

Binary Search Trees



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by Christine Alvarado, Mia Minnes, and Leo Porter, 2015.

By the end of this video you will be able to...

- Define a Binary Search Tree
- Identify valid Binary Search Trees

Binary Search (Review)

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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toFind

Chicago

Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
------	---------	---------	-------	-------	----------	-------



toFind

Chicago

Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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toFind

Chicago

Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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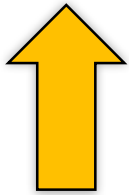


toFind

Chicago

Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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toFind

Chicago

Binary Search

Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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toFind

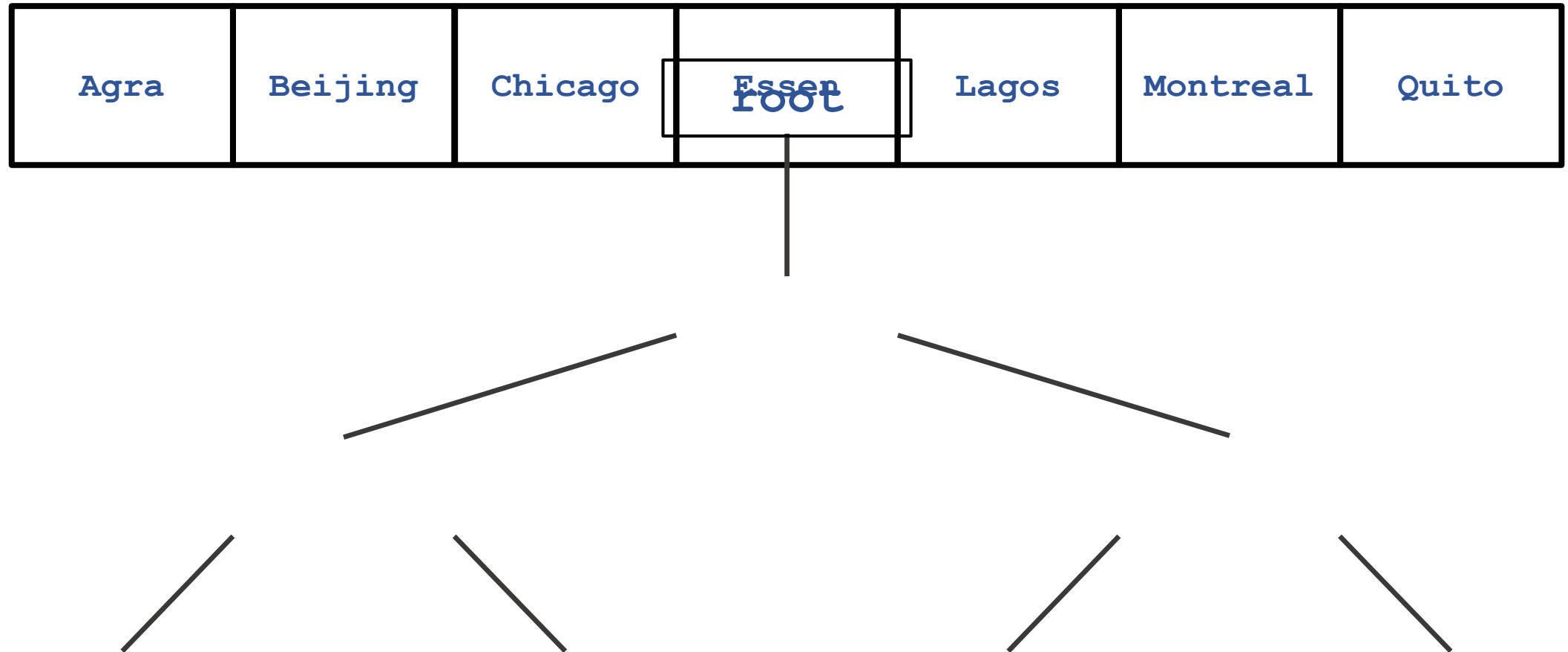
Chicago

Binary Search

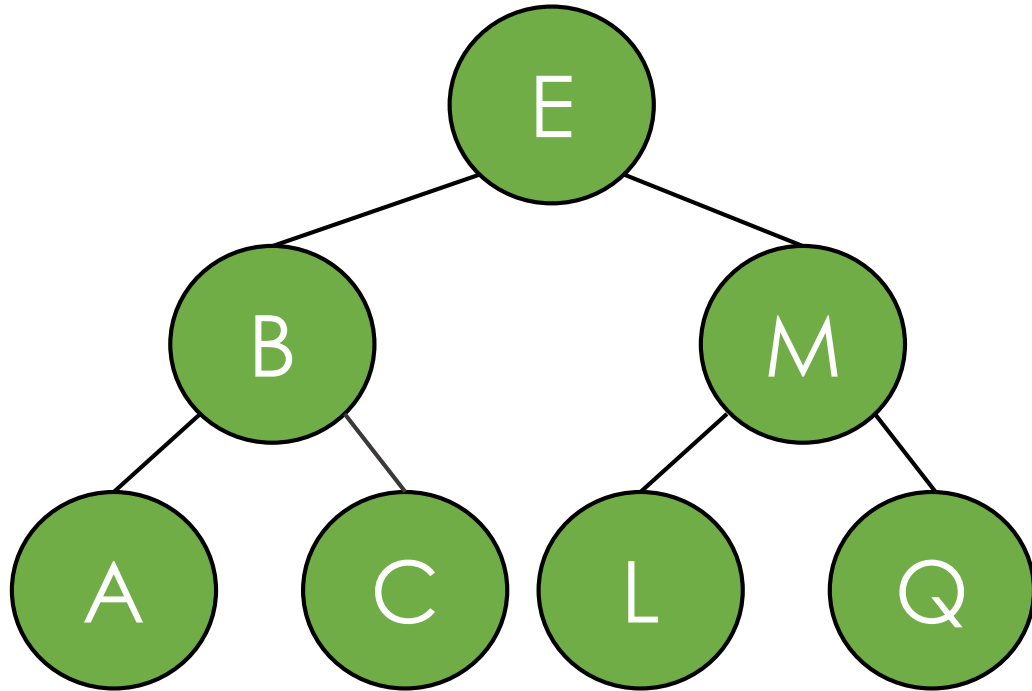
Agra	Beijing	Chicago	Essen	Lagos	Montreal	Quito
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Sorted arrays are good for search,
but bad for insertion/removal

