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CSCI 3287

Assignment 4

13.2.1.c

$1 + 0.0002n$ where $n = (100{,}000 - 1)$

$1 + 0.0002(999{,}999) = {\sim}200.9998$ms = 201ms.

13.2.1.e

Degrees = $((63/1000) * 20\% + (64/1000) * 80\%) * 360$ degrees = 22.9 degrees

$(22.9/360) * 10 = 0.636$ms

13.3.1.a, b

Cylinder of Request	First Time Available	Elevator	FCFS
8000	0	1 + (24000) / 4000 + 4.3 = 11.3	11.3
48000	1	11.3 + 1 + (40000) / 4000 + 4.3 = 26.6	11.3 + 1 + (40000) / 4000 + 4.3 = 26.6
4000	10	33.9 + 1 + (36000) / 4000 + 4.3 = 48.2	26.6 + 1 + (44000) / 4000 + 4.3 = 42.9
40000	20	26.6 + 1 + (8000) / 4000 + 4.3 = 33.9	42.9 + 1 + (36000) / 4000 + 4.3 = 57.2

14.1.1.a

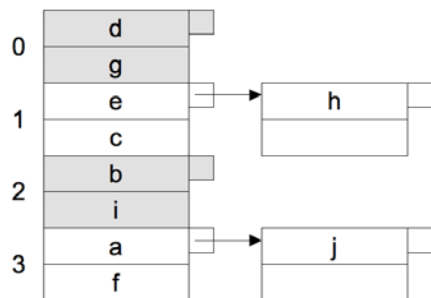n/3 blocks for data file, n/10 for the index

Total = 13n/30 blocks

14.1.1.b

n/3 blocks for data file + n/30 = 11n/30

14.2.1.a

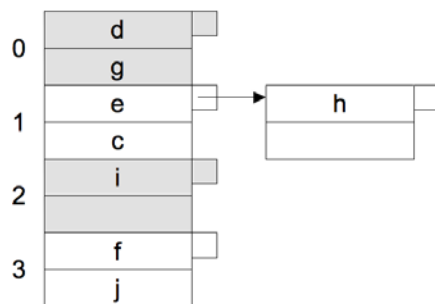Total: 100000 + 14286 + 204 + 3 + 1 = 114494
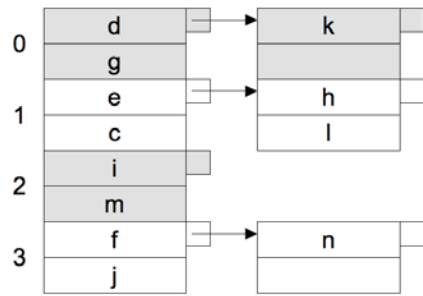
5 I/Os for a lookup because the tree has 4 levels

14.3.1.i

14.3.1.ii

14.3.1.iii

First diagram:

```
0  | d | → | k |
   | g |       
1  | e | → | h |
   | c |   | l |
2  | i |
   | m |
3  | f | → | n |
   | j |
```

14.3.1.iv

```
0  | g |
   | k |
1  | e | → | l |
   | h |   |   |
2  | i |
   | m |
3  | f | → | n |
   | j |   |   |
```