Programación de Computadores

Tema 5: Matrices

Carrera Ingeniería Civil en Informática
y Ciencias de la Computación
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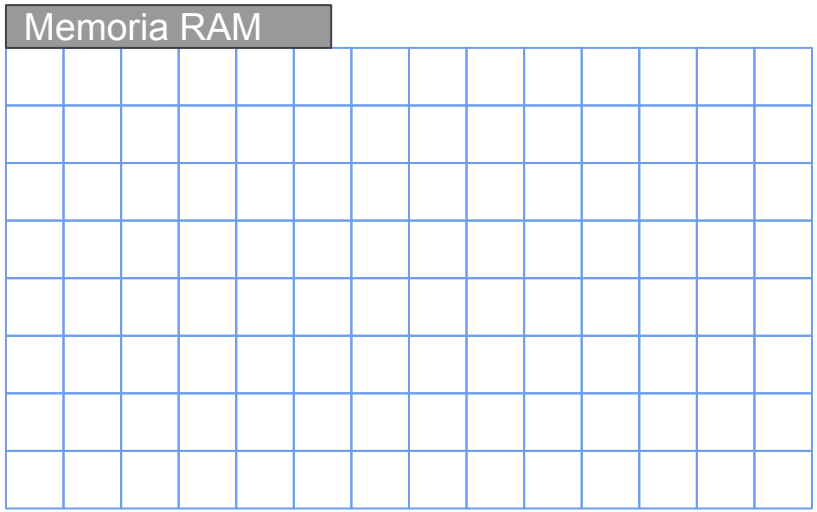
Estructura de un arreglo bi-dimensional (matriz)

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

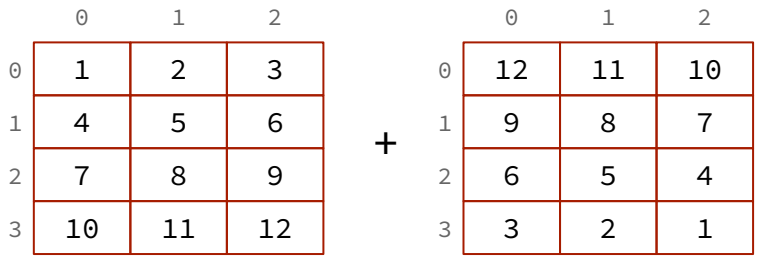
A =

	0	1	2
0	0	5	1
1	-1	3	2
2	99	-6	1
3	0	11	-8



Ver: matrices_2D_3D.c

Suma de matrices (Vista de la memoria)



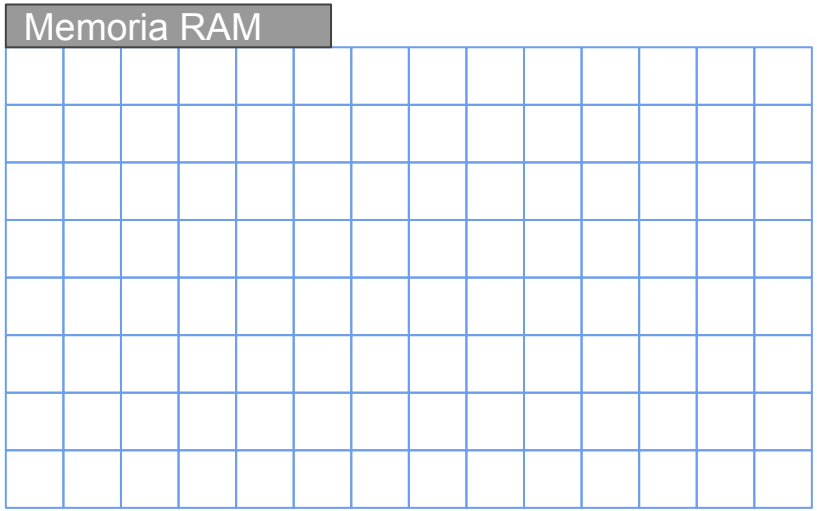
	0	1	2
0	1	2	3
1	4	5	6
2	7	8	9
3	10	11	12

