**Homework 2 CS147 Fall 2015 Frank Mock**

Program Output Observations:

* Many of the Obtained != Expected answers would be correct if only the last 4 bits of the product were considered.

For example: -1 x 1

11111111 x 0001 resulted in 00001111 instead of 11111111

* In 88% of the Obtained != Expected answers the multiplier was negative
* In 93% of the correct answers (Obtained == Expected) the MSB of the 4 bit multiplier is zero. In the 7% that did have a 1 in the MSB position, the multiplicand was zero, 00000000.

In conclusion, the algorithm needs to be changed as described on page 187 of the textbook when doing signed multiplication. The changes are minor. Simply change any negative number to positive keeping track of the original signs. Do one less iteration of the algorithm, (example: 3 iterations instead of 4 for four bit multiplication). Change the sign of the final product if necessary: If the original signs of the numbers were different make the product negative.