Binary Search Tree

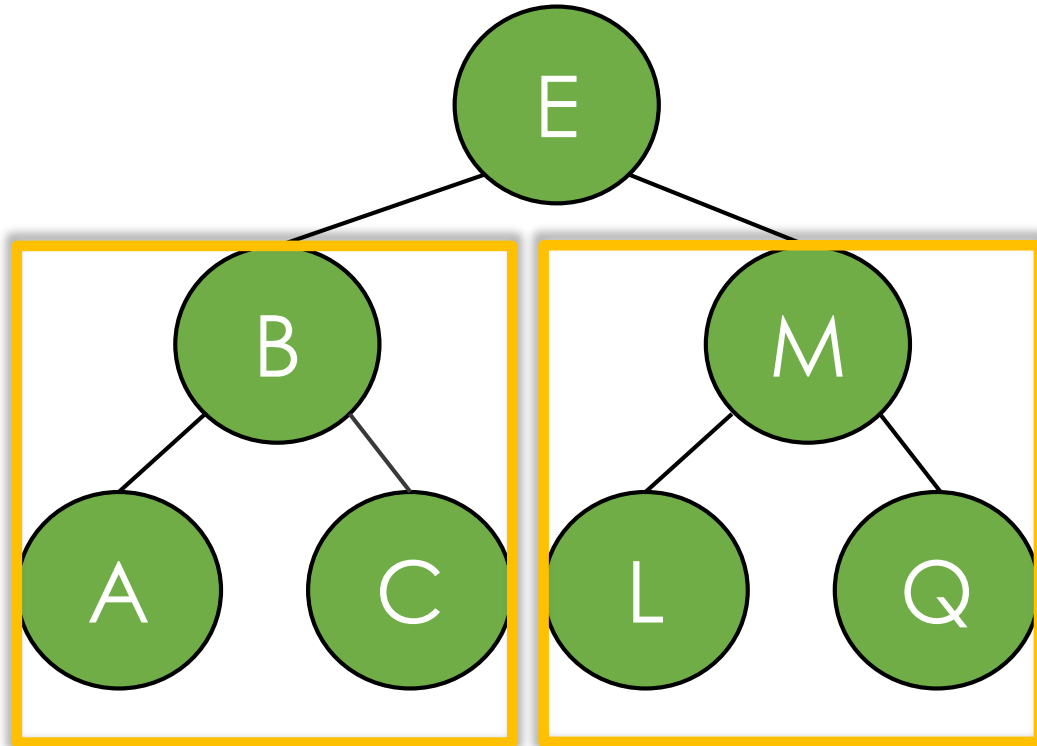


Binary Search Tree



Binary Search Tree:
1. Binary Tree

Binary Search Tree



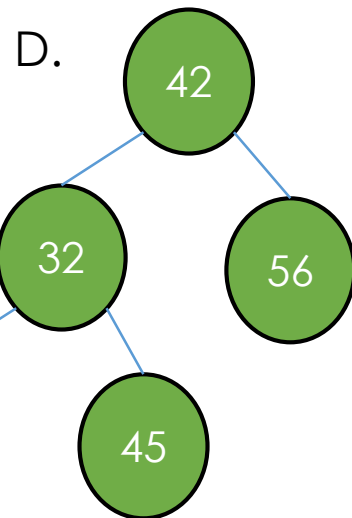
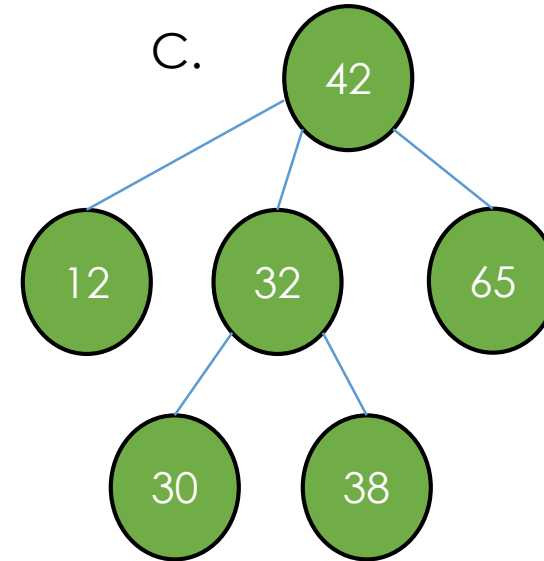
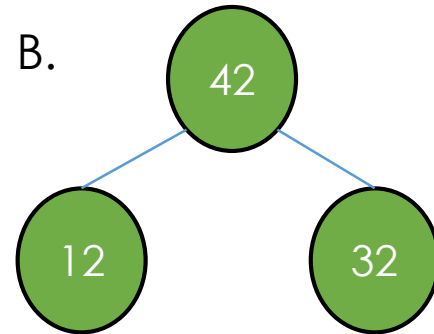
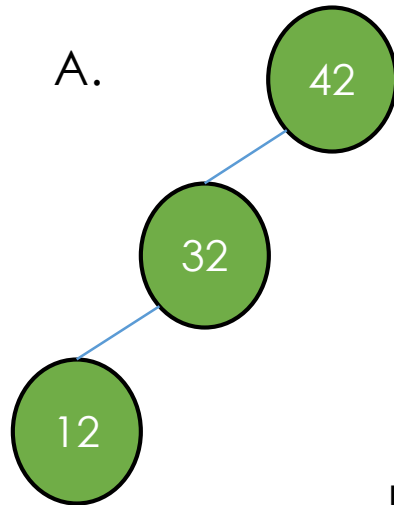
Left subtree's
values must be
lesser

