

Actividad | # 1 | Matrices

Ingeniería en Desarrollo de Software



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FECHA: 02/03/2025

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1 Introducción

Las matrices son números y símbolos que se organizan en filas y columnas, los cuales se utilizan para poder organizar y manipular enormes cantidades de datos.

2 Descripción}

En esta actividad aprenderemos a crear matrices, las cuales debemos multiplicar dicha matriz por una escalar, también crearemos matrices de sumas y restas las cuales se utilizan sumando y restando los elementos correspondientes de dichas matrices.

3 Justificación

Las matrices estas echas para guardad cantidades enormes de información los cuales son una herramienta muy eficaz a la hora de solicitar datos que necesitemos , esto nos ayuda a tener una mejora en la productividad.

4 Desarrollo

4.1 Matriz 1

1) Sean las matrices:

$$A = \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} \quad C = \begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix}$$

Ejecutar las siguientes operaciones: 1) 5A 2) 2A + B 3) 3A - 4B 4) B - 2C 5) 2A + (B - C)

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for creating and manipulating matrices. The code defines matrix A, then matrix B, and then matrix C. It also shows the output of the matrix creation commands.
- Console:** Displays the execution of the R code, showing the structure of the matrices and the results of the assignment operations.
- Environment Pane:** Shows the objects in the global environment: 'matrizA', 'matrizB', and 'matrizC'. Each is listed as a numeric matrix of size 2x2.
- Files Pane:** Shows the project structure with a folder named 'matematicas matriciales' containing a subfolder 'SCRIP'.
- Taskbar:** At the bottom, showing various application icons and the system clock indicating 10:27 p.m. on 01/03/2025.

```
# R Script
1 # Crear una matriz de 2x2 vacia y asignar valores especificos
2:1 (Top Level)

> matrizA
      [,1] [,2]
[1,]    1    3
[2,]   -2    0
>
> matrizB <- matrix(nrow = 2, ncol = 2)
> matrizB[1, 1] <- 4
> matrizB[1, 2] <- 1
> matrizB[2, 1] <- 2
> matrizB[2, 2] <- -3
> matrizB
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> matrizC <- matrix(nrow = 2, ncol = 2)
> matrizC[1, 1] <- 2
> matrizC[1, 2] <- -2
> matrizC[2, 1] <- 1
> matrizC[2, 2] <- 5
> matrizC
      [,1] [,2]
[1,]    2   -2
[2,]    1    5
> |
```

Object	Class	Dimensions	Values
matrizA	num	[1:2, 1:2]	1 -2 3 0
matrizB	num	[1:2, 1:2]	4 2 1 -3
matrizC	num	[1:2, 1:2]	2 1 -2 5

Files: Home > matematicas matriciales > SCRIP

- 1) 5A.R (519 B, Feb 28, 2025, 2:50 AM)
- 2) 2A + B.C.R (546 B, Feb 28, 2025, 3:07 AM)
- 3) 3A - 4B.R (591 B, Feb 28, 2025, 2:25 AM)
- 4) B - 2C.R (554 B, Feb 28, 2025, 2:34 AM)
- 5) 2A + (B-C).R (595 B, Feb 28, 2025, 2:46 AM)

Activar Windows
Ve a Configuración para activar Windows.

1) $5^a =$

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains a script with the following code:

```
> escalar <- matrizA * 5
> escalar
      [,1] [,2]
[1,]    5  15
[2,]   -10    0
> view(escalar)
> |
```
- Environment Pane:** Displays the current environment with the following variables:

Variable	Class	Dimensions	Values
escalar	num	[1:2, 1:2]	5 -10 15 0
matrizA	num	[1:2, 1:2]	1 -2 3 0
matrizB	num	[1:2, 1:2]	4 2 1 -3
matrizC	num	[1:2, 1:2]	2 1 -2 5
- Console:** Shows the execution of the code in the Source Editor.
- Files Pane:** Displays the file structure of the project, showing a folder named "matemáticas natriciales" and a file named "SCRIP".
- Taskbar:** Shows the Windows taskbar with various application icons and the system clock indicating 01:11 a.m. on 28/02/2025.

2) $2A + B$

The screenshot shows the RStudio interface with the following components:

- Console:** Contains R code for creating and manipulating matrices. The code defines matrix A, multiplies it by 2 to get matrix B, creates matrix C, and then adds matrix B to matrix C to get matrix D.
- Environment:** Displays the current environment with variables: `escalar` (numeric vector), `matrizA` (2x2 matrix), `matrizB` (2x2 matrix), `matrizC` (2x2 matrix), and `suma` (2x2 matrix).
- Files:** Shows the file explorer with a folder named `matematicas matriciales` and a file named `SCRIP`.

