

# Programación de Computadores

## Tema 5: Matrices



Carrera Ingeniería Civil en Informática  
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```
int A[4][3] = {{0, 5, 1}, {-1, 3, 2}, {99, -6, 1}, {0, 11, -8}}
```

$$A = \begin{bmatrix} 0 & 5 & 1 \\ -1 & 3 & 2 \\ 99 & -6 & 1 \\ 0 & 11 & -8 \end{bmatrix}$$

Memoria RAM

The diagram shows a grid representing RAM memory. It consists of 10 columns and 10 rows, forming a 10x10 grid of cells. The top-left cell is highlighted in grey and contains the text 'Memoria RAM'.

Ver: matrices\_2D\_3D.c

# Suma de matrices (Vista de la memoria)

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|   | 0  | 1  | 2  |
|---|----|----|----|
| 0 | 1  | 2  | 3  |
| 1 | 4  | 5  | 6  |
| 2 | 7  | 8  | 9  |
| 3 | 10 | 11 | 12 |

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|   | 0  | 1  | 2  |
|---|----|----|----|
| 0 | 12 | 11 | 10 |
| 1 | 9  | 8  | 7  |
| 2 | 6  | 5  | 4  |
| 3 | 3  | 2  | 1  |

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|   | 0  | 1  | 2  |
|---|----|----|----|
| 0 | 13 | 13 | 13 |
| 1 | 13 | 13 | 13 |
| 2 | 13 | 13 | 13 |
| 3 | 13 | 13 | 13 |

Memoria RAM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Ver: [suma\\_matrices.c](#)

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## Memoria RAM

[illegible]

Ver: `mult_matrices.c`

# Multiplicación de matrices + transpuesta (Vista de la memoria)

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|   | 0  | 1  | 2  |
|---|----|----|----|
| 0 | 1  | 2  | 3  |
| 1 | 4  | 5  | 6  |
| 2 | 7  | 8  | 9  |
| 3 | 10 | 11 | 12 |

 $\times$ 

|   | 0  | 1  | 2  | 3 |
|---|----|----|----|---|
| 0 | 12 | 11 | 10 | 3 |
| 1 | 9  | 8  | 7  | 2 |
| 2 | 6  | 5  | 4  | 1 |

|   | 0  | 1  | 2  |
|---|----|----|----|
| 0 | 1  | 2  | 3  |
| 1 | 4  | 5  | 6  |
| 2 | 7  | 8  | 9  |
| 3 | 10 | 11 | 12 |

 $\times$ 

|   | 0  | 1 | 2 |
|---|----|---|---|
| 0 | 12 | 9 | 6 |
| 1 | 11 | 8 | 5 |
| 2 | 10 | 7 | 4 |
| 3 | 3  | 2 | 1 |

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|   | 0   | 1   | 2   | 3  |
|---|-----|-----|-----|----|
| 0 | 48  | 42  | 36  | 10 |
| 1 | 129 | 114 | 99  | 28 |
| 2 | 210 | 186 | 162 | 46 |
| 3 | 291 | 258 | 225 | 64 |

Memoria RAM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Ver: [transposicion.c](#) y [mult\\_trans\\_matrices.c](#)

# Matrices RGB

|   | 0   | 1   | 2  |
|---|---|---|--|
| 0 |  |  |  |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |

**Red**

|   | 0   | 1   | 2   |
|---|-----|-----|-----|
| 0 | 0   | 0   | 0   |
| 1 | 255 | 255 | 255 |
| 2 | 0   | 255 | 255 |
| 3 | 246 | 106 | 183 |

**Green**

|   | 0   | 1   | 2   |
|---|-----|-----|-----|
| 0 | 255 | 0   | 255 |
| 1 | 255 | 0   | 255 |
| 2 | 0   | 0   | 153 |
| 3 | 203 | 168 | 183 |

**Blue**

|   | 0   | 1   | 2   |
|---|-----|-----|-----|
| 0 | 255 | 255 | 0   |
| 1 | 255 | 255 | 0   |
| 2 | 0   | 0   | 0   |
| 3 | 222 | 79  | 183 |

Ver: [imagen\\_rgb.c](#)

Ver: [get\\_RGB\\_matrices.py](#)

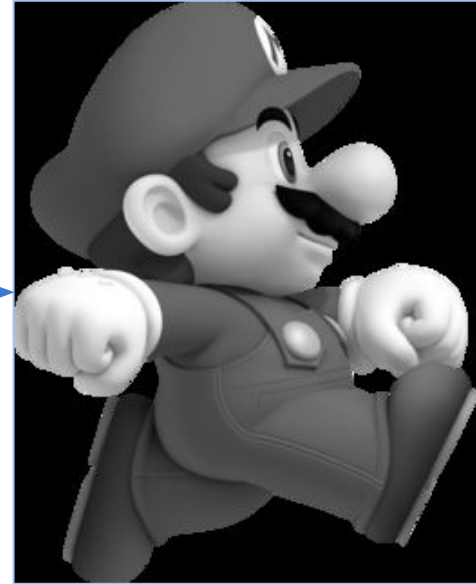
Ver: [leer\\_archivo\\_rgb.c](#)

# Matrices RGB (transformación a escala de grises)

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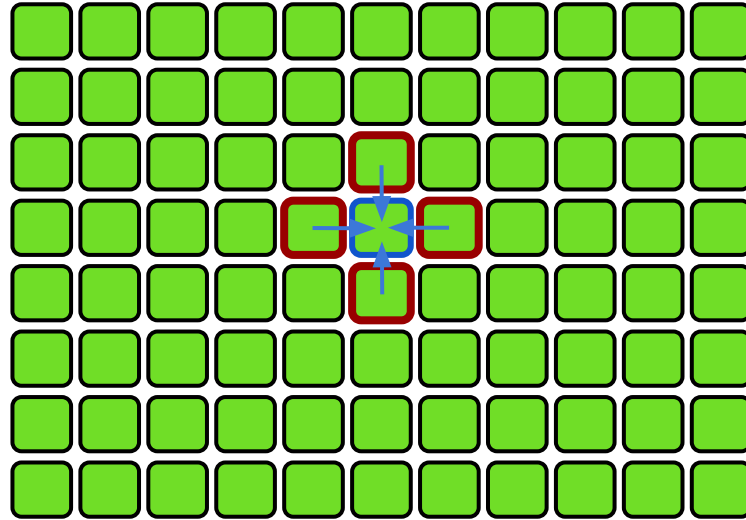
$$\mathbf{M}[i] = (\mathbf{R}[i] + \mathbf{G}[i] + \mathbf{B}[i]) / 3$$



Ver: [escala\\_grises.c](#)

# Propagación de valores en una matriz

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# Propagación de valores en una matriz

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