sep", "Oct", "Nov", "Dic", "media_anual")
temp$media_anual <- rowMeans(temp[,2:13])
#la coma para columnas es antes de los numeros, la coma despues de los numeros son para seleccionar fila
#seleccionar temp[,2:13] y en consola aparece las columnas seleccionadas

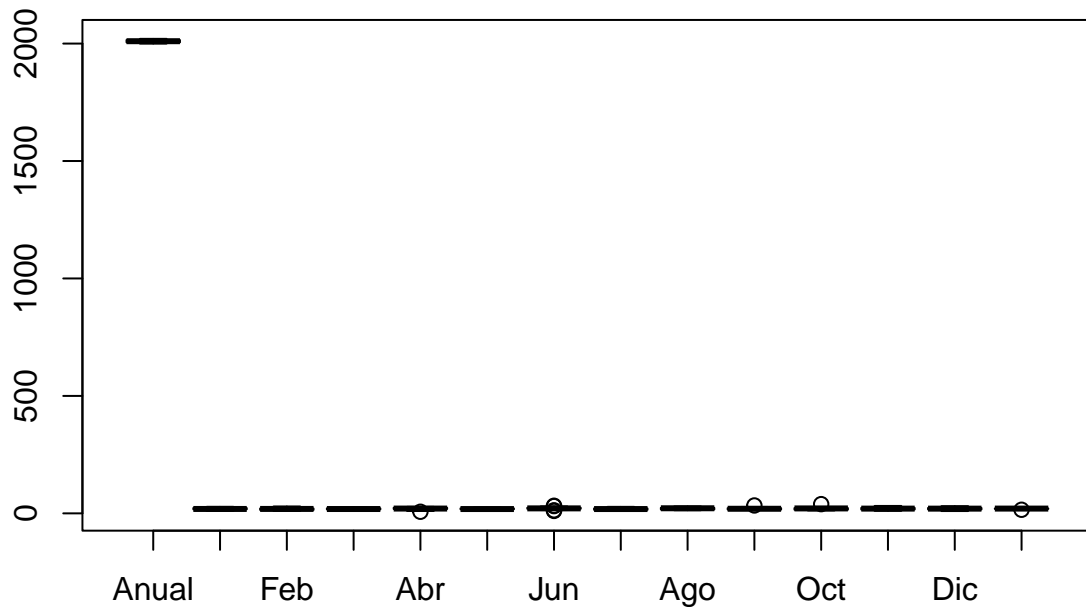
head(temp)
```

```
##   Anual  Ene  Feb  Mar  Abr  May  Jun  Jul  Ago  Sep  Oct  Nov  Dic  media_anual
## 1  2000 22.5 18.9 19.4 14.0 16.0 22.0 15.0 13.4 18.8 12.4 22.9 21.1    18.03333
## 2  2001 19.3 20.3 18.5 24.1 17.5 29.4 17.2 22.6 16.2 17.8 25.7 20.2    20.73333
## 3  2002 23.2 12.9 12.6 26.8 24.6 20.9 20.5 21.5 15.6 24.3 24.8 16.7    20.36667
## 4  2003 27.6 17.3 16.4 19.6 21.6 21.3 17.5 21.3 15.9 21.1 23.3 30.7    21.13333
## 5  2004 18.8 20.6 17.7 25.0 17.4 19.6 12.2 21.7 19.6 13.8 18.4 23.2    19.00000
## 6  2005 18.8 14.2 25.3 21.8 22.6 10.4 20.3 16.6 21.7 20.9 23.8  9.9     18.85833
```

```
# SEMANA 3

# Graficar con Boxplot

boxplot(temp) # no funciona asi
```



```
temp1 <- temp[,2:13] # dejamos solo las columnas de los meses desde ene-dic
```

```

colores <- c("paleturquoise3", "paleturquoise3", "paleturquoise3",
             "seagreen3", "seagreen3", "seagreen3",
             "sienna2", "sienna2", "sienna2",
             "violetred2", "violetred2", "violetred2")

boxplot(temp1,
        main= "Comportamiento Temperatura (2000-2020)",
        xlab = "Mes",
        ylab = "Temperatura (°C)",
        col= colores,
        border = "black")

```