Console Output:

```
> matrizA[1, 1] <- 1
> matrizA[1, 2] <- 3
> matrizA[2, 1] <- -2
> matrizA[2, 2] <- 0
>
> matrizA
      [,1] [,2]
[1,]    1    3
[2,]   -2    0
>
> escalar <- matrizA * 2
> escalar
      [,1] [,2]
[1,]    2    6
[2,]   -4    0
>
> matrizB <- matrix(nrow = 2, ncol = 2)
>
> matrizB[1, 1] <- 4
> matrizB[1, 2] <- 1
> matrizB[2, 1] <- 2
> matrizB[2, 2] <- -3
>
> matrizB
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> suma <- escalar + matrizB
> suma
      [,1] [,2]
[1,]    6    7
[2,]   -2   -3
> |
```

Environment Data:

Variable	Type	Dimensions	Values
escalar	num	[1:2, 1:2]	2 -4 6 0
matrizA	num	[1:2, 1:2]	1 -2 3 0
matrizB	num	[1:2, 1:2]	4 2 1 -3
matrizC	num	[1:2, 1:2]	2 1 -2 5
suma	num	[1:2, 1:2]	6 -2 7 -3

Files:

- Home > matematicas matriciales > SCRIP

System Tray: Shows the date and time as 01:43 a. m. 28/02/2025.

3) $3A - 4B$

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Source

```
> matrizA
      [,1] [,2]
[1,]    1    3
[2,]   -2    0
>
> escalar <- matrizA * 3
> escalar
      [,1] [,2]
[1,]    3    9
[2,]   -6    0
>
> matrizB <- matrix(nrow = 2, ncol = 2)
>
> matrizB[1, 1] <- 4
> matrizB[1, 2] <- 1
> matrizB[2, 1] <- 2
> matrizB[2, 2] <- -3
>
> matrizB
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> escalar <- matrizB * 4
> escalar
      [,1] [,2]
[1,]   16    4
[2,]    8  -12
>
> resta <- matrizA * 3 - matrizB * 4
> resta
      [,1] [,2]
[1,]  -13    5
[2,]  -14   12
>
```

Environment History Connections Tutorial

R Global Environment

Data

escalar	num	[1:2, 1:2]	16 8 4 -12		
matrizA	num	[1:2, 1:2]	1 -2 3 0		
matrizB	num	[1:2, 1:2]	4 2 1 -3		
resta	num	[1:2, 1:2]	-13 -14 5 12		

Files Plots Packages Help Viewer Presentation

Folder File Delete Rename

Home > matematicas natriciales > SCRIP

	Name	Size	Modified
	..		
	2A+B.R	542 B	Feb 28, 2025, 1:53 AM

Activar Windows
Ve a Configuración para activar Windows.

La P... 02:24 a. m. 28/02/2025

4) $B - 2C$

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Project: (None)

Source

Console Terminal Background Jobs

```
> matrizB[1, 1] <- 4
> matrizB[1, 2] <- 1
> matrizB[2, 1] <- 2
> matrizB[2, 2] <- -3
>
> matrizB
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> matrizC <- matrix(nrow = 2, ncol = 2)
>
> matrizC[1, 1] <- 2
> matrizC[1, 2] <- -2
> matrizC[2, 1] <- 1
> matrizC[2, 2] <- 5
>
> matrizC
      [,1] [,2]
[1,]    2   -2
[2,]    1    5
>
> escalar <- matrizC * 2
> escalar
      [,1] [,2]
[1,]    4   -4
[2,]    2   10
>
> resta <- matrizB - matrizC * 2
> resta
      [,1] [,2]
[1,]    0    5
[2,]    0  -13
>
```

Environment History Connections Tutorial

R Global Environment

Data

escalar	num	[1:2, 1:2]	4 2 -4 10	
matrizB	num	[1:2, 1:2]	4 2 1 -3	
matrizC	num	[1:2, 1:2]	2 1 -2 5	
resta	num	[1:2, 1:2]	0 0 5 -13	

Files Plots Packages Help Viewer Presentation

Folder File Delete Rename

Home > matematicas matriciales > SCRIP

	Name	Size	Modified
	..		
	2A+B.R	591 B	Feb 28, 2025, 2:25 AM
	3) 3A - 4B.R	591 B	Feb 28, 2025, 2:28 AM

Activar Windows

Ve a Configuración para activar Windows.

