

WorkList ADT

<code>add(work)</code>	Notifies the worklist that it must handle <code>work</code>
<code>peek()</code>	Returns the next item to work on
<code>next()</code>	Removes and returns the next item to work on
<code>hasWork()</code>	Returns true if there's any work left and false otherwise

Choosing The Data Structures

Choose data structures and algorithms to solve the following problems:

Call all the phone numbers with a particular area code in someone's phone book. What is the time complexity of your solution? What is the space complexity?

Back when Robbie was in middle school (i.e. around 2007), cell phones could send each other text messages, but they didn't have full keyboards.¹ Our phones implemented "Text on nine keys" (or T9). T9's objective is to make it easier to type text messages with 9 keys. It allows words to be entered by a single keypress for each letter in which several letters are associated with each key. It combines the groups of letters on each phone key with a fast-access dictionary of words. It looks up in the dictionary all words corresponding to the sequence of keypresses and orders them by frequency of use. So for example, the input '2665' could be the words {`book`, `cook`, `cool`}. Describe how you would implement a T9 dictionary for a mobile phone.

¹We also had to walk to school uphill both ways, or something.