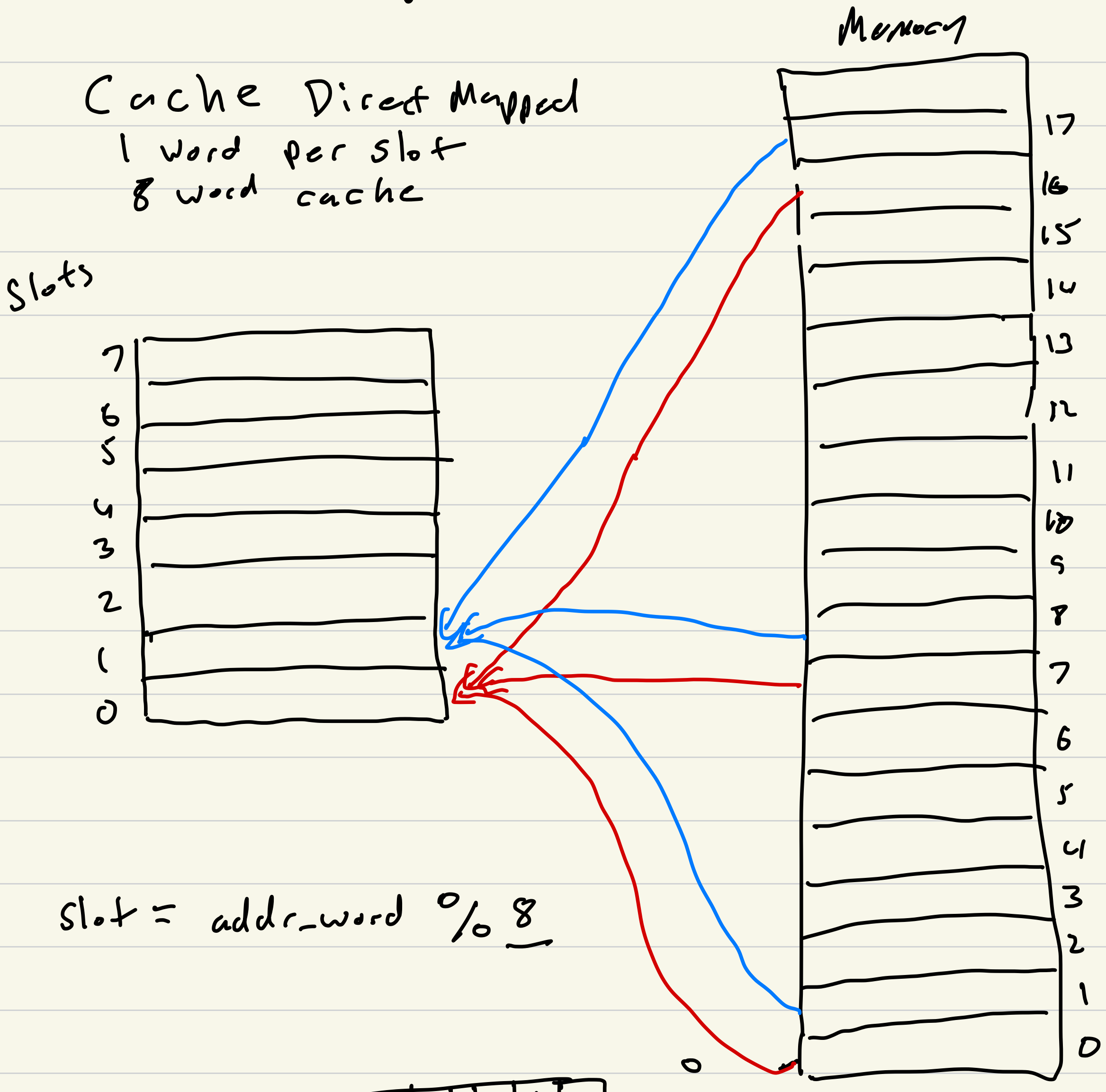
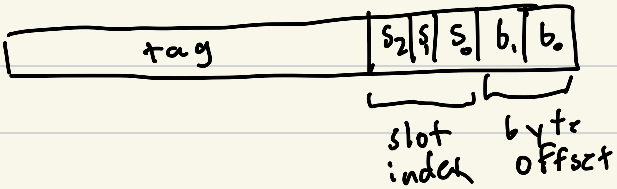
CS 315-01 Project04 Midterm

