Pràctica 1 de matemàtiques

A l'arxiu Practica-1.pdf s'explica en què consisteix l'exercici i quins són els criteris d'avaluació.

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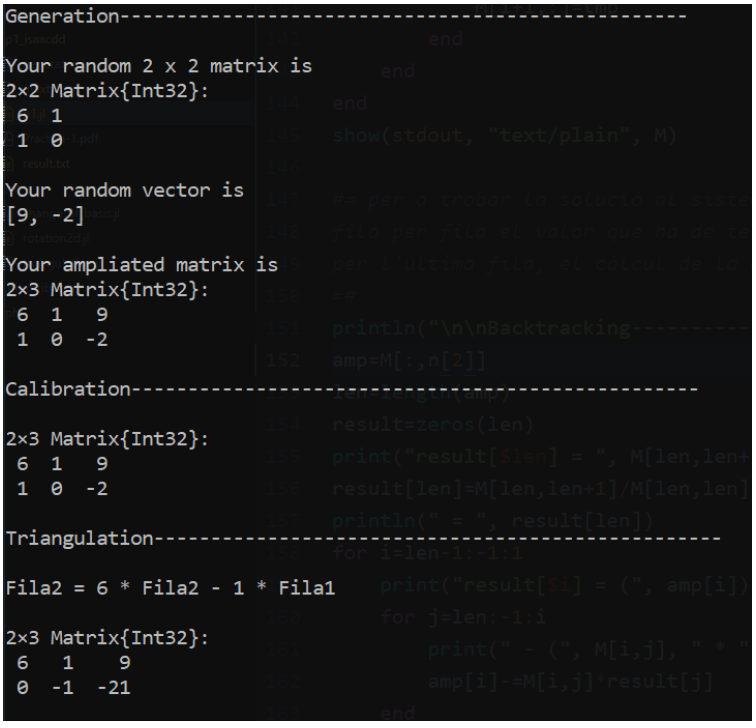
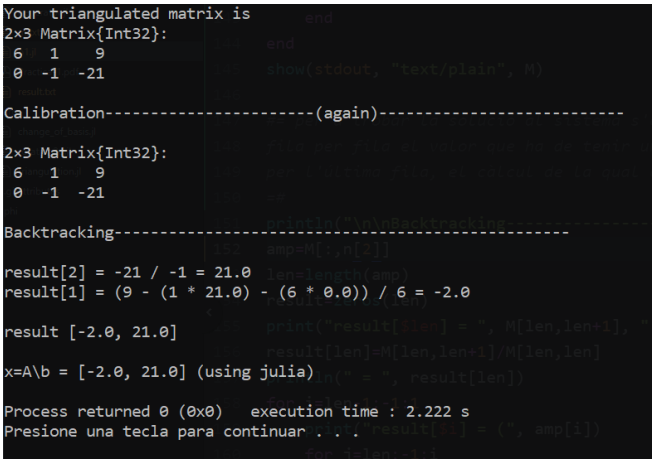
El directori d'entrega consisteix en una carpeta on hi consten dos fitxers de text per a introduir i llegir matrius, dos pdf per a explicar l'exercici (mencionat prèviament) i per a mostrar exemples d'ús del codi, i finalment dos arxius de codi en llenguatge julia (.jl), un proporcionat pel professor per a generar matrius (generator.jl) i un altre anomenat p1.jl que és l'exercici en si, programat i comentat seguint una organització caòtica escollida per mi.

A continuació els exemples resolts per l'algoritme (amb matrius de 2,3 i 4 de dimensió):





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Generation----------------------------------------------------

Your random 3 x 3 matrix is
3×3 Matrix{Int32}:
 0  -4   1
 1  -3  -4
 0   1   0

Your random vector is
[-9, 6, 9]

Your ampliated matrix is
3×4 Matrix{Int32}:
 0  -4   1  -9
 1  -3  -4   6
 0   1   0   9

Calibration---------------------------------------------------

3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   1   0   9

Triangulation-------------------------------------------------

Fila2 = 1 * Fila2 - 0 * Fila1
```

```
Fila2 = 1 * Fila2 - 0 * Fila1

3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   1   0   9

Fila3 = 1 * Fila3 - 0 * Fila1

3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   1   0   9

Fila3 = -4 * Fila3 - 1 * Fila2

3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   0  -1  -27

Your triangulated matrix is
3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   0  -1  -27

