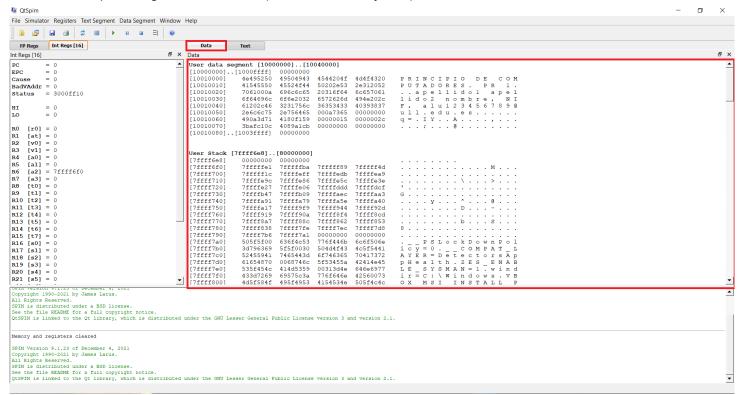
Práctica 1 - Principio de computadores

a)

I)

Se muestra aquí el segmento de datos (Usuario, Kernel y Pila).



II)

Se muestra esta vez el segmento de instrucciones (Usuario y Kernel).

```
File Simulator Registers Text Segment Data Segment Window Help
      FP Regs Int Regs [16]
 Int Regs [16]
                                                                                                                               Text
                                                                                                                                                                                                                                                             User Text Segment [00400000]..[00440000]; 183: 1w SaO O(Ssp) # argo; 184: addiu Sal Sap 4 # argv; 185: addiu Sal Sal 4 # envp; 186: 511 SvO SaO 2; 187: addu Sal Sal SvO; 188: jal main; 189: nop; 191: 1i SvO 10; 189: nop; 191: 1i SvO 10; 192: syscall # ayscall 10 (exit); 6: 1a SaO,titulo
                                                                                                                                                                                         lw $4, 0($29)
addiu $5, $29, 4
addiu $6, $5, 4
sll $2, $4, 2
ddu $6, $6, $2
jal 0x00400024 [main]
 Cause = 0
BadVAddr = 0
Thatus = 3000ff10
                                                                                                                                                                                       [00400014] 0c110009
[00400015] 0000000
[00400015] 3402000a
[00400020] 0000000c
[00400024] 3c011001
[00400023] 34020004
[00400023] 34020004
[00400030] 0000000c
[00400033] 3c011001
[00400034] 3c011001
[00400035] 3402002
[00400036] 34020004
[00400040] 0000000c
[00400040] 3c011001
                                                                                                                                                              0c100009
LO = 0

RO [r0] = 0

R1 [at] = 0

R2 [v0] = 0

R3 [v1] = 0

R5 [a1] = 0

R6 [a2] = 7ffff6f0

R7 [a3] = 0

R8 [t0] = 0

R9 [t1] = 0

R10 [t2] = 0

R11 [t3] = 0

R14 [t6] = 0

R14 [t6] = 0

R15 [t7] = 0

R16 [s0] = 0

R17 [s1] = 0

R18 [s2] = 0

R20 [s4] = 0

R21 [s4] = 0

R20 [s4] = 0

R21 [s5] = 0

R20 [s4] = 0

R21 [s5] = 0
                                                                                                                                     0040003c] 3402004

00400040] 30000006

00400044] 3c011001

00400046] 3c011001

00400046] 3c011001

00400050] 8c29006c

00400054] 01095020

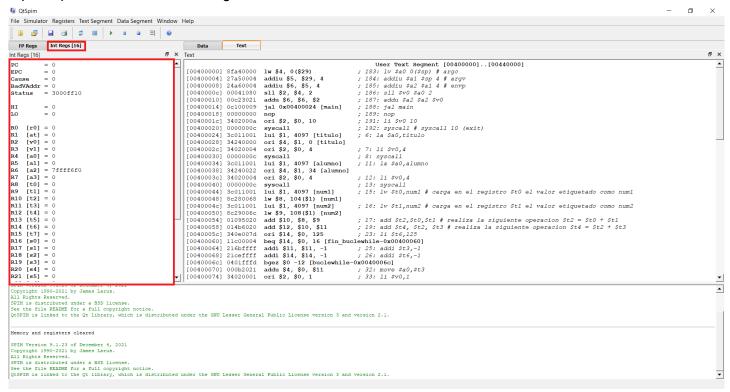
00400056] 340e007d

00400056] 11c00004

00400064] 21cbffff
                                                                                                                                                                                                                                                              ; 13: syscall
; 15: lw $t0,num1 # carga en el registro $t0 el valor etiquetado como num1
                                                                                                                                                                                                                                                              ; 16: lw $t1,num2 # carga en el registro $t1 el valor etiquetado como num2
                                                                                                                                       0400068] 21ceffff
040006c] 0401fffd
                                                                                                                                       00400070] 000b2021
00400074] 34020001
  All Rights Reserved.
SFML is distributed under a BSD license.
See the file REALME for a full copyright notice.
(DFSFML is linked to the Ct library, which is distributed under the GNU Lesser General Public License version 3 and version 2.1.
       mory and registers cleared
  SPIM Version 9.1.23 of December 4, 2021
Copyright 1990-2021 by James Larus.
All Rights Reserved.
SPIM is distributed under a BSD license.
See the file REARME for a full copyright notice.
QCSPIM is linked to the Qt library, which is distributed under the GNU Lesser General Fublic License version 3 and version 2.1.
```