Windows Taskbar: YouTube, TV, Firefox, Edge, Word, Excel, D, VS Code, WhatsApp, Chrome, File Explorer, W, I, JupyterLab, R, JPY/...

System Tray: ESP, 02:33 a. m., 28/02/2025

5) $2A + (B-C)$

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Project: (None)

Environment History Connections Tutorial

Import Dataset 152 MIB

R Global Environment

Data

escalar	num	[1:2, 1:2]	2 -4 6 0		
matrizA	num	[1:2, 1:2]	1 -2 3 0		
matrizB	num	[1:2, 1:2]	4 2 1 -3		
matrizC	num	[1:2, 1:2]	2 1 -2 5		
resta	num	[1:2, 1:2]	2 1 3 -8		
suma	num	[1:2, 1:2]	4 -3 9 -8		

Files Plots Packages Help Viewer Presentation

Folder File Delete Rename

Home > matematicas natriciales > SCRIP

	Name	Size	Modified
	..		
	2A+B.R	591 B	Feb 28, 2025, 2:25 AM
	3) 3A - 4B.R	554 B	Feb 28, 2025, 2:34 AM
	4) B-2C.R	554 B	Feb 28, 2025, 2:35 AM

Activar Windows
Ve a Configuración para activar Windows.

```
> matrizB[1, 1] <- 4
> matrizB[1, 2] <- 1
> matrizB[2, 1] <- 2
> matrizB[2, 2] <- -3
>
> matrizB
      [,1] [,2]
[1,]    4    1
[2,]    2   -3
>
> matrizC <- matrix(nrow = 2, ncol = 2)
>
> matrizC[1, 1] <- 2
> matrizC[1, 2] <- -2
> matrizC[2, 1] <- 1
> matrizC[2, 2] <- 5
>
> matrizC
      [,1] [,2]
[1,]    2   -2
[2,]    1    5
>
> resta <- matrizB - matrizC
> resta
      [,1] [,2]
[1,]    2    3
[2,]    1   -8
>
> suma <- matrizA *2 + matrizB - matrizC
> suma
      [,1] [,2]
[1,]    4    9
[2,]   -3   -8
>
```

Windows taskbar: 14°C, 02:45 a.m., 28/02/2025

1 Sean las matrices

$$A = \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix}$$

$$C = \begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix}$$

Ejecutar las siguientes operaciones

1) $5A$ 2) $2A+B$ 3) $3A-4B$ 4) $B-2C$ 5) $2A+(B-C) =$

$$1) 5A = 5 * \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix} = \begin{bmatrix} 5 & 15 \\ -10 & 0 \end{bmatrix}$$

$$2) 2A = 2 * \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix} = \begin{bmatrix} 2 & 6 \\ -4 & 0 \end{bmatrix} + \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} = \begin{bmatrix} 6 & 7 \\ -2 & -3 \end{bmatrix}$$

$$3) 3A = 3 * \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix} = \begin{bmatrix} 3 & 9 \\ -6 & 0 \end{bmatrix} - 4B = 4 * \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} = \begin{bmatrix} 16 & 4 \\ 8 & -12 \end{bmatrix}$$

$$\begin{bmatrix} 3 & 9 \\ -6 & 0 \end{bmatrix} - \begin{bmatrix} 16 & 4 \\ 8 & -12 \end{bmatrix} = \begin{bmatrix} 3-16 & 9-4 \\ (-6)-8 & 0-(-12) \end{bmatrix} = \begin{bmatrix} -13 & 5 \\ -14 & 12 \end{bmatrix}$$

$$4) \quad B = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} - 2C = 2 \cdot \begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix} = \begin{bmatrix} 4 & -4 \\ 2 & 10 \end{bmatrix}$$

$$B = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} - \begin{bmatrix} 4 & -4 \\ 2 & 10 \end{bmatrix} = \begin{bmatrix} 4-4 & 1-(-4) \\ 2-2 & (-3)-10 \end{bmatrix} = \begin{bmatrix} 0 & 5 \\ 0 & -13 \end{bmatrix}$$

$$5) \quad 2A = 2 \cdot \begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix} = \begin{bmatrix} 2 & 6 \\ -4 & 0 \end{bmatrix} + \begin{bmatrix} 2 & 3 \\ 1 & -8 \end{bmatrix} = \begin{bmatrix} 4 & 9 \\ -3 & -8 \end{bmatrix}$$

$$(B-C) = \begin{bmatrix} 4 & 1 \\ 2 & -3 \end{bmatrix} - \begin{bmatrix} 2 & -2 \\ 1 & 5 \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ 1 & -8 \end{bmatrix}$$

