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Assignment #4 Analysis

In order to investigate the performance of a computer’s file system for a specific workload, I started by defining the workload to be reading random characters from a text file. I created multiple test files of sizes: 0.1, 0.5, 1, 5, 10, 50, and 100 megabytes, using the base64 /dev/urandom Unix command line. I then ran these files through my program readtime.c, which outputs the sequential and random read times for each file. The read times for all the workloads are listed below in the graph. As you can see there is a positive linear relationship between read times and a workload’s size. Therefore, the larger a user’s workload the worse the computer’s file system performance will be. We can also see that in all cases the performance of a random read is worse than that of a sequential read. Also, the ratio of random to sequential read times increases as workload increases. Therefore, as workload increases the more apparent the difference in their performance becomes. Ultimately reading sequentially is far better for a computer’s file system performance than reading randomly.