Cache Direct Mapped

1 word per slot
8 word cache

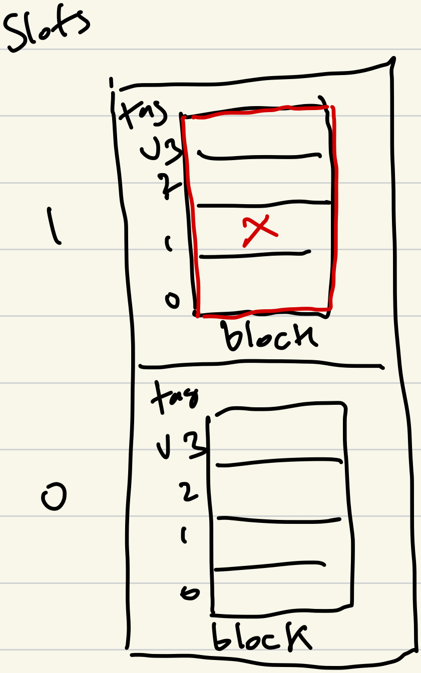


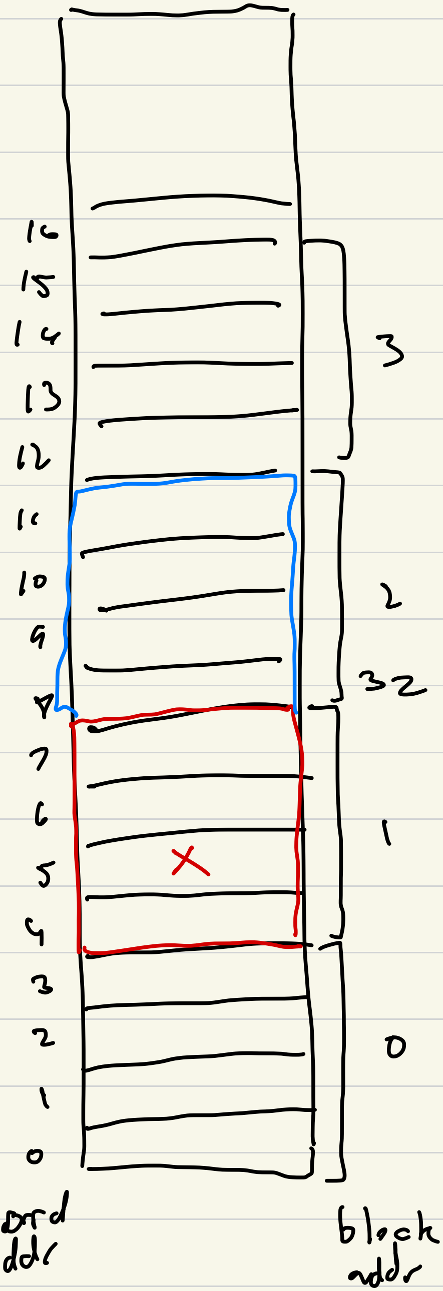
slot = addr_word % 8



slot_index = (addr >> 2) & 0b111;

DM Block Size = 4



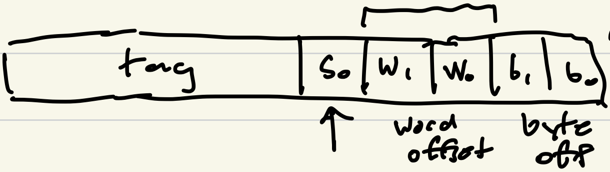


addr

addr_word = addr / 4

addr_block = addr_word / 4

slot_index = addr_block % 2;