4.2 Matriz 2

2) Sean las matrices:

$$A = \begin{bmatrix} 1 & -2 & 1 \\ 3 & 0 & 4 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix}$$

Tachado

Ejecutar las siguientes operaciones: 1) $A*B$ 2) $B*C$ 3) $C*A$

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for creating matrices A, B, and C.
- Console:** Displays the output of the R code, showing the structure and values of matrices A, B, and C.
- Environment:** Lists the objects in the global environment: `matrizA`, `matrizB`, and `matrizC`.
- Files:** A file explorer showing a directory named `matematicas matriciales / SCRIP` containing several files related to matrix operations.

R Code in Source Editor:

```
R - R 4.4.2 - ~/matematicas matriciales/SCRIP/
> matrizA[2, 3] <- 4
> matrizA
  [,1] [,2] [,3]
[1,]  1  -2   1
[2,]  3   0   4
>
> matrizB <- matrix(nrow = 3, ncol = 2)
> matrizB[1, 1] <- -1
> matrizB[1, 2] <- 2
> matrizB[2, 1] <- 1
> matrizB[2, 2] <- 0
> matrizB[3, 1] <- 5
> matrizB[3, 2] <- -2
>
> matrizB
  [,1] [,2]
[1,] -1   2
[2,]  1   0
[3,]  5  -2
>
> matrizC <- matrix(nrow = 2, ncol = 2)
> matrizC[1, 1] <- 1
> matrizC[1, 2] <- -3
> matrizC[2, 1] <- -4
> matrizC[2, 2] <- 2
>
> matrizC
  [,1] [,2]
[1,]  1  -3
[2,] -4   2
```

Environment Panel:

Object	Class	Dimensions	Values
matrizA	num	[1:2, 1:3]	1 3 -2 0 1 4
matrizB	num	[1:3, 1:2]	-1 1 5 2 0 -2
matrizC	num	[1:2, 1:2]	1 -4 -3 2

Files Panel:

Name	Size	Modified
1) 5A.R	519 B	Feb 28, 2025, 2:50 AM
2) 2A + BC.R	546 B	Feb 28, 2025, 3:07 AM
3) 3A - 4 B.R	591 B	Feb 28, 2025, 2:25 AM
4) B - 2C.R	554 B	Feb 28, 2025, 2:34 AM
5) 2A + (B-C).R	595 B	Feb 28, 2025, 2:46 AM
CREACIÓN DE MATRICES A,B,C.R	472 B	Mar 1, 2025, 10:38 PM

1) $A * B$

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Source

Console Terminal Background Jobs

```
> R - R 4.4.2 - ~/matemáticas natricales/SCRIP/
> matrizA <- matrix(nrow = 2, ncol = 3)
>
> matrizA[1, 1] <- 1
> matrizA[1, 2] <- -2
> matrizA[1, 3] <- 1
> matrizA[2, 1] <- 3
> matrizA[2, 2] <- 0
> matrizA[2, 3] <- 4
>
> matrizA
      [,1] [,2] [,3]
[1,]    1   -2    1
[2,]    3    0    4
> matrizB <- matrix(nrow = 3, ncol = 2)
>
> matrizB[1, 1] <- -1
> matrizB[1, 2] <- 2
> matrizB[2, 1] <- 1
> matrizB[2, 2] <- 0
> matrizB[3, 1] <- 5
> matrizB[3, 2] <- -2
>
> matrizB
      [,1] [,2]
[1,]   -1    2
[2,]    1    0
[3,]    5   -2
> multiplicación <- matrizA %% matrizB
> multiplicación
      [,1] [,2]
[1,]    2    0
[2,]   17   -2
> |
```

Environment History Connections Tutorial

Global Environment

Data

matrizA	num	[1:2, 1:3]	1 3 -2	0 1 4	
matrizB	num	[1:3, 1:2]	-1 1 5	2 0 -2	
multiplicaci...	num	[1:2, 1:2]	2 17	0 -2	

Files Plots Packages Help Viewer Presentation

Folder File Delete Rename

Home > matemáticas natricales > SCRIP

	Name	Size	Modified
	..		
	1) SA.R	519 B	Feb 28, 2025, 2:50 AM
	2) 2A + BC.R	546 B	Feb 28, 2025, 3:07 AM
	3) 3A - 4 B.R	591 B	Feb 28, 2025, 2:25 AM
	4) B - 2C.R	554 B	Feb 28, 2025, 2:34 AM
	5) 2A + (B-C).R	595 B	Feb 28, 2025, 2:46 AM
	CREACIÓN DE MATRICES A,B,C.R	472 B	Mar 1, 2025, 10:38 PM
	CREACION DE MATRIZ # 2.R	554 B	Mar 1, 2025, 10:54 PM

Activar Windows
Ve a Configuración para activar Windows.

