Improving search time

In binary search, we eliminate half of the remaining possibilities at each step. If we start with n possibility, the maximum number of tries needed is O(logn). [assumption: have to be in some kind of orders, have to be sorted]

In order for binary search to work, our data has to be sorted

How much faster will out set implementation be if we used binary search?

|  |  |  |
| --- | --- | --- |
|  | Sequential search | Binary search |
| Has | O(n) | O(logn) |
| Add | O(n)+O(1)=O(n) | O(logn)+O(n)=O(n) |
| Remove | O(n)+O(1)=O(n) | O(logn)+O(n)=O(n) |

Moving data in an array

Shift to the right, start at the right.

Let’s assume that we want to insert our new element x in slot s.

Copy the pointer instead of copy the content