Problem 1: Solve Spring 2013 Final Exam Problem 4(a), asking for details about a partially described cache.

Problem 2: Solve Problem 4(b), a really easy hit ratio question.

Problem 3: Consider the code in Problem 4(c). For these questions assume that $b = 0x1000$, with that value of $b$ we know that $b[0]$ starts at the beginning of a line. 

(a) What would the hit ratio be if ASIZE were 0 (meaning that the a array is effectively not part of the structure)? When you compute the hit ratio consider both loops (the one with sum += in the loop body and the one with norm_val in the loop body).

(b) For what value of ASIZE would Some_Struct (or $b[0]$ or $b[1]$, etc.) be the same size as a cache line?

(c) What would the hit ratio be if Some_Struct were the size of a cache line? Consider both loops.

(d) Find the smallest value for ASIZE that will minimize the hit ratio (make things as bad as they can get). (This is part (c) from the test.) Don’t forget that this is a set-associative cache.