18°C 11:00 p. m. 01/03/2025

2) $B * C$

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Project: (None)

Environment History Connections Tutorial

R Global Environment

Data

matrizB	num	[1:3, 1:2]	-1	1	5
matrizC	num	[1:2, 1:2]	1	-4	3
multiplicaci...	num	[1:3, 1:2]	-9	1	13

Files Plots Packages Help Viewer Presentation

Folder File Delete Rename

Home > matemáticas matriciales > SCRIP

	Name	Size	Modified
<input type="checkbox"/>	1) 5A.R	519 B	Feb 28, 2025, 2:50 AM
<input type="checkbox"/>	2) 2A + BC.R	546 B	Feb 28, 2025, 3:07 AM
<input type="checkbox"/>	3) 3A - 4B.R	591 B	Feb 28, 2025, 2:25 AM
<input type="checkbox"/>	4) B - 2C.R	554 B	Feb 28, 2025, 2:34 AM
<input type="checkbox"/>	5) 2A + (B-C).R	595 B	Feb 28, 2025, 2:46 AM
<input type="checkbox"/>	CREACIÓN DE MATRICES A,B,C.R	472 B	Mar 1, 2025, 10:38 PM
<input type="checkbox"/>	CREACION DE MATRIZ # 2 A, B, C.R	554 B	Mar 1, 2025, 10:54 PM
<input type="checkbox"/>	F 1-A x B.R	615 B	Mar 1, 2025, 11:11 PM

Activar Windows
Ve a Configuración para activar Windows.

R F 2- B x C.R

```
24
25
26 matrizC <- matrix(nrow = 2, ncol = 2)
27
28 matrizC[1, 1] <- 1
29 matrizC[1, 2] <- 3
30 matrizC[2, 1] <- -4
31 matrizC[2, 2] <- 2
32
33 matrizC
34
35 multiplicación <- matrizB %>% matrizC
36 multiplicación
```

Console

```
R - R 4.4.2 . ~/
[3,] 5 -2
> matrizC <- matrix(nrow = 2, ncol = 2)
>
> matrizC[1, 1] <- 1
> matrizC[1, 2] <- 3
> matrizC[2, 1] <- -4
> matrizC[2, 2] <- 2
>
> matrizC
      [,1] [,2]
[1,]  1    3
[2,] -4    2
> multiplicación <- matrizB %>% matrizC
> multiplicación
      [,1] [,2]
[1,] -9    1
[2,]  1    3
[3,] 13   11
> |
```

Windows taskbar: 17°C, 12:03 a.m., 02/03/2025

3) $C \cdot A$

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for creating two matrices and multiplying them.

```
26 matrizC <- matrix(nrow = 2, ncol = 2)
27
28 matrizC[1, 1] <- 1
29 matrizC[1, 2] <- 3
30 matrizC[2, 1] <- -4
31 matrizC[2, 2] <- 2
32
33 matrizC
34
35 multiplicación <- matrizC %% matrizA
36 multiplicación
37
38
```
- Console:** Shows the execution of the code, including the creation of `matrizA` and the result of the multiplication `matrizC %% matrizA`.

```
> matrizA <- matrix(nrow = 2, ncol = 3)
>
> matrizA[1, 1] <- 1
> matrizA[1, 2] <- -2
> matrizA[1, 3] <- 1
> matrizA[2, 1] <- 3
> matrizA[2, 2] <- 0
> matrizA[2, 3] <- 4
>
> matrizA
  [,1] [,2] [,3]
[1,]   1  -2   1
[2,]   3   0   4
> multiplicación <- matrizC %% matrizA
> multiplicación
  [,1] [,2] [,3]
[1,]  10  -2  13
[2,]   2   8   4
>
```
- Environment:** Displays the objects in the global environment.