Right subtree's
values must be
greater

Binary Search Tree:

1. Binary Tree
2. Left subtrees are less than parent
3. Right subtrees are greater than parent

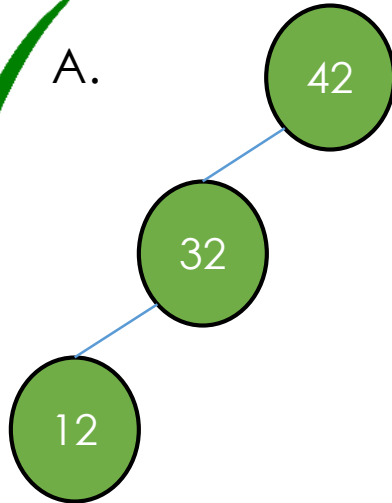
Which of these are binary search trees (select all)



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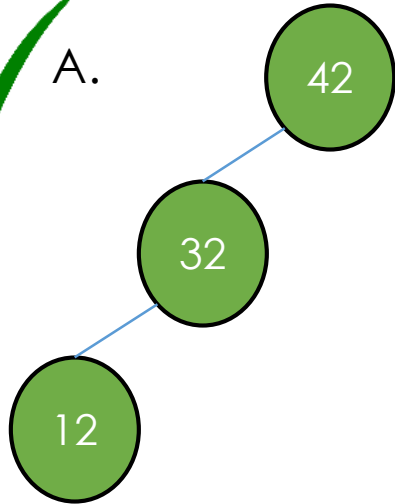
A.