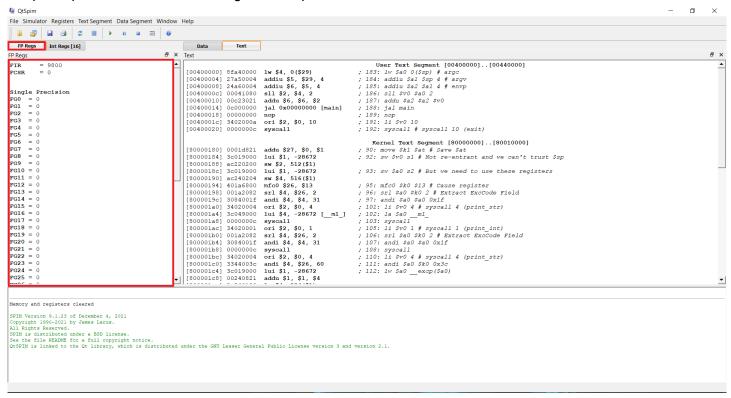
III)

Aquí se puede ver el banco de registros enteros.



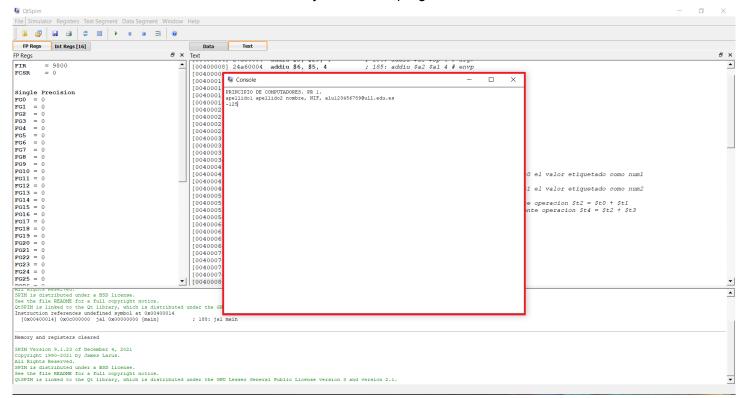
IV)

Y aquí se puede ver el banco de registros en punto flotante.

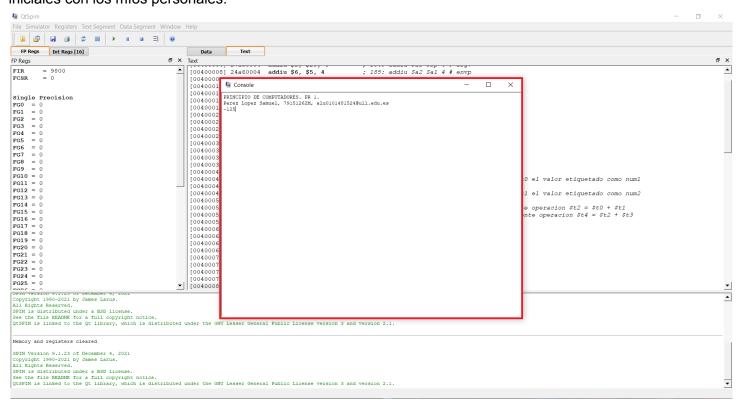


V)

Por último se muestra la consola del sistema ejecutando el programa.



b)Se observa la consola del sistema, con el programa cambiado en el Visual Studio Code, sustituyendo los datos iniciales con los míos personales.



l)

