Linked Lists

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CSC220 Programming II – Spring 2022

Outline

Map

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- A linked list is just as slow as an array (actually slower).
- But a skip list is MUCH faster.

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  - That takes $\mathrm{O}(n)$, which dominates the running time.
  - No hope of a fast addOrChange method for large n.

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  - References to the next and previous entries in the list.

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- The slides show how to use this structure to implement a phone directory.

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  - Two possibilities.

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  - Similar to entries in array with index bigger than size.

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- Write the line that makes that change happen.

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- One step forward, two steps back!

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  - But getting to the *i*th element takes $O(n)$,
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  - with only two variables.
  - Keep each step simple!

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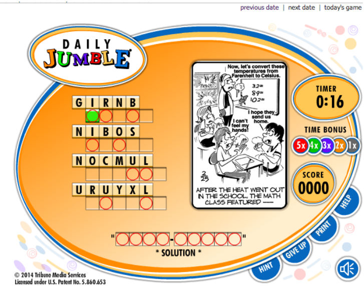

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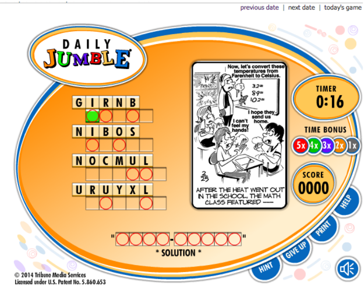

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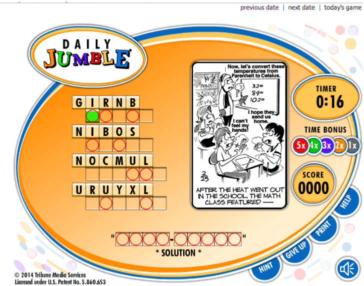

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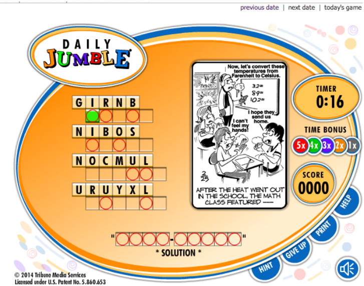

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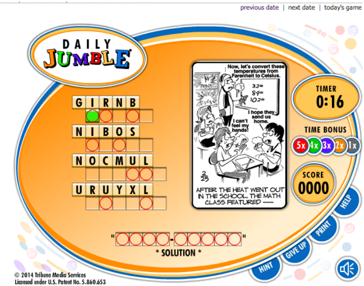

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- Need to unscramble words.
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  - How can a Map help us to do that?

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  - Solution is to use **List<String>** as the value type.
  - But we won't do that this time.

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- $n^2 = 233{,}697{,}796{,}929$.
- A half million squared is a quarter trillion.
- A computer that can do a billion operations in a second
- will take 233 seconds times the number of operations per find.