Lab3&4 勘误

2024.10.21

Lab3&4\lab3\design_sources\cache.v

此处应该是set to the not recent

```
88      always @ (*) begin
89          valid <= TO_BE_FILLED; // if both not hit, set to the recent value
90          dirty <= TO_BE_FILLED; // if both not hit, set to the recent value
91          tag <= TO_BE_FILLED; // if both not hit, set to the recent value
92          hit <= hit1 | hit2;
93          if (load & hit1) begin
94              dout <= u_b_h_w[1] ? word1 :
95              u_b_h_w[0] ? {u_b_h_w[2] ? 16'b0 : {16{half_word1[15]}}, half_word1} :
96              {u_b_h_w[2] ? 24'b0 : {24{byte1[7]}}, byte1};
97          end
98          else if (load & hit2) begin
99              dout <= u_b_h_w[1] ? word2 :
100             u_b_h_w[0] ? {u_b_h_w[2] ? 16'b0 : {16{half_word2[15]}}, half_word2} :
101             {u_b_h_w[2] ? 24'b0 : {24{byte1[7]}}, byte2};
102         end
103         else begin
104             dout <= recent1 ? word2 : word1;
105         end
106     end
```

Lab3&4\lab4\riscv_sources\riscv.txt

漏写了loop标号
可以在第一行补上

```
addi x0, x0, 0
lb x1, 0x01C(x0)
lh x2, 0x01C(x0)
lw x3, 0x01C(x0)
lbu x4, 0x01C(x0)
lhu x5, 0x01C(x0)
lw x0, 0x210(x0)
lui x1 0xABCDE
sub x1, x4, x2
addi x1, x1, 0x71C
sb x1, 0x0(x0)
sh x1, 0x4(x0)
sw x1, 0x8(x0)
lw x6, 0x200(x0)
lw x7, 0x400(x0)
lw x8, 0x410(x0)
ori x16, x0, 0xED
jal x0, loop
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
```

```
loop: addi x0, x0, 0
lb x1, 0x01C(x0)
lh x2, 0x01C(x0)
lw x3, 0x01C(x0)
lbu x4, 0x01C(x0)
lhu x5, 0x01C(x0)
lw x0, 0x210(x0)
lui x1 0xABCDE
sub x1, x4, x2
addi x1, x1, 0x71C
sb x1, 0x0(x0)
sh x1, 0x4(x0)
sw x1, 0x8(x0)
lw x6, 0x200(x0)
lw x7, 0x400(x0)
lw x8, 0x410(x0)
ori x16, x0, 0xED
jal x0, loop
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
addi x0, x0, 0
```

Lab3&4 Bonus

2024.10.21

4-way set associative

```
assign addr_element1 = {addr_index, 2'b00};
assign addr_element2 = {addr_index, 2'b01};
assign addr_element3 = {addr_index, 2'b10};
assign addr_element4 = {addr_index, 2'b11};
```

```
assign addr_wordr = recent1==0?addr_word1
                  :recent1==1?addr_word2
                  :recent1==2?addr_word3
                  :addr_word4;
```

```
assign recent1 = inner_recent[addr_element1];
assign recent2 = inner_recent[addr_element2];
assign recent3 = inner_recent[addr_element3];
assign recent4 = inner_recent[addr_element4];
```

```
if(recent3==0) begin
    inner_recent[addr_element3]<=recent4;
end
else if(recent2==0) begin
    inner_recent[addr_element2]<=recent3;
    inner_recent[addr_element3]<=recent4;
end
else if(recent1==0) begin
    inner_recent[addr_element1]<=recent2;
    inner_recent[addr_element2]<=recent3;
    inner_recent[addr_element3]<=recent4;
end
inner_recent[addr_element4]<=0;
```