Aquí se está localizando la letra inicial (S) para poder asignarle su espacio de memoria.

```
User data segment [10000000]..[10040000]
[10000000]..[1000ffff]
                      00000000
[10010000]
             4e495250
                      49504943
                               4544204f 4d4f4320
                                                    PRINCIPIO
                                                                       D E
                                                                             COM
                                                                               1 .
[10010010]
             41545550 45524f44
                               50202e53 2e312052
                                                    PUTADORES.
                                                                         P R
                                65706f4c 61<mark>53</mark>207a
[100100201
             6550000a 207a6572
                                                    . . Perez
                                                                    Lopez
                                                                               S a
                                                                79151262M,
             6c65756d 3937202c
[100100301
                                32313531
                                         2c4d3236
                                                    muel,
             756c6120 31303130
                                                      alu0101481524@u
[100100401
                                35313834
                                         75403432
                                                    ll.edu.es...
[10010050]
             652e6c6c 652e7564
                                00000a73
                                         00000000
                                                    q = . I Y . . A . . . . , . . .
[10010060]
             490a3d71
                      4180f159
                                00000015
                                         0000002c
             3bafc10c
                      4089a1cb
                                00000000
                                         00000000
[10010070]
                                                    . . . ; . . . @ . . . . . . .
[10010080]..[1003ffff]
                      00000000
```

La dirección de memoria de la inicial de mi nombre (S) es [1001002e].

II)

Están señaladas la letra inicial de mi nombre y su representación en hexadecimal.

```
User data segment [10000000]..[10040000]
[10000000]..[1000ffff]
                     00000000
[10010000]
             4e495250
                     49504943
                               4544204f
                                        4d4f4320
                                                   PRINCIPIO
                                                                     D E
                                                                          COM
                     45524f44
                                        2e312052
                                                   PUTADORES.
[10010010]
             41545550
                               50202e53
                                                                       P R
                                                                            1
             6550000a 207a6572
                                        6153207a
                                                                            Sa
                              65706f4c
[100100201
                                                                 Lopez
                                                   . . Perez
                                                              79151262M,
             6c65756d 3937202c 32313531
                                        2c4d3236
                                                   muel,
[100100301
                                                    alu0101481524@u
[10010040]
             756c6120 31303130 35313834
                                       75403432
[10010050]
             652e6c6c 652e7564 00000a73 00000000
                                                   ll.edu.es....
[10010060]
             490a3d71 4180f159 00000015 0000002c
                                                   q = . I Y . . A . . . . , . . .
[10010070]
             3bafc10c 4089a1cb
                              00000000 00000000
                                                   . . . ; . . . @ . . . . . . . .
[100100801..[1003ffff1
                     00000000
```

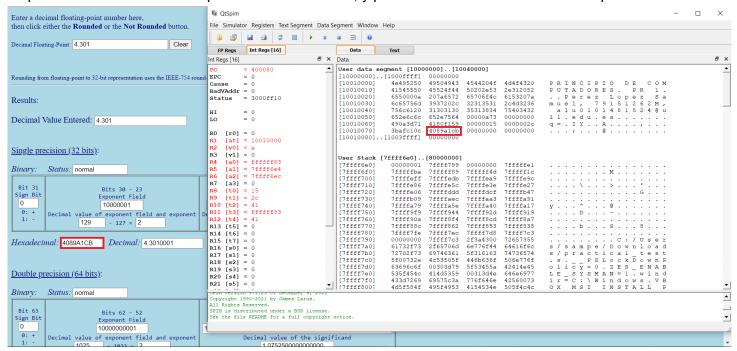
III)

Se observa el segmento de datos correspondiente a la dirección de num3.

```
User data segment [10000000]..[10040000]
[10000000]..[1000ffff]
                     00000000
                               4544204f 4d4f4320
[10010000]
            4e495250
                     49504943
                                                   PRINCIPIO
                                                                      D E
            41545550 45524f44
                              50202e53 2e312052
                                                   PUTADORES.
[100100101
                                                                        P R
                                                                             1 .
[10010020]
            6550000a 207a6572
                              65706f4c 6153207a
                                                                  Lopez
                                                                             s a
                                                   . . Perez
                                                              79151262M,
[100100301
            6c65756d 3937202c
                               32313531
                                        2c4d3236
                                                   muel,
                                                     alu0101481524@u
                      31303130
                                        75403432
[100100401
            756c6120
                               35313834
            652e6c6c
                      652e7564
                                        00000000
[100100501
                               00000a73
                                                   ll.edu.es.....
[10010060]
             490a3d71
                      4180f159
                               00000015
                                        0000002c
                                                   q = . I Y . . A . . . , . . .
[10010070]
                               00000000
                                                   . . . ; . . . @ . . . . . . . .
            3bafc10c
                      4089a1cb
                                        00000000
[10010080]..[1003fffff]
                     00000000
```

IV)

