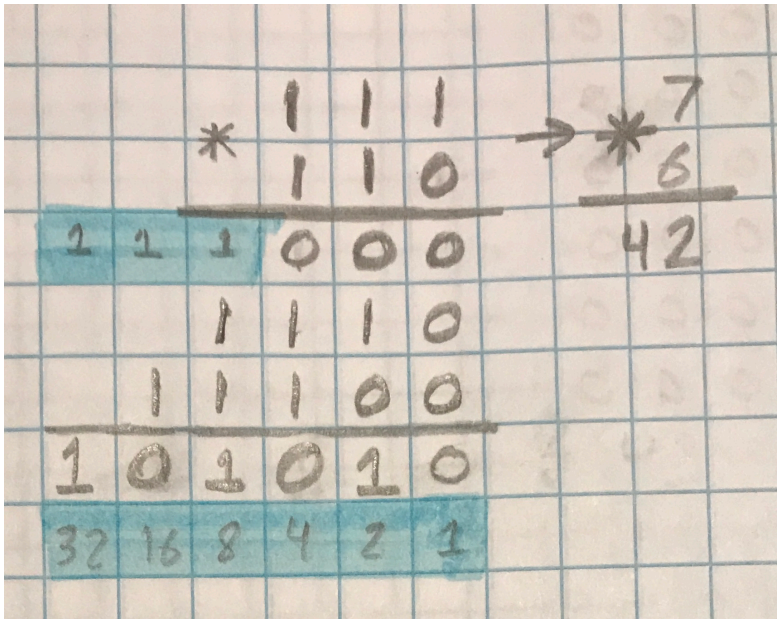
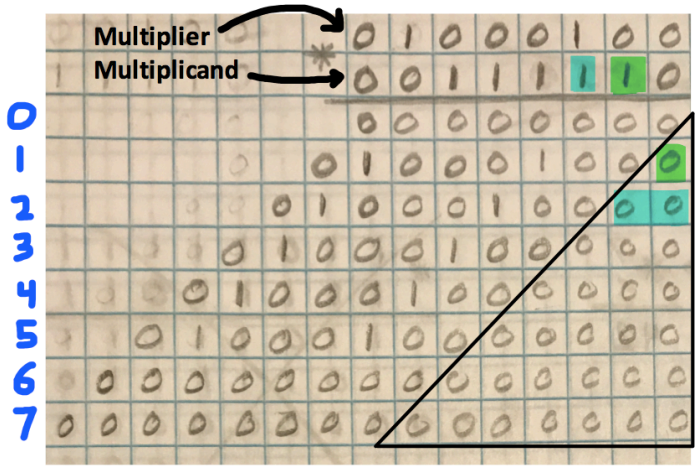
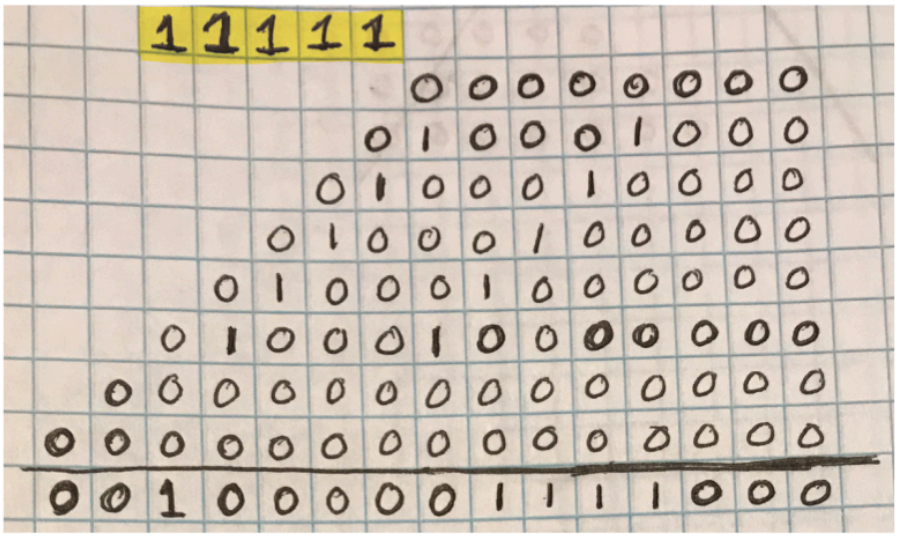


