Quiz 3: Julian Garcia

Consider a computer with the following

256KB 4-way set associative cache

Cache block size: 16 bytes

16-bit addresses

Question:

How many bits for the block offset?

$16 = 2^4$

We need a 4 bit block offset

How many bits for the set index?

We have 16 - 4 = 12 bits left for set and tag

Cache is 256KB

Cache block is 16bytes

So cache contains $2^8 * 2^{10} / 2^6 = 2^{12} = 4096$

A set contains 4 blocks

$4096/4 = 1024 = 2^{10}$ sets

Therefore, we need a 10-bit set index

How many bits for the tag?

16 - 4 - 10 = 2
We need 2 bits for the tag