+

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

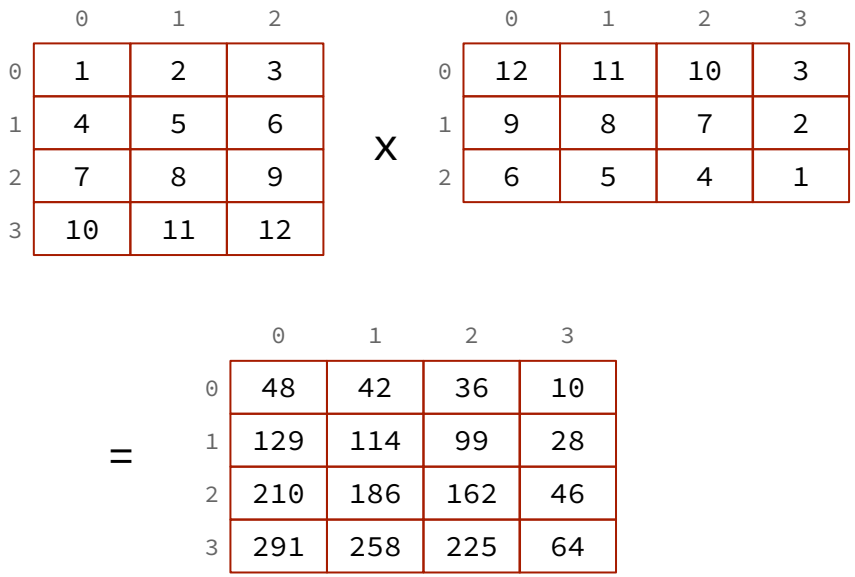
=

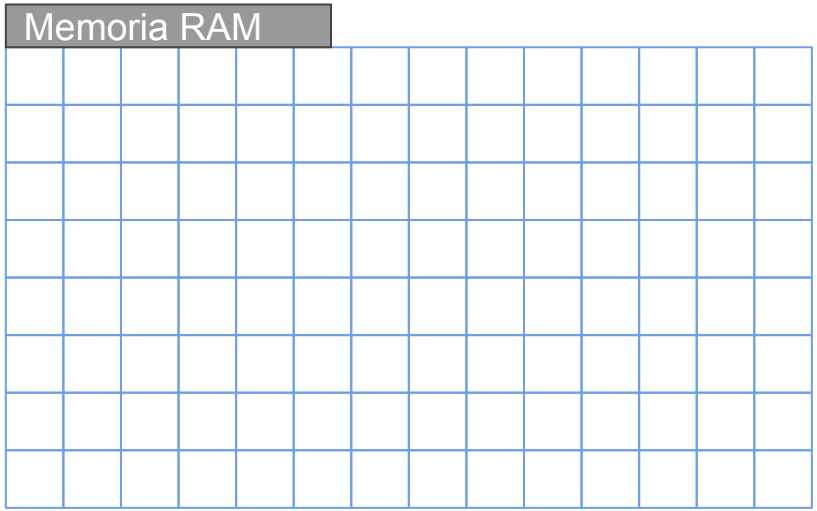
	0	1	2
0	13	13	13
1	13	13	13
2	13	13	13
3	13	13	13



Ver: suma_matrices.c

Multiplicación de matrices (Vista de la memoria)





Ver: mult_matrices.c

Multiplicación de matrices + transpuesta (Vista de la memoria)

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

x

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

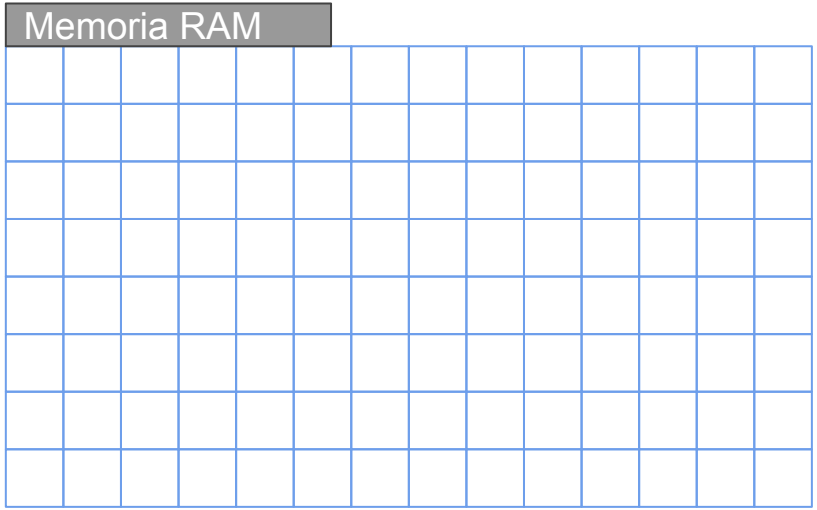
	0	1	2
0	1	2	3
1	4	5	6
2	7	8	9
3	10	11	12

x

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

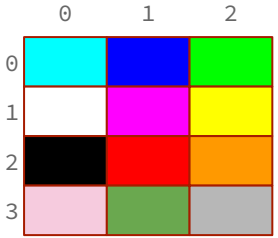
=

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



Ver: transposicion.c y mult_trans_matrices.c

Matrices RGB



Red

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

Green

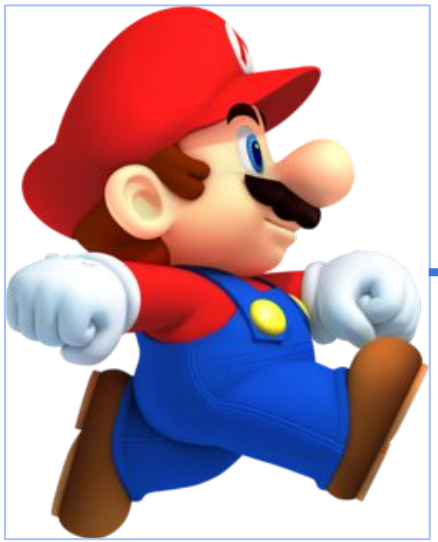
	0	1	2
0	255	0	255
1	255	0	255
2	0	0	153
3	203	168	183

