Архітектура комп'ютера

Лабораторна робота №1

Вивчення системних команд мікроконтроллера КР1816ВЕ48

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Варіант : порт BUS

F = 4(x1&x2)-(x3-x4+1)-(x5vx6-1)/2

Код :

```
        Sel    Rb0
; r0 - l bits of x1
; r1 - h bits of x1
; r2 - l bits of x2
; r3 - h bits of x2

        Ins    A, Bus
        Mov    R0, A

        Ins    A, Bus
        Mov    R1, A

        Ins    A, Bus
        Mov    R2, A

        Ins    A, Bus
        Mov    R3, A

; (x1&x2)
; put result into x1
; for l bits
        Mov    A, R0
        Anl    A, R2
        Mov    R0, A
; for h bits
        Mov    A, R1
        Anl    A, R3
        Mov    R1, A

; 4*(x1&x2)
; put result into x1
        Mov    A, R0
        Rlc    A
        Mov    R0, A

        Mov    A, R1
        Rlc    A
        Mov    R1, A

        Mov    A, R0
        Rlc    A
        Mov    R0, A

        Mov    A, R1
        Rlc    A
        Mov    R1, A
```

```
; r2 - l bits of x5
; r3 - h bits of x5
; r4 - l bits of x6
; r5 - h bits of x7

        Ins    A, Bus
        Mov    R2, A

        Ins    A, Bus
        Mov    R3, A

        Ins    A, Bus
        Mov, R4, A

        Ins    A, Bus
        Mov    R5, A

; (x5vx6)
; put result into x5
        Mov    A, R2
        Orl    A, R4
        Mov    R2, A

        Mov    A, R3
        Orl    A, R5
        Mov    R3, A

; (x5vx6)-1
; put result into x5
        Clr    C
        Mov    A, #FFH

        Add    A, R2
        Mov    R2, A
        Mov    A, R3

        Addc   A, #FFH
        Mov    R3, A

; (x5vx6)/2
; put result into x5
        Clr    C
        Mov    A, R3
        Rrc    A
        Mov    R3, A
        Mov    A, R2
        Rrc    A
        Mov    R2, A

; r4 - l bits of x4
; r5 - h bits of x4
; r6 - l bils of x3
; r7 - h bits of x3

        Ins    A, Bus
        Mov    R4, A
```

```
        Ins    A, Bus
        Mov    R5, A


        Ins    A, Bus
        Mov    R6, A


        Ins    A, Bus
        Mov    R7, A


; (x3-x4)
; put result into x3

; make x4 negative
        Clr    C
        Mov    A, R4
        Cpl    A
        Add    A, #1
        Mov    R4, A
        Mov    A, R5
        Cpl    A
        Addc   A, #0
        Mov    R5, A

; subtraction
        Clr    C
        Mov    A, R6
        Add    A, R4
        Mov    R6, A
        Mov    A, R7
        Addc   A, R5
        Mov    R7, A

; (x3-x4)+1
; put result into x3

        Clr    C
        Mov    A, R6
        Add    A, #1
        Mov    R6, A

        Mov    A, R7
        Addc   A, #0
        Mov    R7, A

; 4(x1&x2)-(x3-x4+1)
; put result into x1
; make x3 negative
        Clr    C
        Mov    A, R6
        Cpl    A
        Add    A, #1
        Mov    R6, A

        Mov    A, R7
        Cpl    A
```

```
        Addc   A, #0
        Mov    R7, A

; subtraction
        Clr    C
        Mov    A, R0
        Add    A, R6
        Mov    R0, A

        Mov    A, R1
        Addc   A, R7
        Mov    R1, A

; 4(x1&x2)-(x3-x4+1) - (x5vx6-1)/2
; put result into x1
; make negative
        Clr    C
        Mov    A, R2
        Cpl    A
        Add    A, #1
        Mov    R2, A

        Mov    A, R3
        Cpl    A
        Addc   A, #0
        Mov    R3, A

; subtraction

        Clr    C
        Mov    A, R0
        Add    A, R2
        Mov    R0, A

        Mov    A, R1
        Addc   A, R3
        Mov    R3, A
```