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TALLER

**2.** Escriba los 4 principios de diseño de hardware aprendidos en clase.

1. La simplisidad favorece la regularidad
2. Entre más pequeño es más rápido
3. Hacer el caso común más rápido
4. Buenos diseños demandan grandes compromisos

**3.** Convertir a instrucciones de bajo nivel.

**INICIALIZACIÓN DE VARIABLES**

int x=0; ---- x=%L0 ADD %g0,0,%L0

int y =8; ---- y=%L1 ADD %g0, 8,%L1

int z = 1; ---- z=%L2 ADD %g0, 1,%L2

**OPERACIONES**

y=x+3; ADD %L0, 3, %L3

z=z+3; ADD %L2, 3, %L2

x=(x-z)+ (3+y); SUB %L0, %L2, %L2

ADD %L3, 3, %L3

ADD %L3, %L2, %L0

**4.** Usar el ld, y st.

**ejercicio 1**

a[4]= a[2]+x;

**INICIALIZACIÓN DE VARIABLES**

a=%O0 Vector de salida

a=%L1 Vector de entrada

x=%L2

**OPERACIONES**

LD [%L1+(2\*4)],%L3

ADD %L2,%L3,%L2

ST %L2,[ %O0 + (4\*4) ]

**ejercicio 2**

y[0] = y[40]+13;

**INICIALIZACIÓN DE VARIABLES**

y=%O0 Vector de salida

y=%L1 Vector de entrada

13 Es un Inmediato

**OPERACIONES**

LD [%L1+(40\*4)],%L2

ADD %L2,13,%L3

ST %L3,[ %O0 + (0\*4) ]

**5.** Convertir a lenguaje de máquina.

**a.**int main(){

int i =3; ---------- i=%L0 ADD %g0,3,%L0 LENGUAJE BAJO NIVEL

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10000 | 000000 | 00000 | 1 | 0000000000011 |

p=2; --------------p=%L1 ADD %g0,2,%L1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero -RS2 |
| 10 | 10001 | 000000 | 00000 | 1 | 0000000000010 |

return i+3; ADD %L0,3,%O0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 01000 | 000000 | 10000 | 1 | 0000000000011 |

}

b.

int main(){

**INICIALIZACIÓN DE VARIABLES**

int p=3; ---- p=%L0 ADD %g0,3,%L0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10000 | 000000 | 00000 | 1 | 0000000000011 |

x=1; ---- x=%L1 ADD %g0, 1,%L1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10001 | 000000 | 00000 | 1 | 0000000000001 |

z=4; ---- z=%L2 ADD %g0,4 ,%L2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10010 | 000000 | 00000 | 1 | 0000000000100 |

int w=0; ------ w=%L3 ADD %g0,0 ,%L3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10011 | 000000 | 00000 | 1 | 0000000000000 |

**OPERACIONES**

w=(p+40)+(x-z); ADD %L0, 40, %L0 1

SUB %L1, %L2, %L1 2

ADD %L0, %L1, %L4 3

return 0 %O0; -------- ADD %g0,0,%O0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 01000 | 000000 | 00000 | 1 | 0000000000000 |

1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero- RS2 |
| 10 | 10000 | 000000 | 10000 | 1 | 0000000101000 |

2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero | RS2 |
| 10 | 10001 | 000100 | 10001 | 0 | 00000000 | 10010 |

3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero | RS2 |
| 10 | 01000 | 000000 | 10000 | 0 | 00000000 | 10001 |

}

6. Inicializar las siguientes variables negativas usando OR.

float n=-12; ----------------12= Binario es 1100 INVERTIDO ES 0011 Y CONVERTIDO CON COMPLEMENTO A DOS ES 0100

%g0,-12,%L0 lenguaje bajo nivel

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero -RS2 |
| 10 | 10000 | 000010 | 00000 | 1 | 1111111110100 |

float a=-11; ----------------11= Binario es 1011 INVERTIDO ES 0100 Y CONVERTIDO CON COMPLEMENTO A DOS ES 0101

%g0,-11,%L1 lenguaje bajo nivel

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero -RS2 |
| 10 | 10001 | 000010 | 00000 | 1 | 1111111110101 |

float =-14; --------------------14=Binario es 1110 INVERTIDO ES 0001 Y CONVERTIDO CON COMPLEMENTO A DOS ES 0010

%g0,-14,%L2 lenguaje bajo nivel

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| OP | RD | OP3 | RS1 | i | Unusued/zero -RS2 |
| 10 | 10010 | 000010 | 00000 | 1 | 1111111110010 |