Solucions Problemes (2.32)

Problema 2.32 de la col.lecció

Donades les següents declaracions:

```
char indx[100];                 /* enters de 1 byte  */
short meitat[100];             /* enters de 2 bytes */
int val[100], vec[100];      /* enters de 4 bytes */
main()
{
       char c;
       int i, j;
...
}
```

Tradueix les següents sentències en C suposant que les variables i, j, i c ocupen els registres $t0, $t1, i $t2:

a) `i = val[5] + vec[10];`

```
la   $t3, val
lw   $t3, 20($t3)
la   $t4, vec
lw   $t4, 40($t4)
addu $t0, $t3, $t4
```

b) `i = vec[10 + val[5]];`

```
la    $t3, val
lw    $t3, 20($t3)
addiu $t3, $t3, 10
sll   $t3, $t3, 2
la    $t4, vec
addu  $t4, $t4, $t3
lw    $t0, 0($t4)
```

c) `c = indx[i + val[j]];`

```
la    $t3, val
sll   $t4, $t2, 2
addu  $t3, $t3, $t4
lw    $t3, 0($t3)
addu  $t3, $t3, $t0
la    $t4, indx
addu  $t4, $t4, $t3
lb    $t2, 0($t4)
```

d) `c = indx[meitat[i]];`

```
la    $t3, meitat
sll   $t4, $t0, 1
addu  $t3, $t3, $t4
lh    $t3, 0($t3)
la    $t4, indx
addu  $t4, $t4, $t3
lb    $t2, 0($t4)
```

e) `i = meitat[vec[i] + val[j]];`

```
la   $t3, val
sll  $t4, $t1, 2
add  $t3, 4t3, $t4
lw   $t3, 0($t3)
la   $t4, vec
sll  $t5, $t0, 2
add  $t4, $t4, $t5
lw   $t4, 0($t4)
addu $t3, $t3, $t4
 sll  $t3, $t3, 1
la   $t4, meitat
add  $t3, $t3, $t4
lh   $t0, 0($t3)
```

f) `i = val[meitat[i]] + vec[j];`

```
la   $t4, meitat
sll  $t5, $t0, 1
add  $t4, $t4, $t5
lh   $t4, 0($t4)
sll  $t3, $t3, 2
la   $t4, val
add  $t3, $t3, $t4
lw   $t5, 0($t3)

la   $t3, vec
sll  $t4, $t1, 2
add  $t3, $t3, $t4
lw   $t3, 0($t3)

addu $t0, $t3, $t5
```

g) `i = vec[indx[i]] - val[j];`

```
la   $t3, indx
add  $t3, $t3, $t0
lb   $t3, 0($t3)
sll  $t3, $t3, 2
la   $t4, vec
add  $t3, $t3, $t4
lw   $t3, 0($t3)
la   $t4, val
sll  $t5, $t1, 2
add  $t4, $t4, $t5
lw   $t4, 0($t4)
subu $t0, $t3, $t4
```

h) `i = meitat[indx[val[j]]];`

```
la    $t4, val
sll   $t5, $t1, 2
add   $t4, $t4, $t5
lw    $t4, 0($t4)
la    $t3, indx
addu  $t3, $t3, $t4
lb    $t3, 0($t3)
sll   $t3, $t3, 1
la    $t4, meitat
```

```
addu  $t3, $t3, $t4
lh    $t0, 0($t3)
```