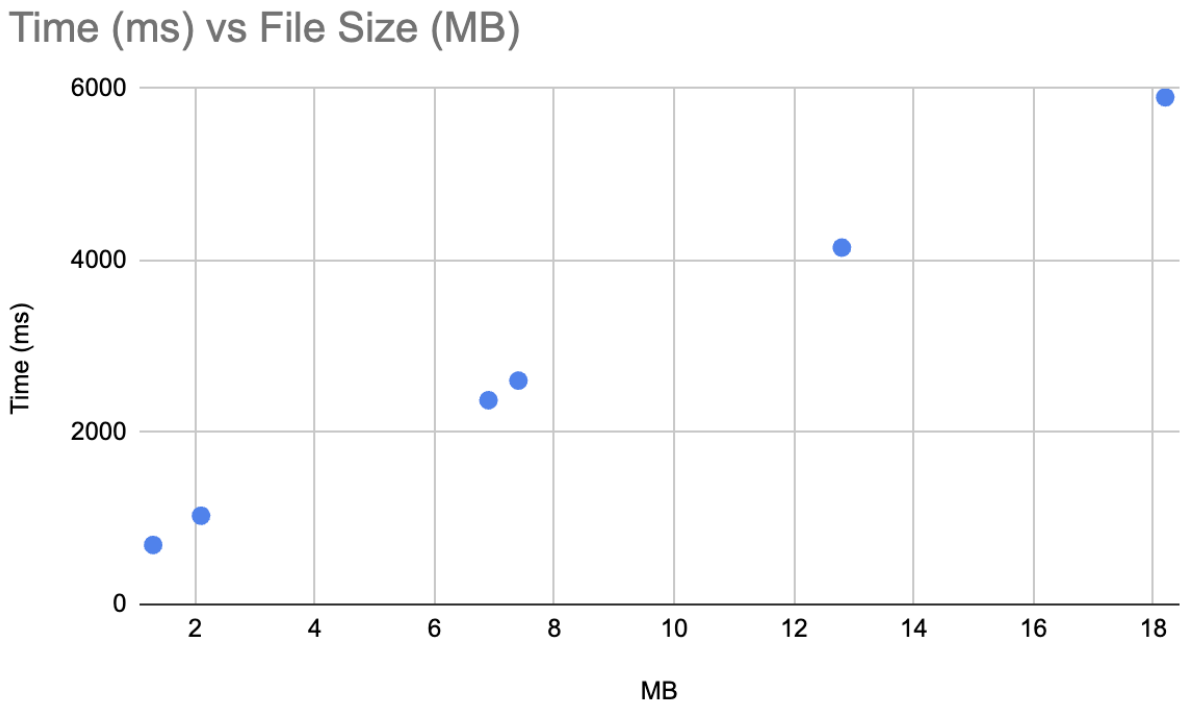
Mason McGowan

Question 1



The data that I collected above for transfer time (ms) vs File Size (MB) shows a linear relationship. A (roughly) straight line can be drawn to connect the data points, and because the x and y axis intervals are the same (2MB and 2000ms), the relationship is linear. This relationship makes sense with context because when transferring, there is a maximum capacity the buffer can hold at a time. That means that a large file of size x, for example, has to be transferred in sections of the maximum capacity size, looping until the entire file is transferred. Bigger files require more loops, but because the maximum capacity of the buffer is always the same, we see the linear relationship in time vs file size.

Question 2

The main bottleneck that stops the code from transferring files faster is the constant buffer size used to transfer files. The larger the file size, the more that the buffer has to read from the FIFO to transfer sections of the file at a time. However, no matter the file size, the maximum capacity of the buffer size is always the same, and therefore we see the linear relationship between transfer time and file size. An analogy that represents this bottleneck is using a cardboard box to move items from your living room to your garage. No matter how many items you have to move, the box is only so big and can only fit so many items at a time.