

Tarea del día 16 de mayo de 2024

Capturas del trabajo en R:

```

> load("E:/Bioinformatica/clase 1605/.RData")
> cars <- data.frame(mtcars)
> for (i in seq_len(ncol(cars))) {
+   current_ncol <- cars[,i]
+ }
> promedio_cars <- colMeans(cars)
>
> print(promedio_cars)
      mpg      cyl      disp      hp      drat      wt      qsec
20.090625  6.187500 230.721875 146.687500  3.596563  3.217250 17.848750
      vs      am      gear      carb
 0.437500  0.406250  3.687500  2.812500
>
> data <- as.matrix(mtcars)
> heatmap(data)
> heatmap(data, scale="column", col = cm.colors(256))
> library(tidyverse)
Error in library(tidyverse) : there is no package called 'tidyverse'
> library(tidyverse)
Error in library(tidyverse) : there is no package called 'tidyverse'

```

```

The downloaded source packages are in
      'C:\Users\mildr\AppData\Local\Temp\RtmpC63VUH\downloaded_packages'
> library(tidyverse)
— Attaching core tidyverse packages ————— tidyverse 2.0.0 —
✓ dplyr      1.1.4      ✓ readr      2.1.5
✓ forcats    1.0.0      ✓ stringr    1.5.1
✓ ggplot2    3.5.1      ✓ tibble     3.2.1
✓ lubridate  1.9.3      ✓ tidyr      1.3.1
✓ purrr      1.0.2
— Conflicts ————— tidyverse_conflicts() —
✗ dplyr::filter() masks stats::filter()
✗ dplyr::lag()     masks stats::lag()
i Use the conflicted package to force all conflicts to become errors
> library(tidyverse)
> PCA_cars<-prcomp(mtcars, scale=TRUE)
> PCA_cars
Standard deviations (1, ..., p=11):
[1] 2.5706809 1.6280258 0.7919579 0.5192277 0.4727061 0.4599958 0.3677798 0.3505730
[9] 0.2775728 0.2281128 0.1484736

```

Rotation (n x k) = (11 x 11):

	PC1	PC2	PC3	PC4	PC5	PC6
mpg	-0.3625305	0.01612440	-0.22574419	-0.022540255	-0.10284468	-0.10879743
cyl	0.3739160	0.04374371	-0.17531118	-0.002591838	-0.05848381	0.16855369
disp	0.3681852	-0.04932413	-0.06148414	0.256607885	-0.39399530	-0.33616451
hp	0.3300569	0.24878402	0.14001476	-0.067676157	-0.54004744	0.07143563
drat	-0.2941514	0.27469408	0.16118879	0.854828743	-0.07732727	0.24449705
wt	0.3461033	-0.14303825	0.34181851	0.245899314	0.07502912	-0.46493964
qsec	-0.2004563	-0.46337482	0.40316904	0.068076532	0.16466591	-0.33048032
vs	-0.3065113	-0.23164699	0.42881517	-0.214848616	-0.59953955	0.19401702
am	-0.2349429	0.42941765	-0.20576657	-0.030462908	-0.08978128	-0.57081745
gear	-0.2069162	0.46234863	0.28977993	-0.264690521	-0.04832960	-0.24356284
carb	0.2140177	0.41357106	0.52854459	-0.126789179	0.36131875	0.18352168

	PC7	PC8	PC9	PC10	PC11
mpg	0.367723810	0.754091423	-0.235701617	-0.13928524	-0.124895628
cyl	0.057277736	0.230824925	-0.054035270	0.84641949	-0.140695441
disp	0.214303077	-0.001142134	-0.198427848	-0.04937979	0.660606481
hp	-0.001495989	0.222358441	0.575830072	-0.24782351	-0.256492062
drat	0.021119857	-0.032193501	0.046901228	0.10149369	-0.039530246
wt	-0.020668302	0.008571929	-0.359498251	-0.09439426	-0.567448697
qsec	0.050010522	0.231840021	0.528377185	0.27067295	0.181361780
vs	-0.265780836	-0.025935128	-0.358582624	0.15903909	0.008414634
am	-0.587305101	0.059746952	0.047403982	0.17778541	0.029823537
gear	0.605097617	-0.336150240	0.001735039	0.21382515	-0.053507085
carb	-0.174603192	0.395629107	-0.170640677	-0.07225950	0.319594676

```
> library(stats)
> pca_mtcars <- prcomp(mtcars, scale. = TRUE)
> summary(pca_mtcars)
```

