【OS】Day41

Class	Operating System: Three Easy Pieces
Date	@February 22, 2022

【Ch37】Hard Drive Disks Homework

Question 1

1. Compute the seek, rotation, and transfer times for the following sets of requests: `-a 0`, `-a 6`, `-a 30`, `-a 7,30,8`, and finally `-a 10,11,12,13`.

```
-a 6 // Seek: 0 Rotation: 345 Transfer: 30
```

```
-a 30 // Seek: 80 Rotation:265 Transfer: 30
```

```
-a 7,30,8 // Seek: 160 Rotation: 545 Transfer: 90
```

```
-a 10,11,12,13 // Seek: 40 Rotation: 425 Transfer: 120
```

Question 2

2. Do the same requests above, but change the seek rate to different values: `-S 2`, `-S 4`, `-S 8`, `-S 10`, `-S 40`, `-S 0.1`. How do the times change?

The seek time is divided by the given option.

Question 3

3. Do the same requests above, but change the rotation rate: `-R 0.1`, `-R 0.5`, `-R 0.01`. How do the times change?

The rotation time is divided by the given option.

Question 4

4. FIFO is not always best, e.g., with the request stream `-a 7,30,8`, what order should the requests be processed in? Run the shortest seek-time first (SSTF) scheduler (`-p SSTF`) on this workload; how long should it take (seek, rotation, transfer) for each request to be served?

```
Block:   7  Seek:  0  Rotate: 15  Transfer: 30  Total:  45
Block:   8  Seek:  0  Rotate:  0  Transfer: 30  Total:  30
Block:  30  Seek: 80  Rotate:190  Transfer: 30  Total: 300

TOTALS      Seek: 80  Rotate:205  Transfer: 90  Total: 375
```

Question 5

5. Now use the shortest access-time first (SATF) scheduler (`-p SATF`). Does it make any difference for `-a 7,30,8` workload? Find a set of requests where SATF outperforms SSTF; more generally, when is SATF better than SSTF?

```
Block:   7  Seek:  0  Rotate: 15  Transfer: 30  Total:  45
Block:   8  Seek:  0  Rotate:  0  Transfer: 30  Total:  30
Block:  30  Seek: 80  Rotate:190  Transfer: 30  Total: 300

TOTALS      Seek: 80  Rotate:205  Transfer: 90  Total: 375
```

When seek time is shorter than rotation time, SATF is better.