

**University of California at Berkeley**  
**College of Engineering**  
**Department of Electrical Engineering and Computer Science**

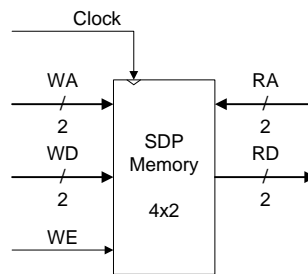
EECS150, Spring 2010

**Quiz 6: March 5<sup>th</sup>**  
**15 Minutes**

Use **only** MUXes, gates, registers, and the memory primitive in the figure to answer the questions.

1. Consider a 4x2 simple dual port (SDP) SRAM memory with asynchronous reads. Add circuitry to make reads from this memory **synchronous**.

Hint: draw a waveform for a synchronous read.



2. Implement a 8x2 **three-port** memory with 2 asynchronous read ports, and 1 write port. Use the space below.