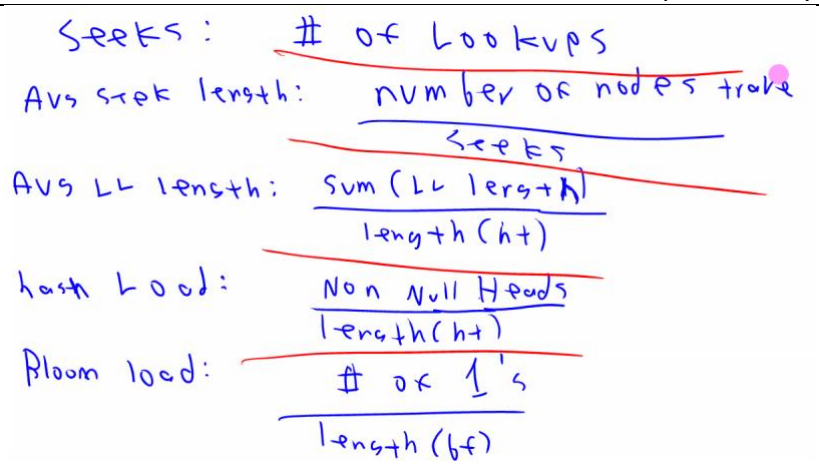
Assignment 6
Stats Results / Write Up:
Despina Patronas

*Information on stats provided by professor Dunne:



Default values BF = 2^20 = 1048576
HT = 10000

```
despinapatronas@Despinas-MacBook-Pro ~/Asgn6 ./hatterspeak -s -f 1048576 -h 10000
^D
Seeks: 14565
Average Seek Length: 0.732853
Average Linked List Length: 1.455700
Hash Table Load: 76.710000%
Bloom Filter Load: 3.888206%%
```

Default values: bloom filter is operating at a low capacity < 5%
NOTE: Hash table is already operating at ¾ cacapity

EFFECT OF CHANGING THE BLOOMFILTER SIZE

What happens when we **increase BF by 2x?**

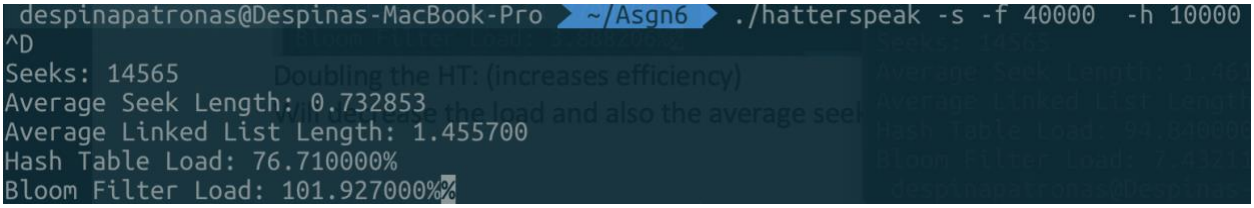
Increasing Bloomfilter size decreases bloom filter load proportionally
Overall more efficient for load (also decrease seek length by ½)
Doesn't affect the other values however..

```
despinapatronas@Despinas-MacBook-Pro ~/Asgn6 ./hatterspeak -s -f 2048576 -h 10000
^D
Seeks: 14565
Average Seek Length: 0.732853
Average Linked List Length: 1.455700
Hash Table Load: 76.710000%
Bloom Filter Load: 1.990202%%
despinapatronas@Despinas-MacBook-Pro ~/Asgn6
```

What is the minimum bloomfilter size to reach capacity? (with the HT being static)

min BF size =~ 40,000 for operating at 100% capacity for the amount of inserts

***note the other values are unaffected**



EFFECT OF CHANGING THE HASHTABLE SIZE

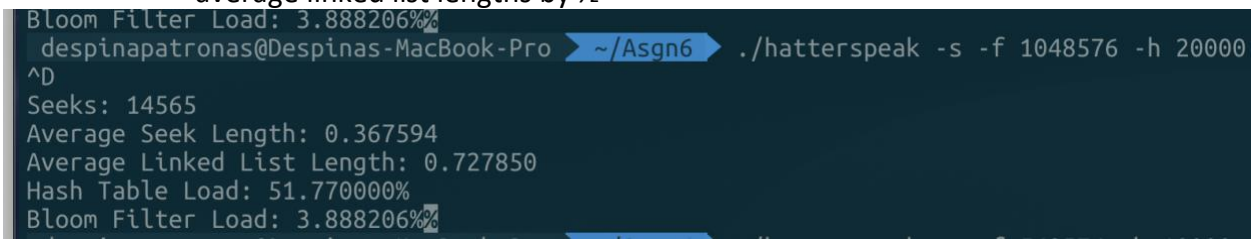
What happens when increasing HT size by 2x?

Doubling the HT: **(increases efficiency all around!)**

Will ALSO decrease the:

average seek length required by ½

average linked list lengths by ½



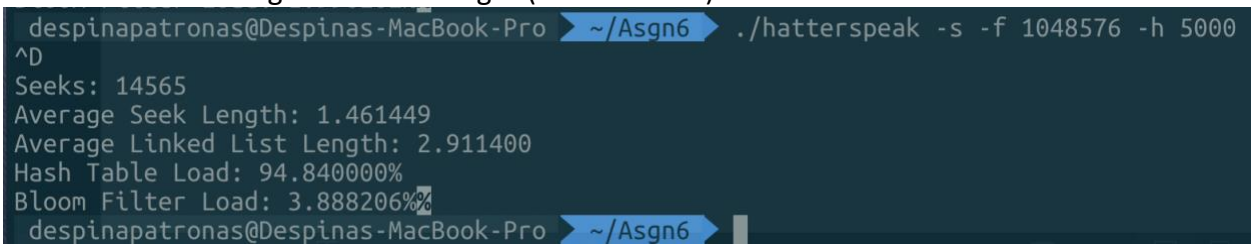
What is the minimum HT size?

To reach almost 100 % capacity, we would have to ½ the hashtable amount

Note: this drastically affects :

average seek length (6x + increase)

average linked list length (3x + increase)



Conclusion
Based on this data:

Changing the size of either of the ADTS does not affect the load of the other ADT

Increasing Hashtable is more benefitial than the bloomfilter

Note: my statistics may not be standard / expected results