Calibration----------------------(again)---------------------------
```

```
Calibration----------------------(again)---------------------------

3×4 Matrix{Int32}:
 1  -3  -4   6
 0  -4   1  -9
 0   0  -1  -27

Backtracking--------------------------------------------------

result[3] = -27 / -1 = 27.0
result[2] = (-9 - (1 * 27.0) - (-4 * 0.0)) / -4 = 9.0
result[1] = (6 - (-4 * 27.0) - (-3 * 9.0) - (1 * 0.0)) / 1 = 141.0

result [141.0, 9.0, 27.0]

x=A\b = [141.0, 9.0, 27.0] (using julia)

Process returned 0 (0x0)   execution time : 2.250 s
Presione una tecla para continuar . . .
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Generation----------------------------------------------------

Your random 4 x 4 matrix is
4×4 Matrix{Int32}:
   1   0   0   0
 -10   1   7   9
  -5   0  10   1
   5   0   1   0

Your random vector is
[4, -6, 7, 10]

Your ampliated matrix is
4×5 Matrix{Int32}:
   1   0   0   0   4
 -10   1   7   9  -6
  -5   0  10   1   7
   5   0   1   0  10

Calibration---------------------------------------------------

4×5 Matrix{Int32}:
   1   0   0   0   4
 -10   1   7   9  -6
  -5   0  10   1   7
   5   0   1   0  10

Triangulation-------------------------------------------------
```

```
Triangulation-------------------------------------------------

Fila2 = 1 * Fila2 - -10 * Fila1

4×5 Matrix{Int32}:
  1  0   0  0   4
  0  1   7  9  34
 -5  0  10  1   7
  5  0   1  0  10

Fila3 = 1 * Fila3 - -5 * Fila1

4×5 Matrix{Int32}:
 1  0   0  0   4
 0  1   7  9  34
 0  0  10  1  27
 5  0   1  0  10

Fila4 = 1 * Fila4 - 5 * Fila1

4×5 Matrix{Int32}:
 1  0   0  0    4
 0  1   7  9   34
 0  0  10  1   27
 0  0   1  0  -10

Fila3 = 1 * Fila3 - 0 * Fila2
```

```
4×5 Matrix{Int32}:
 1  0   0  0    4
 0  1   7  9   34
 0  0  10  1   27
 0  0   1  0  -10

Fila4 = 1 * Fila4 - 0 * Fila2

4×5 Matrix{Int32}:
 1  0   0  0    4
 0  1   7  9   34
 0  0  10  1   27
 0  0   1  0  -10

Fila4 = 10 * Fila4 - 1 * Fila3

4×5 Matrix{Int32}:
 1  0   0   0     4
 0  1   7   9    34
 0  0  10   1    27
 0  0   0  -1  -127

Your triangulated matrix is
4×5 Matrix{Int32}:
 1  0   0   0     4
 0  1   7   9    34
 0  0  10   1    27
 0  0   0  -1  -127
```

```
Your triangulated matrix is
4×5 Matrix{Int32}:
 1  0   0   0     4
 0  1   7   9    34
 0  0  10   1    27
 0  0   0  -1  -127

Calibration----------------------(again)--------------------------

4×5 Matrix{Int32}:
 1  0   0   0     4
 0  1   7   9    34
 0  0  10   1    27
 0  0   0  -1  -127

Backtracking--------------------------------------------------

result[4] = -127 / -1 = 127.0
result[3] = (27 - (1 * 127.0) - (10 * 0.0)) / 10 = -10.0
result[2] = (34 - (9 * 127.0) - (7 * -10.0) - (1 * 0.0)) / 1 = -1039.0
result[1] = (4 - (0 * 127.0) - (0 * -10.0) - (0 * -1039.0) - (1 * 0.0)) / 1 = 4.0

result [4.0, -1039.0, -10.0, 127.0]

x=A\b = [4.000000000000023, -1039.000000000003, -10.000000000000034, 127.00000000000037] (using julia)

Process returned 0 (0x0)   execution time : 2.276 s
Presione una tecla para continuar . . .
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