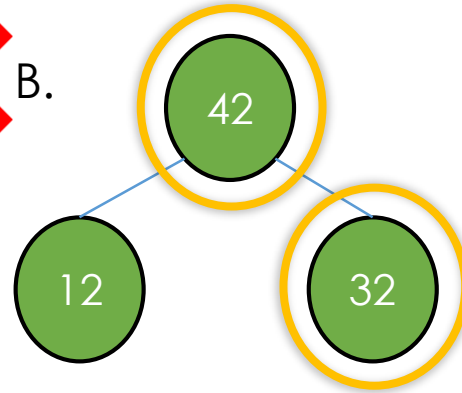
Which of these are binary search trees (select all)



A.



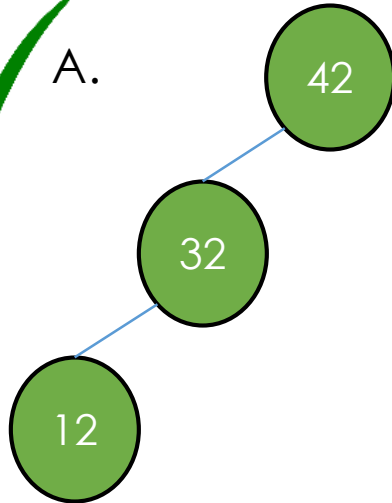
B.



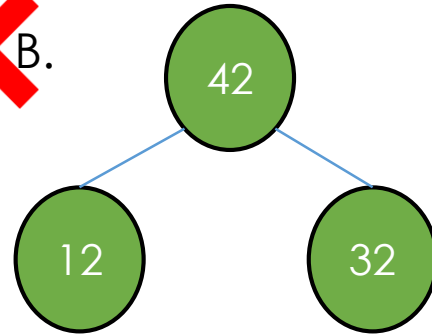
Which of these are binary search trees (select all)



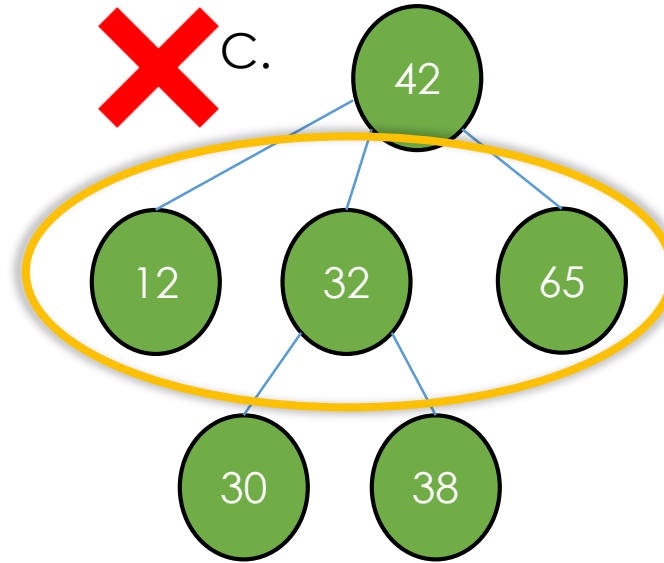
A.



B.



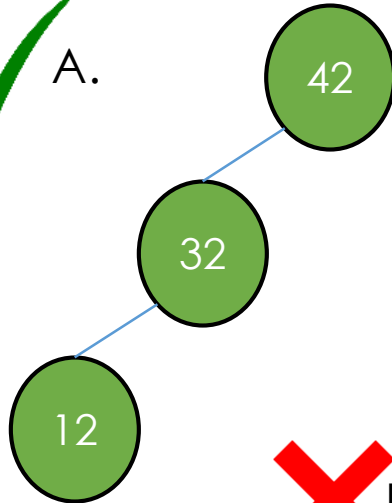
C.



