Dingren Luo 1001167382

Report:

a)Script

The random file size is 30mb for my experiment. I use 15 different block sizes for each plot, from 128b to 2mb. There are 10 iterations in total for both the read and the write experiment. (each iteration produce 1 plot). For each iteration I record the data rates, max data rate and the corresponding block size in '**create_rand_plot.txt**' and '**read_rand_plot.txt**'. After 10 iterations I pick the block size with **most occurrences** as the optimal block size **for each plot** as the **most general optimal block size**. The **most general optimal block size** is recorded on the end of both txt files.

b)ssd hard drive Analysis

1)**write random data**:

I'm using the logarithm ticks for x axis because I found data rate tends to increase intensely in range 100~50000 b, and tends to be horizontal when b > 100000. Thus I plot more block size in range 100~50000 and use log scale to make the plot looks clear.

Just as mentioned above, the curve tends to increase intensely with block size start from 100. At certain point in the curve it reaches max data rate value and decrease slowly. For 10 iterations in my experiment the optimal block size tends to fall in range (4096~131072), and the optimal block size with most occurrences is 8192b.

2)**read random data**:

I'm using the same method for ticking (the logarithm) for read random data experiment. The data rate tends to increase quickly with block size in the same way as in write random data experiment. However after approximate 16384b the data rate might increase or decrease with increase of block size. The absolute value of slope tends to be small comparing to the beginning of the curve. Thus I doubt if there's a optimal value for read from my data. If there exists an optimal value indeed, then the optimal block size with most occurrences in my read data experiment is 16384b.

c)Write and read from other medium (usb)

for write:

The data used to plot create_plot_usb are stored in 'create_rand_data_usb.txt'. The data rate tends to be far slower than writing on SSD hard drive for whole range of block sizes. The curve of the write on usb drive also tends to go up quickly with block size and slightly go down after it reaches the peak. The optimal block size with most occurrences in my experiment is 262144b, noted that this is larger than on ssd hard drive.

for read:

The data used to plot create_plot_usb are stored in 'create_rand_data_usb.txt'. The curve appears to have same properties as mentioned in read random data from SSD hard drive. The difference with writing on usb drive is the reading data rate on usb doesn't seem to be way

smaller than the reading data rate on SSD hard drive. If the optimal exists, then the optimal block size with most occurrences is 131072b in this case. Noted this is also larger than on ssd hard drive.