Importance of components:

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8
Standard deviation	2.5707	1.6280	0.79196	0.51923	0.47271	0.46000	0.3678	0.35057
Proportion of Variance	0.6008	0.2409	0.05702	0.02451	0.02031	0.01924	0.0123	0.01117
Cumulative Proportion	0.6008	0.8417	0.89873	0.92324	0.94356	0.96279	0.9751	0.98626

	PC9	PC10	PC11
Standard deviation	0.2776	0.22811	0.1485
Proportion of Variance	0.0070	0.00473	0.0020
Cumulative Proportion	0.9933	0.99800	1.0000

```
> cargass <- pca_mtcars$rotation
> coordenadas <- pca_mtcars$x
> print("Cargas de los componentes principales:")
[1] "Cargas de los componentes principales:"
> print(cargass)
```

	PC1	PC2	PC3	PC4	PC5	PC6
mpg	-0.3625305	0.01612440	-0.22574419	-0.022540255	-0.10284468	-0.10879743
cyl	0.3739160	0.04374371	-0.17531118	-0.002591838	-0.05848381	0.16855369
disp	0.3681852	-0.04932413	-0.06148414	0.256607885	-0.39399530	-0.33616451
hp	0.3300569	0.24878402	0.14001476	-0.067676157	-0.54004744	0.07143563
drat	-0.2941514	0.27469408	0.16118879	0.854828743	-0.07732727	0.24449705
wt	0.3461033	-0.14303825	0.34181851	0.245899314	0.07502912	-0.46493964
qsec	-0.2004563	-0.46337482	0.40316904	0.068076532	0.16466591	-0.33048032
vs	-0.3065113	-0.23164699	0.42881517	-0.214848616	-0.59953955	0.19401702
am	-0.2349429	0.42941765	-0.20576657	-0.030462908	-0.08978128	-0.57081745
gear	-0.2069162	0.46234863	0.28977993	-0.264690521	-0.04832960	-0.24356284
carb	0.2140177	0.41357106	0.52854459	-0.126789179	0.36131875	0.18352168

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```
carb 0.2140177 0.41357106 0.52854459 -0.126789179 0.36131875 0.18352168
      PC7      PC8      PC9      PC10      PC11
mpg 0.367723810 0.754091423 -0.235701617 -0.13928524 -0.124895628
cyl 0.057277736 0.230824925 -0.054035270 0.84641949 -0.140695441
disp 0.214303077 -0.001142134 -0.198427848 -0.04937979 0.660606481
hp -0.001495989 0.222358441 0.575830072 -0.24782351 -0.256492062
drat 0.021119857 -0.032193501 0.046901228 0.10149369 -0.039530246
wt -0.020668302 0.008571929 -0.359498251 -0.09439426 -0.567448697
qsec 0.050010522 0.231840021 0.528377185 0.27067295 0.181361780
vs -0.265780836 -0.025935128 -0.358582624 0.15903909 0.008414634
am -0.587305101 0.059746952 0.047403982 0.17778541 0.029823537
gear 0.605097617 -0.336150240 0.001735039 0.21382515 -0.053507085
carb -0.174603192 0.395629107 -0.170640677 -0.07225950 0.319594676
```