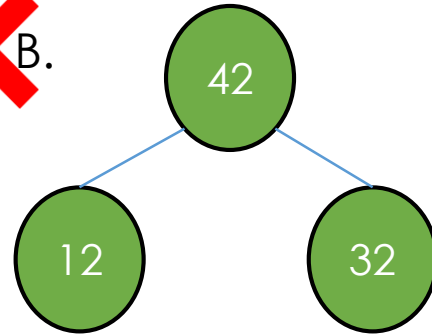
Which of these are binary search trees (select all)



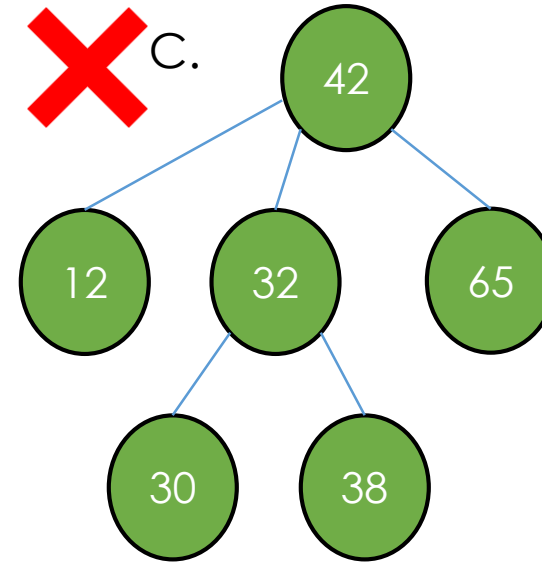
A.



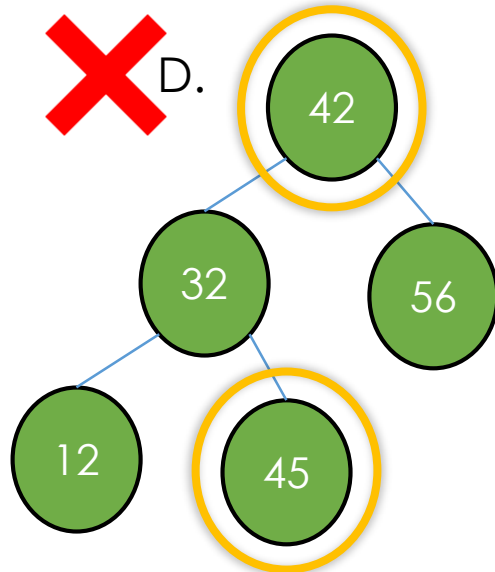
B.



C.



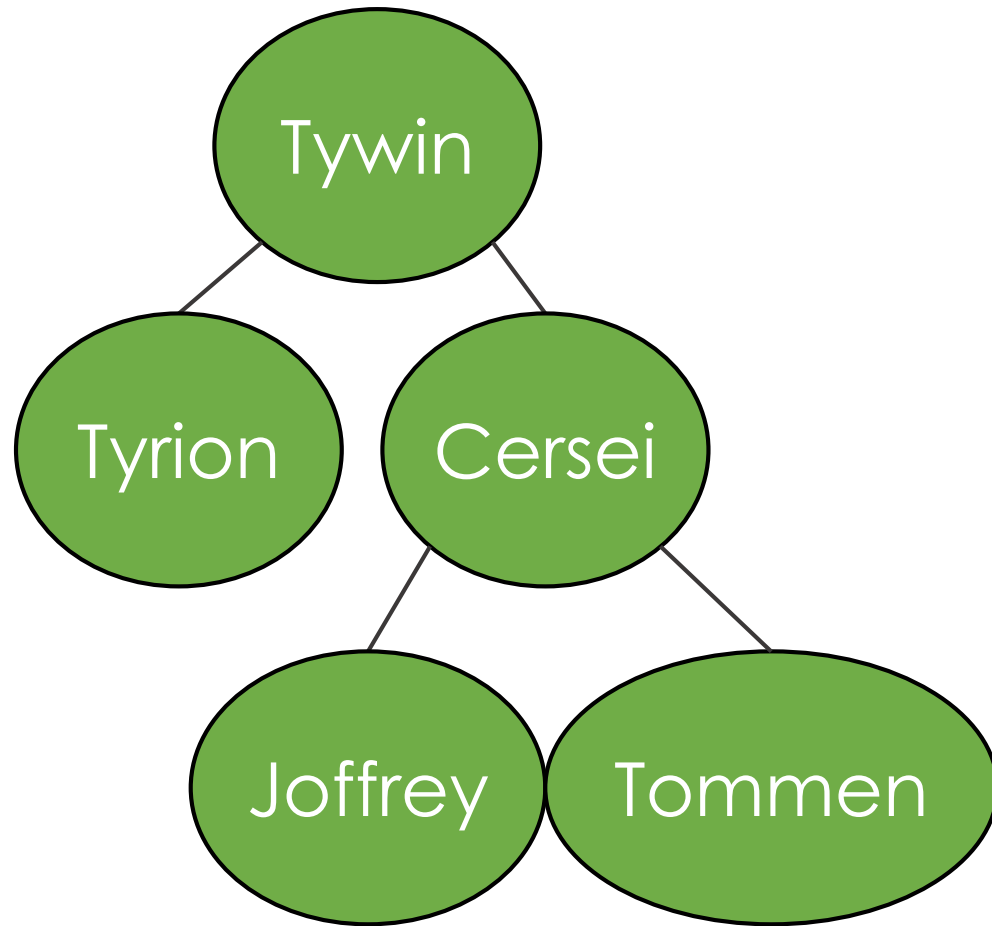
D.



