Assignment 3 Report

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For question 1, the pseudocode was taken from the slides. For question two, we ran the coordinates through the pseudocode to generate the writePixel coordinates. In order to make part b of question 2 less trivial, we swapped (x1, y1) and (x2, y2), as not doing so would not result in any outputs. Regardless, because of the coordinates and the limitations of the basic algorithm, the output was incorrect.

For question 3, we created aliases of dx and dy before swapping them, for the purpose of checking if the slope is greater than one. To perform this check, instead of doing division on dy / dx, we simply compare if (dy >= dx), in which case dy and dx need to be swapped. In this situation, we also swap (x, y) and (x2, y2) for the purpose of creating the pixel coordinates. When the slope is greater than 1 and the coordinates have been calculated, we writePixel(y, x), instead of writePixel(x, y).

Question 4 involved generating the RTL, which we did through analysis of the hardware and how the algorithm could be represented physically.