```
> print("Coordenadas de los componentes principales:")
```

```
[1] "Coordenadas de los componentes principales:"
```

```
> print(coordenadas)
```

	PC1	PC2	PC3	PC4	PC5
Mazda RX4	-0.6468627420	1.7081142	-0.5917309	0.113702214	0.945523363
Mazda RX4 Wag	-0.6194831460	1.5256219	-0.3763013	0.199121210	1.016680740
Datsun 710	-2.7356242748	-0.1441501	-0.2374391	-0.245215450	-0.398762288
Hornet 4 Drive	-0.3068606268	-2.3258038	-0.1336213	-0.503800355	-0.549208936

	PC1	PC2	PC3	PC4	PC5
Mazda RX4	-0.6468627420	1.7081142	-0.5917309	0.113702214	0.945523363
Mazda RX4 Wag	-0.6194831460	1.5256219	-0.3763013	0.199121210	1.016680740
Datsun 710	-2.7356242748	-0.1441501	-0.2374391	-0.245215450	-0.398762288
Hornet 4 Drive	-0.3068606268	-2.3258038	-0.1336213	-0.503800355	-0.549208936
Hornet Sportabout	1.9433926844	-0.7425211	-1.1165366	0.074461963	-0.207515698
Valiant	-0.0552534228	-2.7421229	0.1612456	-0.975167425	-0.211665375
Duster 360	2.9553851233	0.3296133	-0.3570461	-0.051529216	-0.343847875
Merc 240D	-2.0229593244	-1.4421056	0.9290295	-0.142129082	0.316651386
Merc 230	-2.2513839535	-1.9522879	1.7689364	0.287210957	0.333682355
Merc 280	-0.5180912217	-0.1594610	1.4692603	0.066263362	0.069624161
Merc 280C	-0.5011860079	-0.3187934	1.6570701	0.094357222	0.148803650
Merc 450SE	2.2124096339	-0.6727099	-0.3694707	-0.129797905	0.378611141
Merc 450SL	2.0155715693	-0.6724606	-0.4768341	-0.210991001	0.355611763
Merc 450SLC	2.1147047372	-0.7891129	-0.2904620	-0.175332868	0.432140303
Cadillac Fleetwood	3.8383725118	-0.8149087	0.6370972	0.290505877	0.048245223
Lincoln Continental	3.8918495626	-0.7218314	0.7092612	0.405336898	-0.003899176
Chrysler Imperial	3.5363862158	-0.4145024	0.5402468	0.665665306	-0.208027112
Fiat 128	-3.7955510831	-0.2920783	-0.4161681	0.055191058	-0.219981109
Honda Civic	-4.1870356784	0.6775721	-0.2035831	1.167526096	-0.097674091
Tovota Corolla	-4.1675359344	-0.2748890	-0.4589124	0.183313028	-0.222152228

```
> mtcars
```

	mpg	cyl	dis	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2

```
> view(mean_cars)
> vector1 <- df$mpg
Error in df$mpg : objeto de tipo 'closure' no es subconjunto
> CORmtcars <- a_caracteres(df = mtcars, columnas = 1:3)
+
> mtcars <- a_caracteres(df = mtcars, columnas = 1:3)
Error in a_caracteres(df = mtcars, columnas = 1:3) :
  no se pudo encontrar la función "a_caracteres"
> mtcars <- a_cero(df = mtcars, columnas = 1:3)
Error in a_cero(df = mtcars, columnas = 1:3) :
  no se pudo encontrar la función "a_cero"
> mtcars <- a_nas(df = mtcars, columnas = 1:3)
Error in a_nas(df = mtcars, columnas = 1:3) :
  no se pudo encontrar la función "a_nas"
> mtcars <- a_numeros(df = mtcars, columnas = 1:3)
Error in a_numeros(df = mtcars, columnas = 1:3) :
  no se pudo encontrar la función "a_numeros"
> mtcars <- formatear_num(df = mtcars, columnas = 1:3)
Error in formatear_num(df = mtcars, columnas = 1:3) :
  no se pudo encontrar la función "formatear_num"
> stringr
```