Object	Class	Dimensions	Values
matrizA	num	[1:2, 1:3]	1 3 -2 0 1 4
matrizC	num	[1:2, 1:2]	1 -4 3 2
multiplicación	num	[1:2, 1:3]	10 2 -2 8 13 4
- Files:** Shows a file explorer view of the project directory, listing files like `1) 5A.R`, `2) 2A + B.C.R`, etc.

2) Sean las matrices:

$$A = \begin{bmatrix} 1 & -2 & 1 \\ 3 & 0 & 4 \end{bmatrix}$$

$$B = \begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix}$$

$$C = \begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix}$$

Ejecutar las siguientes operaciones:

1) $A * B$ 2) $B * C$ 3) $C * A$:

$$1) \quad A = \begin{bmatrix} 1 & -2 & 1 \\ 3 & 0 & 4 \end{bmatrix} * B = \begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix} \quad \begin{array}{l} (1 * -1 + -2 * 1 + 1 * 5) \\ (1 * 0 + -2 * 0 + 1 * -2) \\ (3 * -1 + 0 * 1 + 4 * 5) \end{array}$$

$$\begin{array}{l} -1 + -2 = -3 + 5 = 2 \\ 1 + 0 = -2 \\ -3 + 0 = -3 + 20 = 17 \end{array} \quad R = \begin{bmatrix} 2 & 0 \\ 17 & -2 \end{bmatrix}$$

$$2) \quad B = \begin{bmatrix} -1 & 2 \\ 1 & 0 \\ 5 & -2 \end{bmatrix} * C = \begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix} = \begin{bmatrix} (-1 + -8) & (3 + 4) \\ (1 + 0) & (3 + 0) \\ (5 + -8) & (15 + -4) \end{bmatrix} = \begin{bmatrix} -9 & 1 \\ 1 & 3 \\ 13 & 11 \end{bmatrix}$$

$$3) \quad C = \begin{bmatrix} 1 & 3 \\ -4 & 2 \end{bmatrix} * A = \begin{bmatrix} 1 & -2 & 1 \\ 3 & 0 & 4 \end{bmatrix} = \begin{bmatrix} (-1 + 9) & (-2 + 0) & (1 + 12) \\ (-4 + 6) & (-8 + 0) & (-4 + 8) \end{bmatrix} =$$

$$R = \begin{bmatrix} 10 & -2 & 13 \\ 2 & -8 & 4 \end{bmatrix}$$

4.3 Matriz 3

3) Sean las matrices:

$$A = \begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix}$$

Ejecutar las siguientes operaciones: 1) A^T 2) B^T 3) $B^T \cdot A$ 4) $A^T \cdot B$

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code to create matrix A (3x2) and matrix B (2x5).
- Console:** Shows the execution of the code and the resulting matrices A and B.
- Environment:** Lists the objects 'matrizA' and 'matrizB' in the Global Environment.
- Files:** Shows a file explorer with a list of R scripts.

Source Editor Code:

```
1 # Crear una matriz de 2x2 vacia y asignar valores especificos
2 matrizA <- matrix(nrow = 3, ncol = 2)
3
4 matrizA[1, 1] <- 2
5 matrizA[1, 2] <- 3
6
7 matrizB <- matrix(nrow = 2, ncol = 5)
8
9 matrizB[1, 1] <- 2
10 matrizB[1, 2] <- 3
11 matrizB[1, 3] <- 5
12 matrizB[1, 4] <- 7
13 matrizB[1, 5] <- -1
14 matrizB[2, 1] <- 1
15 matrizB[2, 2] <- -1
16 matrizB[2, 3] <- 0
17 matrizB[2, 4] <- 4
18 matrizB[2, 5] <- 3
19
20 matrizA
21
22 matrizB
```

Console Output:

```
> matrizA[3, 2] <- 7
>
> matrizA
  [,1] [,2]
[1,]  2   3
[2,]  6   7
[3,]  8   7
>
> matrizB <- matrix(nrow = 2, ncol = 5)
>
> matrizB[1, 1] <- 2
> matrizB[1, 2] <- 3
> matrizB[1, 3] <- 5
> matrizB[1, 4] <- 7
> matrizB[1, 5] <- -1
> matrizB[2, 1] <- 1
> matrizB[2, 2] <- -1
> matrizB[2, 3] <- 0
> matrizB[2, 4] <- 4
> matrizB[2, 5] <- 3
>
> matrizA
  [,1] [,2]
[1,]  2   3
[2,]  6   7
[3,]  8   7
>
> matrizB
  [,1] [,2] [,3] [,4] [,5]
[1,]  2   3   5   7  -1
[2,]  1  -1   0   4   3
>
```

Environment Data:

Object	Class	Attributes
matrizA	num	[1:3, 1:2] 2 6 8 3 7 7
matrizB	num	[1:2, 1:5] 2 1 3 -1 5 0 7 4 -...