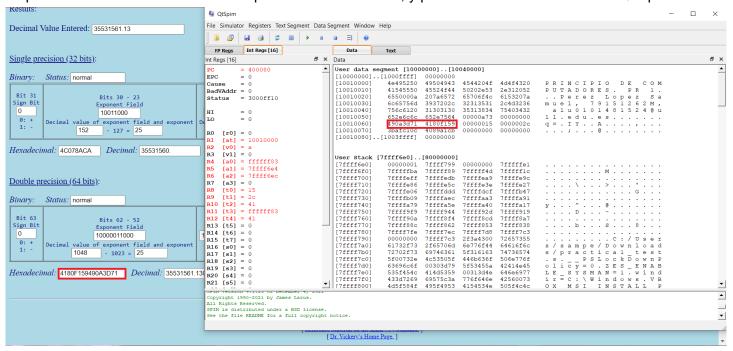
Se puede ver el número 4.301 pasado a hexadecimal, y posteriormente buscado en el QTSpim.



V)

La dirección de memoria donde empieza es [10010074]

VI)
Se puede ver el número 35531561.13 pasado a hexadecimal, y posteriormente buscado en el QTSpim.



VII)

La dirección de memoria donde empieza es [10010060].

I)

```
PC
         = 400058
         = 0
EPC
         = 0
Cause
BadVAddr = 0
        = 3000ff10
Status
         = 0
ΗI
         = 0
LO
R0
   [r0] = 0
    [at] = 10010000
R1
   [\mathbf{v}0] = 4
R2
R3 \quad [v1] = 0
R4 [a0] = 10010022
R5
    [a1] = 7ffff6e4
   [a2] = 7ffff6ec
R6
R7
   [a3] = 0
R8 [t0] = 15
R9 [t1] = 2c
R10 [t2] = 41
R11 [t3] = ffffff83
R12 [t4] = 41
R13 [t5] = 0
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = 0
R17 [s1] = 0
R18 [s2] = 0
R19 [s3] = 0
R20 [s4] = 0
R21 [s5] = 0
```

El \$t2 contiene el valor 41 en hexadecimal, que sería el número 65 en decimal.

II)

Se ha modificado manualmente el valor de \$t3 y se ha introducido el valor 1200 en formato decimal.

```
PC
          = 400058
          = 0
EPC
Cause
BadVAddr = 0
Status
         = 3000ff10
         = 0
ΗI
         = 0
LO
\mathbf{R0} \quad [\mathbf{r0}] = 0
R1
    [at] = 10010000
R2
   [\mathbf{v}0] = 4
R3 \quad [v1] = 0
    [a0] = 10010022
R5 [a1] = 7ffff6e4
R6 [a2] = 7ffff6ec
R7
    [a3] = 0
R8 [t0] = 15
R9 [t1] = 2c
R10 [t2] = 41
R11 [t3] = 4b0
R12 [t4] = 41
R13 [t5] = 0
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = 0
R17 [s1] = 0
R18 [s2] = 0
R19 [s3] = 0
R20 [s4] = 0
R21 [s5] = 0
```

```
PC
         = 40005c
EPC
         = 0
         = 0
Cause
BadVAddr = 0
Status = 3000ff10
ΗI
         = 0
         = 0
LO
   [r0] = 0
R0
R1
   [at] = 10010000
R2
    [\mathbf{v}0] = 4
    [v1] = 0
R3
R4
   [a0] = 10010022
R5
    [a1] = 7ffff6e4
    [a2] = 7ffff6ec
R6
   [a3] = 0
R7
R8
    [t0] = 15
R9
    [t1] = 2c
R10 [t2] = 41
R11
    [+3]
         = 4hc
R12 [t4] = 4f1
R13 [t5] = 0
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = 0
R17 [s1] = 0
R18 [s2] = 0
R19 [s3] = 0
R20 [s4] = 0
R21 [s5] = 0
```

El valor en hexadecimal de \$t4 es 4f1 en hexadecimal, y en decimal es 1265.

IV)

```
PC
         = 400080
EPC
         = 400070
Cause
         = 24
BadVAddr = 0
Status
        = 3000ff10
ΗI
         = 0
LO
         = 0
    [r0] = 0
    [at] = 10010000
R1
R2
    [v0] = a
R3
    [v1] = 0
R4
    [a0] = 433
    [a1] = 7ffff6e4
R5
R6
   [a2] = 7ffff6ec
R7
   [a3] = 0
R8
    [t0] = 15
    [t1] = 2c
R9
R10 [t2] = 41
R11 [t3] = 433
R12 [t4] = 4t1
R13 [t5] = 0
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = 0
R17 [s1] = 0
R18 [s2] = 0
R19 [s3] = 0
R20 [s4] = 0
R21 [s5] = 0
```

El valor en hexadecimal de \$t3 es 433 en hexadecimal, y en decimal es 1075. El valor en hexadecimal de \$t6 es 0 en hexadecimal, y en decimal es 0.