Blue

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

Ver: imagen_rgb.c

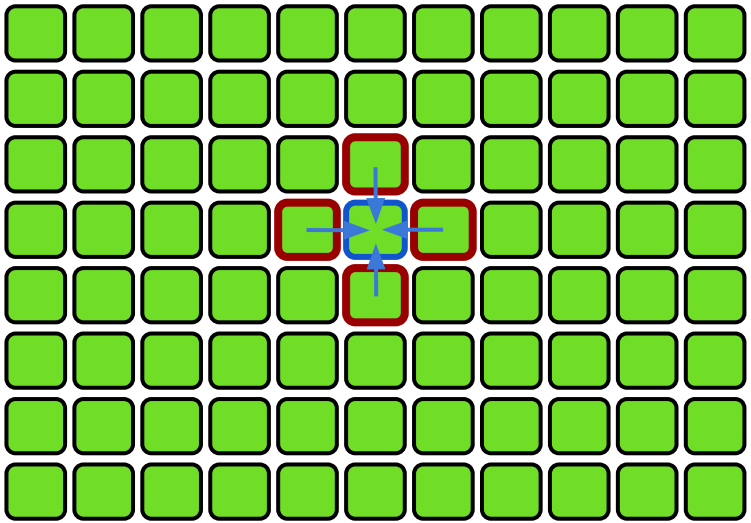
Matrices RGB (transformación a escala de grises)



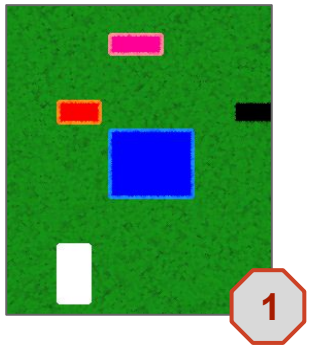
`M[i] = (R[i]+G[i]+B[i])/3`

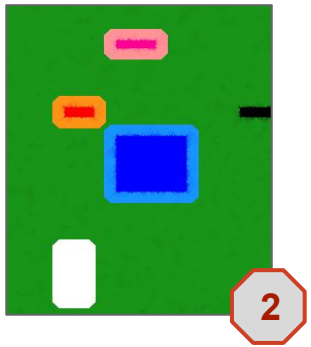
Ver: escala_grises.c

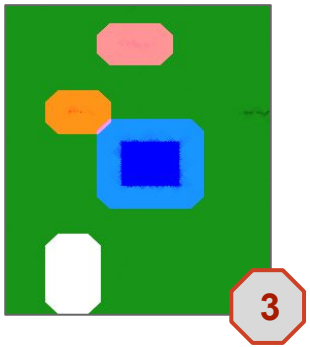
Propagación de valores en una matriz

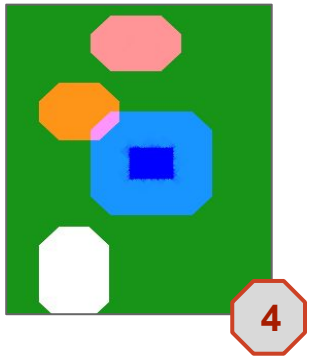


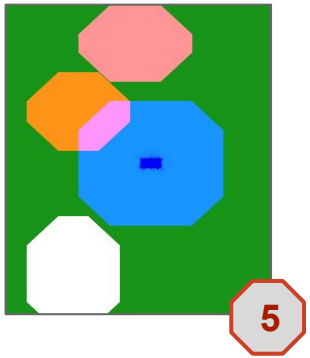
Propagación de valores en una matriz

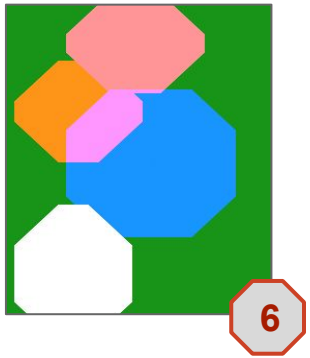


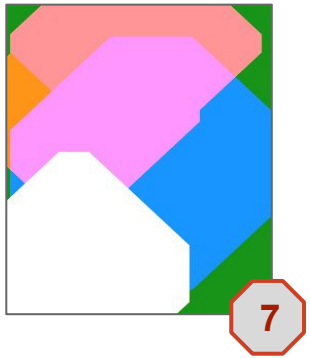












Ver: propagacion.c