Files List:

Name	Size	Modified
1) 5A.R	519 B	Feb 28, 2025, 2:50 AM
2) 2A + BC.R	546 B	Feb 28, 2025, 3:07 AM
3) 3A - 4 B.R	591 B	Feb 28, 2025, 2:25 AM
4) B - 2C.R	554 B	Feb 28, 2025, 2:34 AM
5) 2A + (B-C).R	595 B	Feb 28, 2025, 2:46 AM
CREACIÓN DE MATRICES A,B,C.R	472 B	Mar 1, 2025, 10:38 PM
CREACION DE MATRIZ # 2 A, B, C.R	554 B	Mar 1, 2025, 10:54 PM
F 1-A x B.R	615 B	Mar 1, 2025, 11:11 PM

1) AT

The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains R code for creating a matrix and its transpose.
- Console:** Shows the execution of the code and the resulting matrix and transposed matrix.
- Environment:** Lists the objects created in the global environment.
- Files:** Shows the file explorer with a list of files in the 'matematicas matriciales' directory.

Source Editor Code:

```
1 matrizA[1, 1] <- 2
2 matrizA[1, 2] <- 6
3 matrizA[2, 1] <- 6
4 matrizA[2, 2] <- 7
5 matrizA[3, 1] <- 8
6 matrizA[3, 2] <- 7
7
8 matrizA
9
10
11 matrizA
12
13
14
15 matrizA
16 matriz_transpuesta <- t(matrizA)
17 matriz_transpuesta
18
```

Console Output:

```
> matrizA[3, 1] <- 8
> matrizA[3, 2] <- 7
>
> matrizA
  [,1] [,2]
[1,]  2   6
[2,]  6   7
[3,]  8   7
> matrizA
  [,1] [,2]
[1,]  2   6
[2,]  6   7
[3,]  8   7
> matriz_transpuesta <- t(matrizA)
> matriz_transpuesta
  [,1] [,2] [,3]
[1,]  2   6   8
[2,]  6   7   7
> |
```

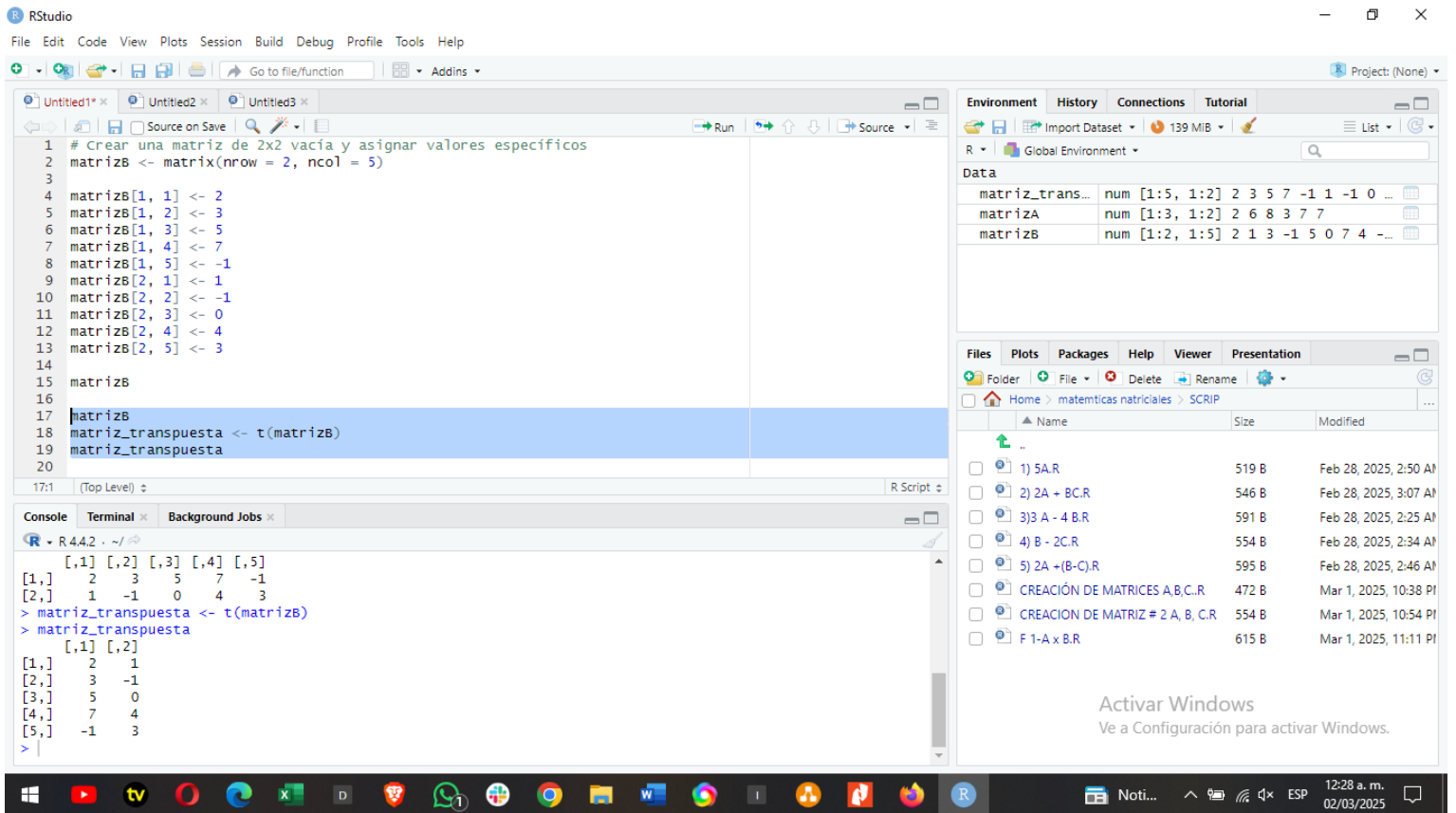
Environment Data:

Object	Class	Attributes	Value
matriz_trans...	num	[1:2, 1:3]	2 3 6 7 8 7
matrizA	num	[1:3, 1:2]	2 6 8 3 7 7

Files List:

Name	Size	Modified
1) 5A.R	519 B	Feb 28, 2025, 2:50 AM
2) 2A + BC.R	546 B	Feb 28, 2025, 3:07 AM
3) 3A - 4 B.R	591 B	Feb 28, 2025, 2:25 AM
4) B - 2C.R	554 B	Feb 28, 2025, 2:34 AM
5) 2A + (B-C).R	595 B	Feb 28, 2025, 2:46 AM
CREACIÓN DE MATRICES A,B,C.R	472 B	Mar 1, 2025, 10:38 PM
CREACION DE MATRIZ # 2 A, B, C.R	554 B	Mar 1, 2025, 10:54 PM
F 1-A x B.R	615 B	Mar 1, 2025, 11:11 PM

2) BT



3) Sean las matrices

$$A) = \begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix}$$

$$B) = \begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix}$$

Calcular las siguientes operaciones:

1) A^T 2) B^T 3) $B^T * A$ 4) $A^T * B$

$$1) A = \begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix} = A^T = \begin{bmatrix} 2 & 6 & 8 \\ 3 & 7 & 7 \end{bmatrix}$$

$$2) B = \begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix} = B^T = \begin{bmatrix} 2 & 1 \\ 3 & -1 \\ 5 & 0 \\ 7 & 4 \\ -1 & 3 \end{bmatrix}$$

$$3) B = \begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix} = B^T = \begin{bmatrix} 2 & 1 \\ 3 & -1 \\ 5 & 0 \\ 7 & 4 \\ -1 & 3 \end{bmatrix} * A = \begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix} = X$$

$$4) A = \begin{bmatrix} 2 & 3 \\ 6 & 7 \\ 8 & 7 \end{bmatrix} = A^T = \begin{bmatrix} 2 & 6 & 8 \\ 3 & 7 & 7 \end{bmatrix} * B = \begin{bmatrix} 2 & 3 & 5 & 7 & -1 \\ 1 & -1 & 0 & 4 & 3 \end{bmatrix} = X$$

5 Conclusión

En esta actividad aprendimos a crear matrices y también a resolver estas mismas matrices en el programa RStudio, lo cual esta herramienta es una gran ayuda a conseguir los resultados de dichas matrices a consultar.

6 REFERENCIAS

Video conferencing, web conferencing, online meetings, screen sharing - Zoom. (s. f.-b). <https://academiaglobal-mx.zoom.us/>

Video conferencing, web conferencing, online meetings, screen sharing - Zoom. (s. f.).
<https://academiaglobal-mx.zoom.us/>