block_base = addr_word - block_idx

Lookup DM 4

slot_index = (addr >> 4) & b1

Hit

b_index = (addr >> 2) & 0b11

b_index = (addr / 4) % 4

Miss

We need to bring in entire block

Load block into slot

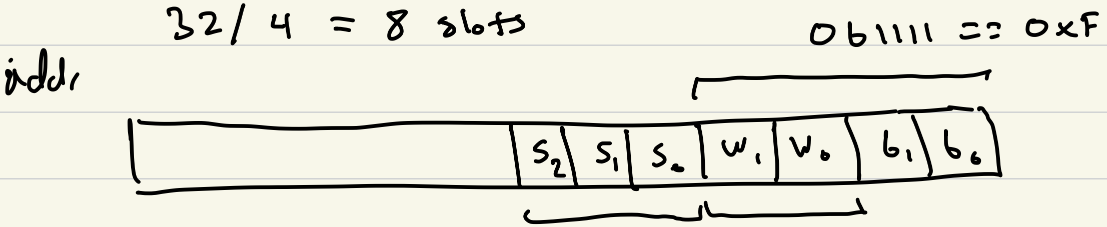
```
Determine block base
Loop 0 to 3
  slot.block[i] =
        *((Uint32_t*)(block_base_byte + (i×4)))

  slot.block[i] =
        *(((uint32_t*)(block_base_byte)) + i)
```

return slot.block[b_indx]

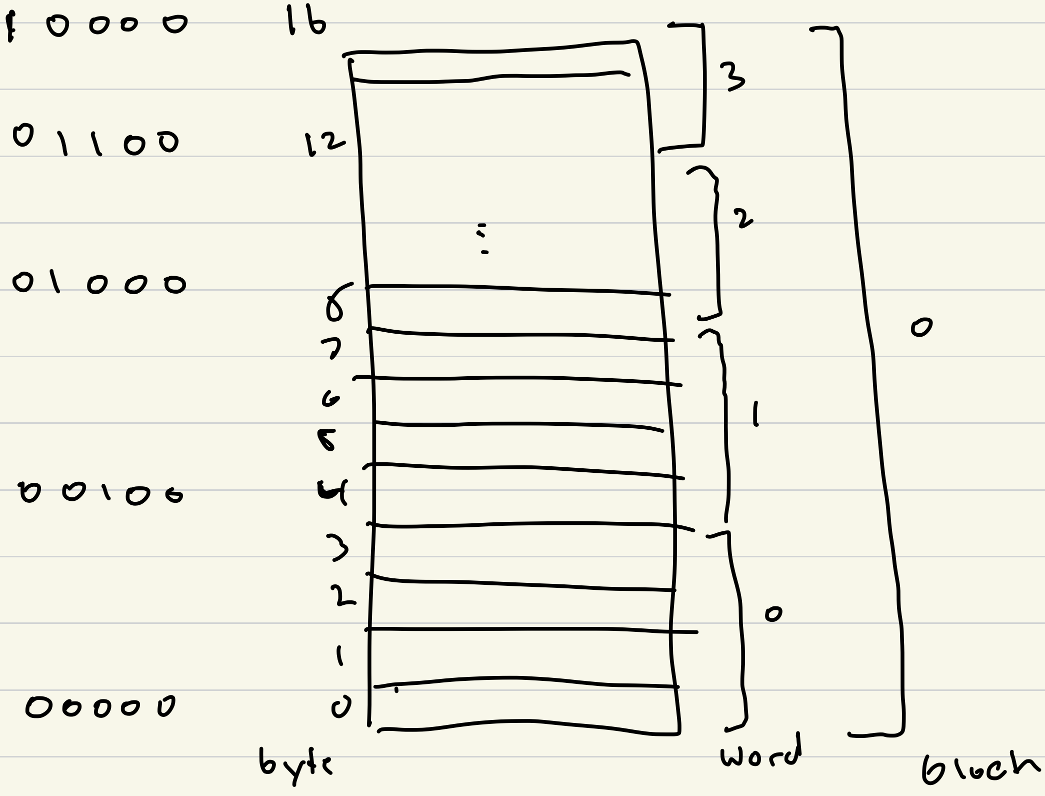
Direct Mapped 32 words 4 word blocks

32/4 = 8 slots



```
b_index = (addr >> 2) & 0b11;
slot_index = (addr >> 4) & 0b111;

block_base_byte = addr & ~(0xF)
```



