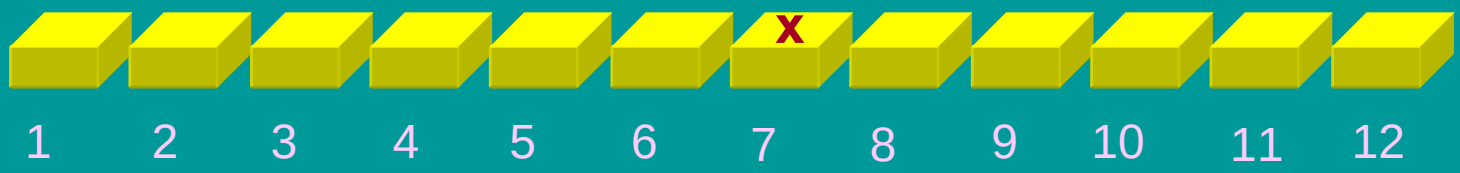
Linear Search Algorithm

How does it work?

Array A[1..n]



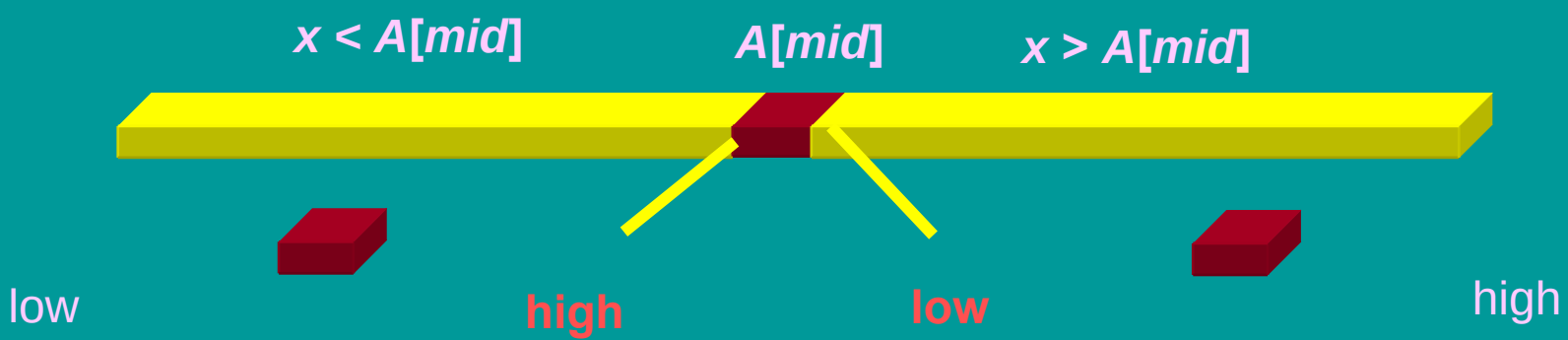
LinearSearch(A, x) = 7

Walk linearly and check each cell sequentially.

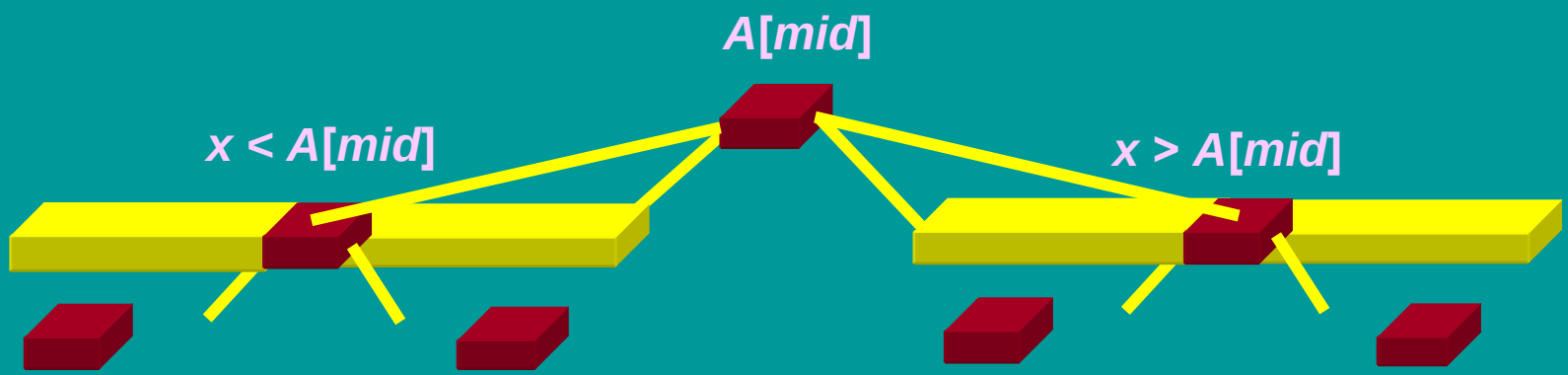
Binary Search Algorithm

How does it work?

