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Exercise 1

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Exercise 1

5 points possible (graded)

ESTIMATED TIME TO COMPLETE: 10 minutes

Here is some code from lecture:

```
def linearSearch(L, x):  
    for e in L:  
        if e == x:  
            return True  
    return False
```


Choose which of the following inputs to `linearSearch` would give the best case, average case, or worst case run time.

1. Best Case Run Time


- ☐ `linearSearch([14, 15, 6, 27, 13, 16, 25, 11, 7], 15)`
- ☐ `linearSearch([21, 1, 25, 22, 30, 13, 7, 24, 12], 24)`
- ☐ `linearSearch([20, 10, 1, 7, 4, 22, 25, 12, 31], 20)`
- ☐ `linearSearch([9, 3, 12, 24, 7, 8, 23, 11, 19], 8)`
- ☐ `linearSearch([4, 12, 20, 17, 9, 14, 7, 24, 6], 7)`
- ☐ `linearSearch([13, 9, 22, 3, 10, 17, 11, 2, 12], 26)`

▼ **Week 6:**
Algorithmic
Complexity


11.
Computational
Complexity

[Finger Exercises](#) 

12. Searching and
Sorting Algorithms

[Finger Exercises](#) 

Problem Set 6

[Problem Set due Mar](#)
[9, 2017 15:30 PST](#) 

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Plotting

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2. Worst Case Run Time

☐ `linearSearch([14, 15, 6, 27, 13, 16, 25, 11, 7], 15)`

☐ `linearSearch([21, 1, 25, 22, 30, 13, 7, 24, 12], 24)`

☐ `linearSearch([20, 10, 1, 7, 4, 22, 25, 12, 31], 20)`

☐ `linearSearch([9, 3, 12, 24, 7, 8, 23, 11, 19], 8)`

☐ `linearSearch([4, 12, 20, 17, 9, 14, 7, 24, 6], 7)`

☐ `linearSearch([13, 9, 22, 3, 10, 17, 11, 2, 12], 26)`

3. Average Case Run Time

☐ `linearSearch([14, 15, 6, 27, 13, 16, 25, 11, 7], 15)`

☐ `linearSearch([21, 1, 25, 22, 30, 13, 7, 24, 12], 24)`

☐ `linearSearch([20, 10, 1, 7, 4, 22, 25, 12, 31], 20)`

☐ `linearSearch([9, 3, 12, 24, 7, 8, 23, 11, 19], 8)`

☐ `linearSearch([4, 12, 20, 17, 9, 14, 7, 24, 6], 7)`

☐ `linearSearch([13, 9, 22, 3, 10, 17, 11, 2, 12], 26)`

4. What is the number of steps it will take to run `linearSearch` in the best case? Express your answer in terms of n , the number of elements in the list `L`.



Indicate addition and multiplication explicitly, with $+$ and $*$ symbols. Indicate exponentiation with the caret ($^$) symbol.

5. What is the number of steps it will take to run `linearSearch` in the worst case? Express your answer in terms of n , the number of elements in the list `l`.

Indicate addition and multiplication explicitly, with $+$ and $*$ symbols. Indicate exponentiation with the caret ($^$) symbol.

Reminder: You do not lose points for trying a problem multiple times, nor do you lose points if you hit "Show Answer". If this problem has you stumped after you've tried it a few times, feel free to reveal the solution.

Click the "Reset" button to clear your answers.

Submit

Exercise 1

Topic: Lecture 11 / Exercise 1

Show Discussion

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