Question 2

Fix li line

Question 3

Why 20 bit shift

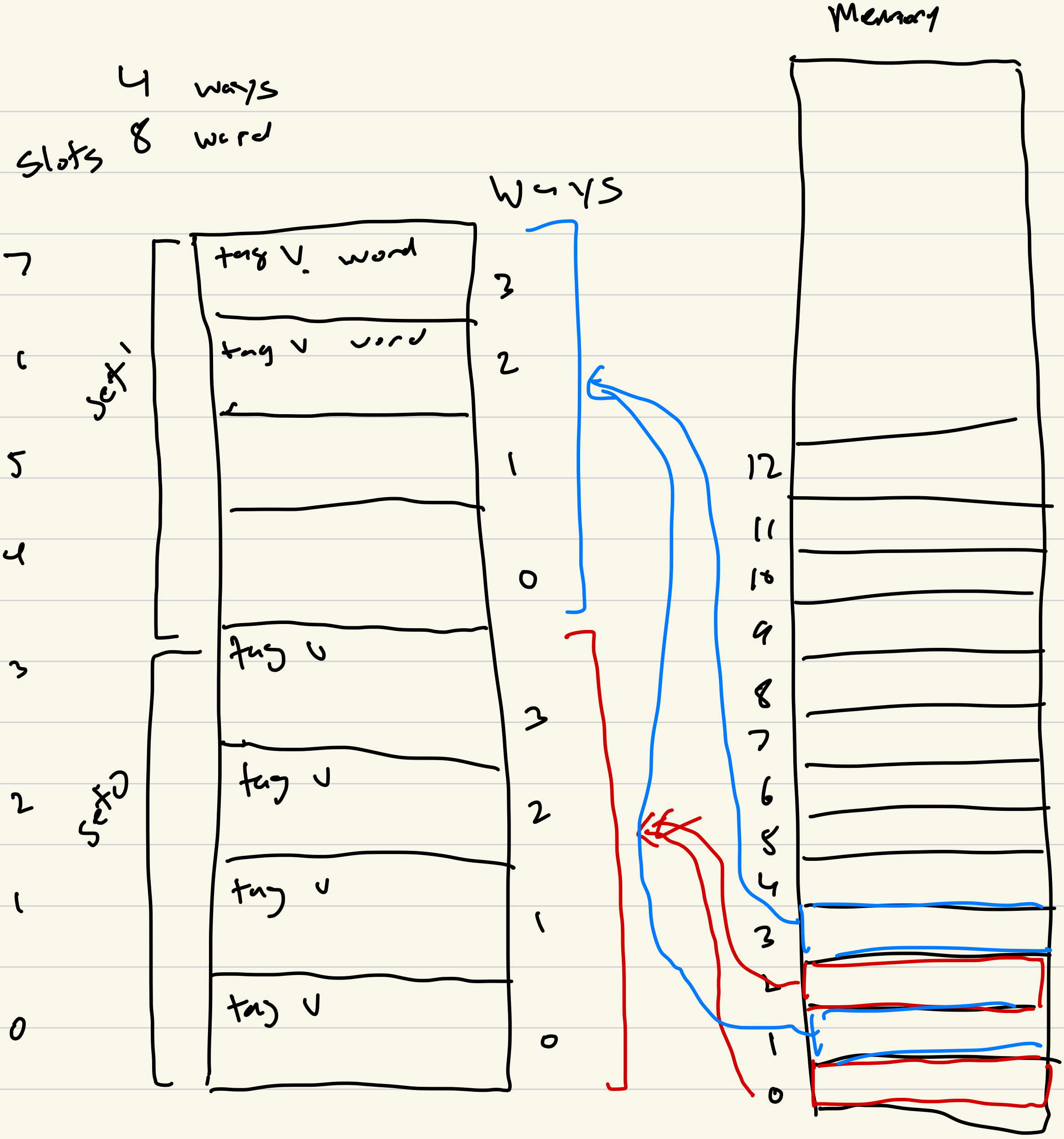
Set Associative Cache

4 way set associative

8 words

4 ways

Slots 8 word



set-index = addr_word % 2