Quiz 3: April 17, 2014

This is a closed book, no calculator quiz.

1. (4 points) For the memory below, what is the address space (1 point)? What is the address-ability (1 point)? What is the data at address 2 (2 points)?

2. (6 points) You wish to express -64 as a 2's complement number.
   (a) (2 points) How many bits do you need (the minimum number)?

   \[ \text{7 bits} \]

   (b) (2 points) With this number of bits, what is the largest positive number you can represent as a 2's complement number (give binary and decimal)?

   \[ 0111111 = 63 = 2^6 - 1 \]

   (c) (2 points) With this number of bits, what is the largest positive number you can represent as an unsigned integer (give binary and decimal)?

   \[ 1111111 = 127 = 2^7 - 1 \]