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Perfectly Balanced Tree (PBT)

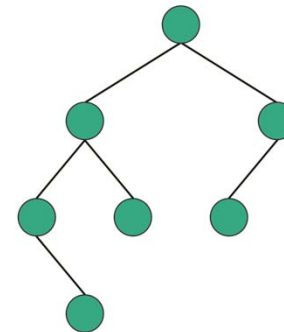
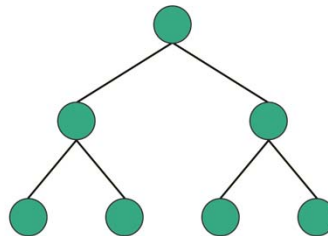
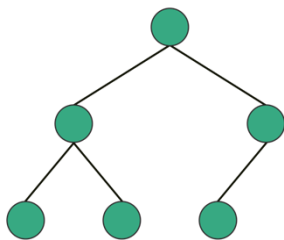
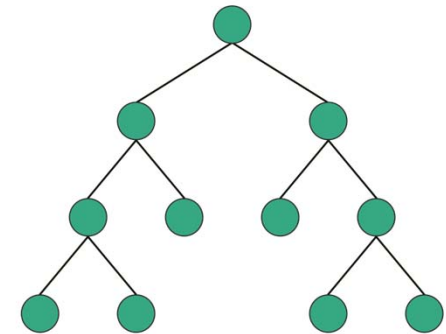
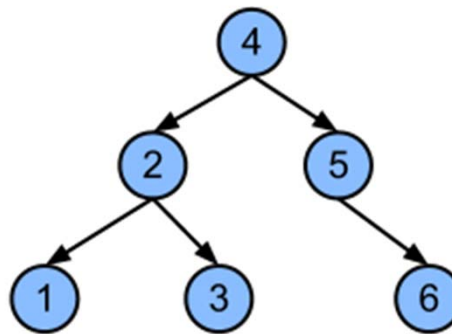
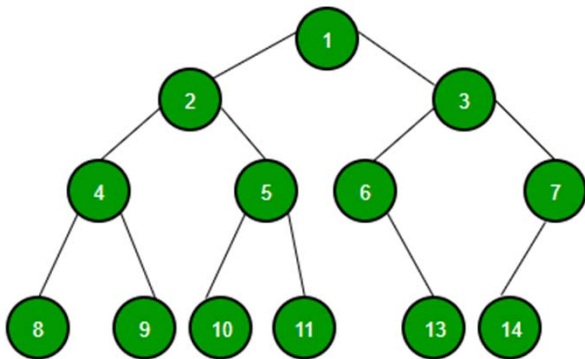
For each node the numbers of nodes in its
left and right subtrees differ by at most 1



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Apakah tree2 di bawah ini adalah PBT, sesuai dengan definisi di atas ? Berikan alasannya





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Perfectly Balanced Tree (PBT)

The rule of equal distribution :

1. Use one node for the root
2. Generate the left subtree with $n_l = n \text{ div } 2$ nodes in this way
3. Generate the right subtree with $n_r = n - n_l - 1$ nodes in this way

Perfectly Balanced Tree (PBT)



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Program BuildTree(input,output)

Type ref = \uparrow node ;
 node = **record** key : integer ;
 left, right : ref
 end ;

Var n : integer ; root : ref ;

Function tree(n:integer) : ref ;

Var newnode : ref ;
 x,nl,nr : integer ;

Begin

if n = 0 **then** tree := nil **else**

begin nl := n div 2 ; nr := n-nl-1 ;

 read(x); new(newnode);

with newnode \uparrow **do begin** key:= x ; left := tree(nl) ; right := tree(nr); **end** ;

 tree := newnode

end ;

End ;

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```
Procedure PrintTree(t:ref; h : integer) ;  
Var l : integer ;  
Begin  
  if t <> nil then  
    with t↑ do  
      begin PrintTree(left, h+1) ;  
        for i := 1 to h do write(' ');  
        writeln(key);  
        PrintTree(right,h+1)  
      end  
    end  
  End ;  
  
Begin  
  read(n) ; root := Tree(n) ; PrintTree(root,0) ;  
End.
```



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Perfectly Balanced Tree (PBT)

Latihan : Diberikan data-data berikut, gambarkan tree yang terbentuk jika dari main program yang dijalankan 2 statement pertama, yaitu :

`read(n) ; root := Tree(n) ;`

1. 3, 5, 4, 6
2. 6, 3, 4, 1, 7, 5, 3



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Latihan : Dari tree hasil latihan sebelumnya,
jalankan perintah ketiga dari main program, yaitu :

`PrintTree(root,0) ;`

Tuliskan tampilannya