1. *Find* $mid = \lfloor (low + high)/2 \rfloor$



1. *Find* $mid = \lfloor (low + high)/2 \rfloor$
2. *If* $x = A[mid]$ *then return* mid
   Else if $x < A[mid]$ *then go to the left sub-tree (sub-array)*
   Else go to the right sub-tree (sub-array)
3. *Repeat*



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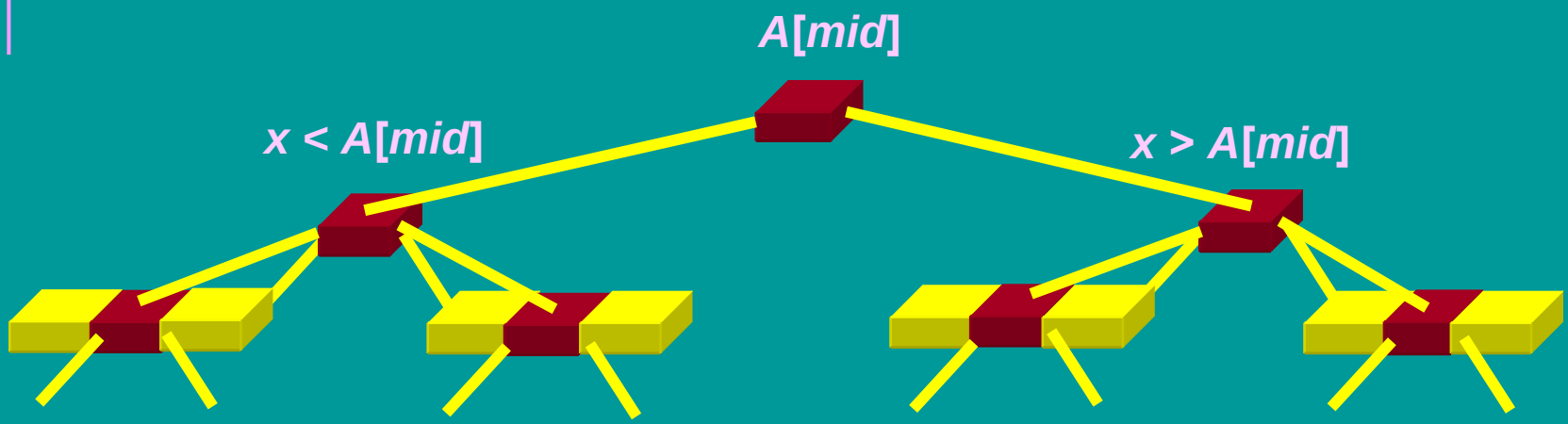

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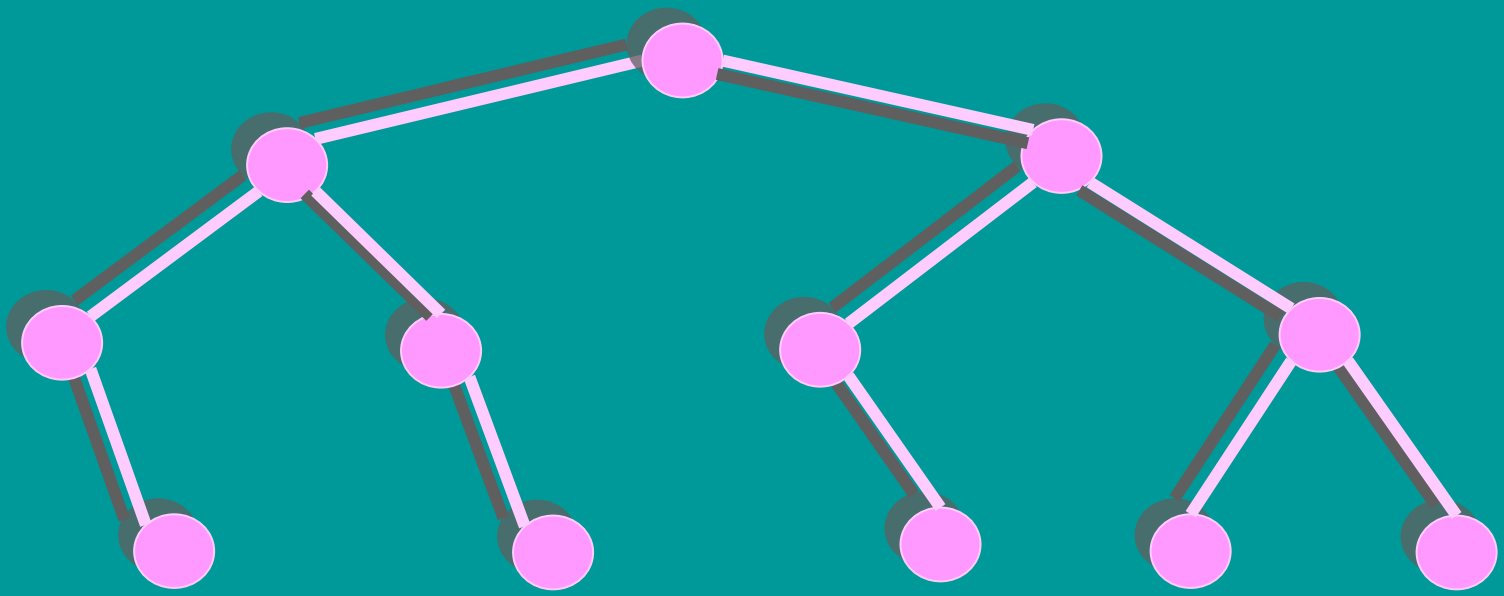
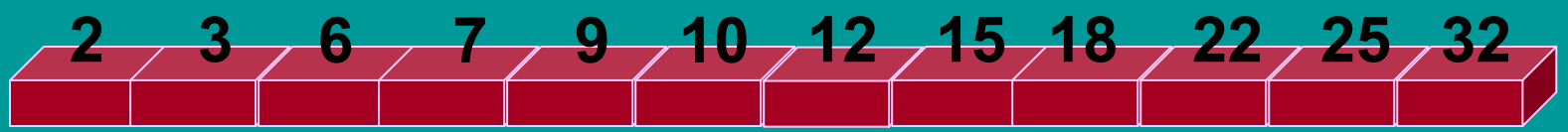
Decision Tree of size n





BinarySearch(A, 15) = 12