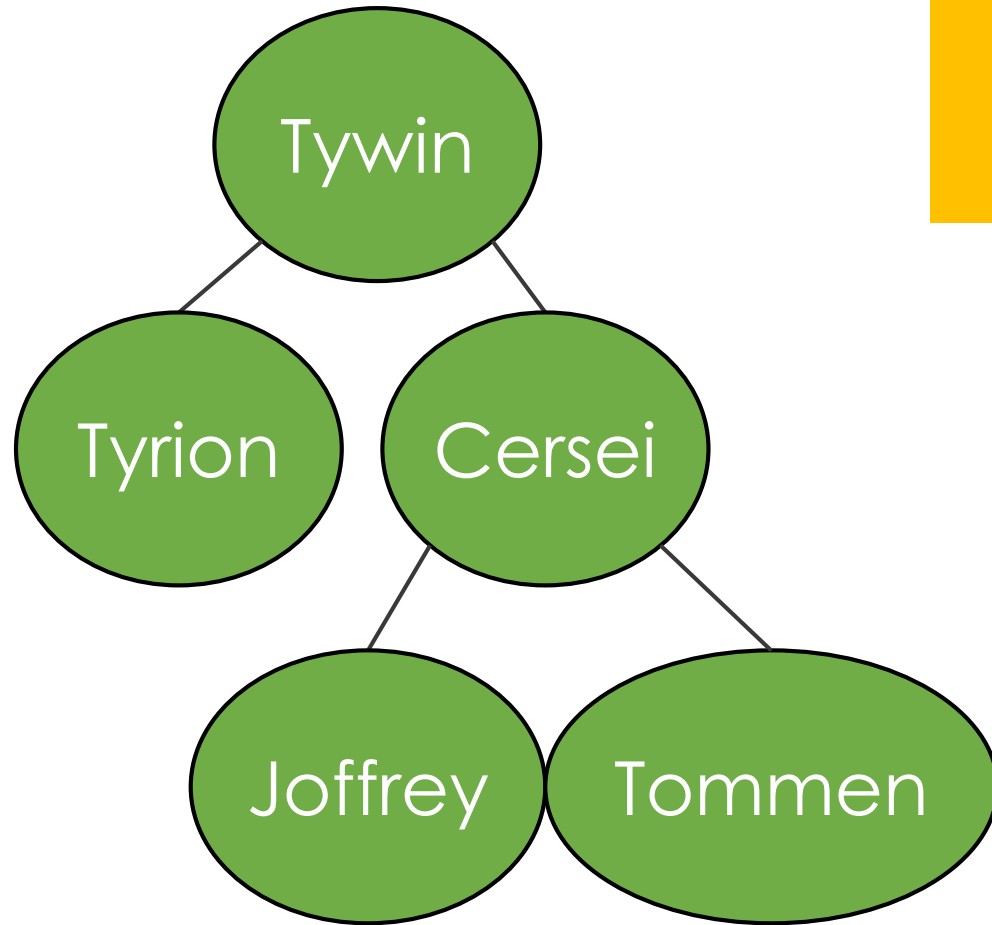
Next step

- Searching BST

Binary Tree



Binary Tree



**Many trees have
some sort of
meaningful ordering**