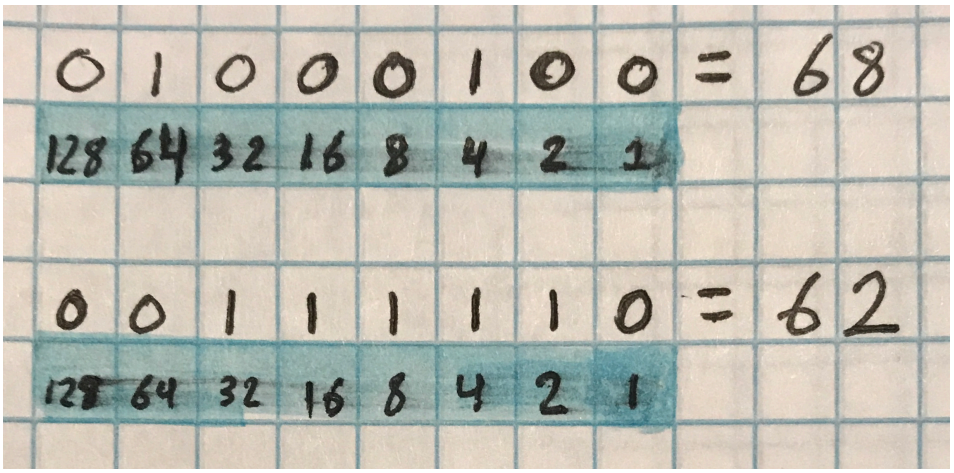
The picture above shows a basic example of multiplying a 3-bit binary number with another 3-bit binary number. The highlighted areas in blue show the carried numbers and the powers of 2 represented by the position of a bit within a binary number.



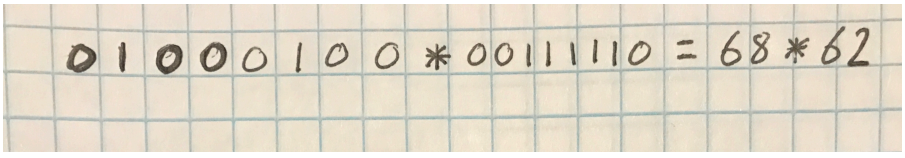
In the above picture, the number of zeros increases as you go down the rows. This is because of the multiplication procedure in itself, which requires that the number of zeros must match the number of place values shifted in the multiplicand. For example, in the green, the multiplier is multiplied to the bit that is located in the first bit that is to the left of the first bit. Because of this, we add one zero to the right of our result. Another example is in the blue, where the multiplier is multiplied to the bit that is located in the second bit that is to the left of the first bit. Because of this, we add two zeros to the right of our result. The number of zeros will only increase as the number of bits to the left of the first bit in the multiplicand increases.



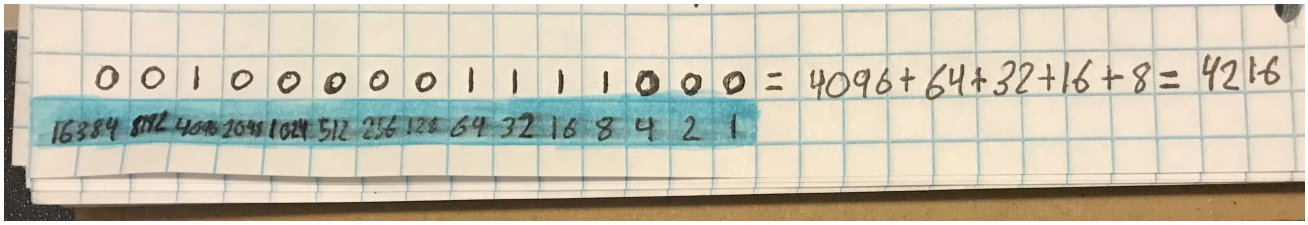
In the picture above, the bits that are carried are highlighted in yellow. The summation of the smaller multiplication operation results within the 8-bit by 8-bit binary equation on the previous page happens in the picture above.



Above is the binary to decimal conversion of the multiplier and the multiplicand in the 8-bit by 8-bit binary equation. The powers of two represented by a position in a binary number is highlighted in blue below the bit.



Above is the binary to decimal conversion of the 8-bit by 8-bit binary equation.



Above is the binary to decimal conversion of the result of the 8-bit by 8-bit multiplication equation. The powers of two represented by a position in a binary number is highlighted in blue below the bit.

***** This is not the final design but I believe that the information in this document can be used to come up with a final design. *****