```
> CORmtcars <- apply(df = mtcars, columnas = 1:3)
Error in apply(df = mtcars, columnas = 1:3) :
  el argumento "FUN" está ausente, sin valor por omisión
> CORmtcars
Error: objeto 'CORmtcars' no encontrado
> CORmtcars <- apply(df = mtcars, columnas = 1:3)
Error in apply(df = mtcars, columnas = 1:3) :
  el argumento "FUN" está ausente, sin valor por omisión
> CORmtcars <- a_character(df = mtcars, columns = 1:3)
Error in a_character(df = mtcars, columns = 1:3) :
  no se pudo encontrar la función "a_character"
> CORmtcars <- a_chars(df = mtcars, columns = c("hp", "wt", "am"))
Error in a_chars(df = mtcars, columns = c("hp", "wt", "am")) :
  no se pudo encontrar la función "a_chars"
> mtcars <- a_characters(df = mtcars, columns = c("hp", "wt", "am"))
Error in a_characters(df = mtcars, columns = c("hp", "wt", "am")) :
  no se pudo encontrar la función "a_characters"
> a_caracteres <- function(df, columnas) {
+   for (col in columnas) {
+     df[[col]] <- as.character(df[[col]])
+   }
+ }


---


> a_caracteres <- function(df, columnas) {
+   for (col in columnas) {
+     df[[col]] <- as.character(df[[col]])
+   }
+   return(df)
+ }
>
> mtcars <- a_caracteres(df = mtcars, columnas = c("hp", "wt", "am"))
> CORmtcars <- a_caracteres(df = mtcars, columnas = c("hp", "wt", "am"))
> pairs(hp ~ wt)
Error in eval(predvars, data, env) : objeto 'hp' no encontrado
> correlation_matrix <- cor(mtcars[, c("hp", "wt", "am")])
Error in cor(mtcars[, c("hp", "wt", "am")]) : 'x' must be numeric
> a_caracteres <- function(df, columnas) {
+   for (col in columnas) {
+     df[[col]] <- as.numeric(df[[col]])
+   }
+   return(df)
+ }
>
```

```

> a_num <- function(df, columnas) {
+   for (col in columnas) {
+     df[[col]] <- as.numeric(df[[col]])
+   }
+   return(df)
+ }
>
> mtcars <- a_num(df = mtcars, columnas = c("hp", "wt", "am"))
>
> CORmtcars <- a_num(df = mtcars, columnas = c("hp", "wt", "am"))
>
> COR <- cor(mtcars[, c("hp", "wt", "am")])
> library(corrplot)
Error in library(corrplot) : there is no package called 'corrplot'
> install.packages(corrplot)
Error in install.packages : objeto 'corrplot' no encontrado
> install.packages('corrplot')
WARNING: Rtools is required to build R packages but is not currently installed. Please
download and install the appropriate version of Rtools before proceeding:

package 'corrplot' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
C:\Users\mildr\AppData\Local\Temp\RtmpC63VUH\downloaded_packages
> corrplot(correlation_matrix, method = "circle", type = "lower", tl.col = "black", tl.
srt = 45)
Error in corrplot(correlation_matrix, method = "circle", type = "lower", :
no se pudo encontrar la función "corrplot"
> library(corrplot)
corrplot 0.92 loaded
> corrplot(correlation_matrix, method = "circle", type = "lower", tl.col = "black", tl.
srt = 45)
Error: objeto 'correlation_matrix' no encontrado
> corrplot(COR, method = "circle", type = "lower", tl.col = "black", tl.srt = 45)
> a_num <- function(df, columnas) {
+   for (col in columnas) {
+     df[[col]] <- as.numeric(df[[col]])
+   }
+   return(df)
+ }
>
> mtcars <- a_num(df = mtcars, columnas = c("hp", "wt", "am"))
> CORmtcars <- a_num(df = mtcars, columnas = c("hp", "wt", "am"))
> COR <- cor(mtcars[, c("hp", "wt", "am")])
> #install.packages('corrplot')
> corrplot(COR, method = "circle", type = "lower", tl.col = "black", tl.srt = 45)
> modelo_anova <- aov(mpg ~ nombre, data = mtcars)
Error in eval(predvars, data, env) : objeto 'nombre' no encontrado
> modelo_anova <- aov(mpg ~ cyl, data = mtcars)
> summary(modelo_anova)
          Df Sum Sq Mean Sq F value    Pr(>F)
cyl         1  817.7   817.7    79.56 6.11e-10 ***
Residuals   30  308.3    10.3
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
>

```

Gráficos obtenidos:



