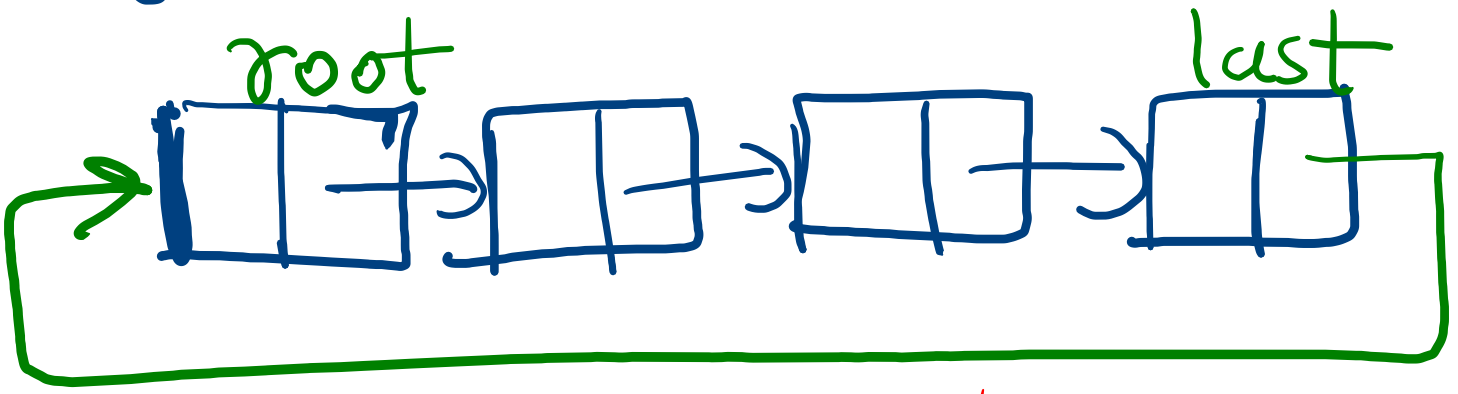
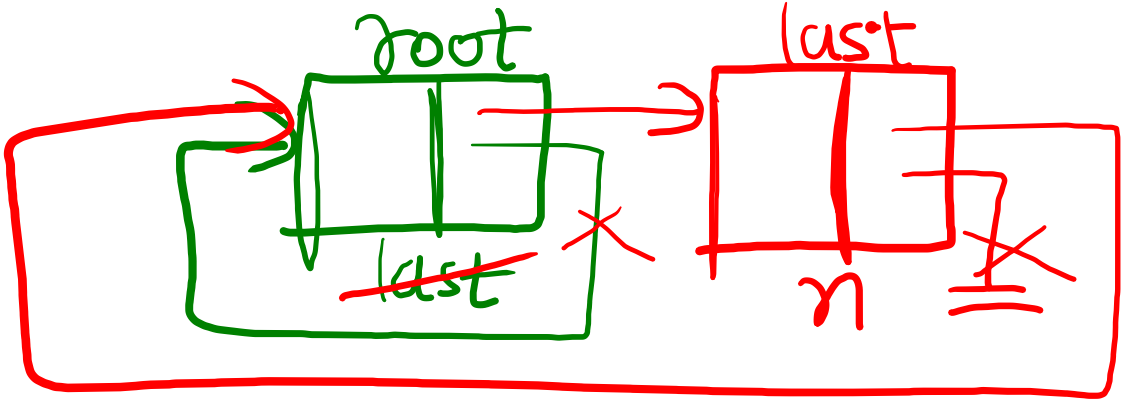
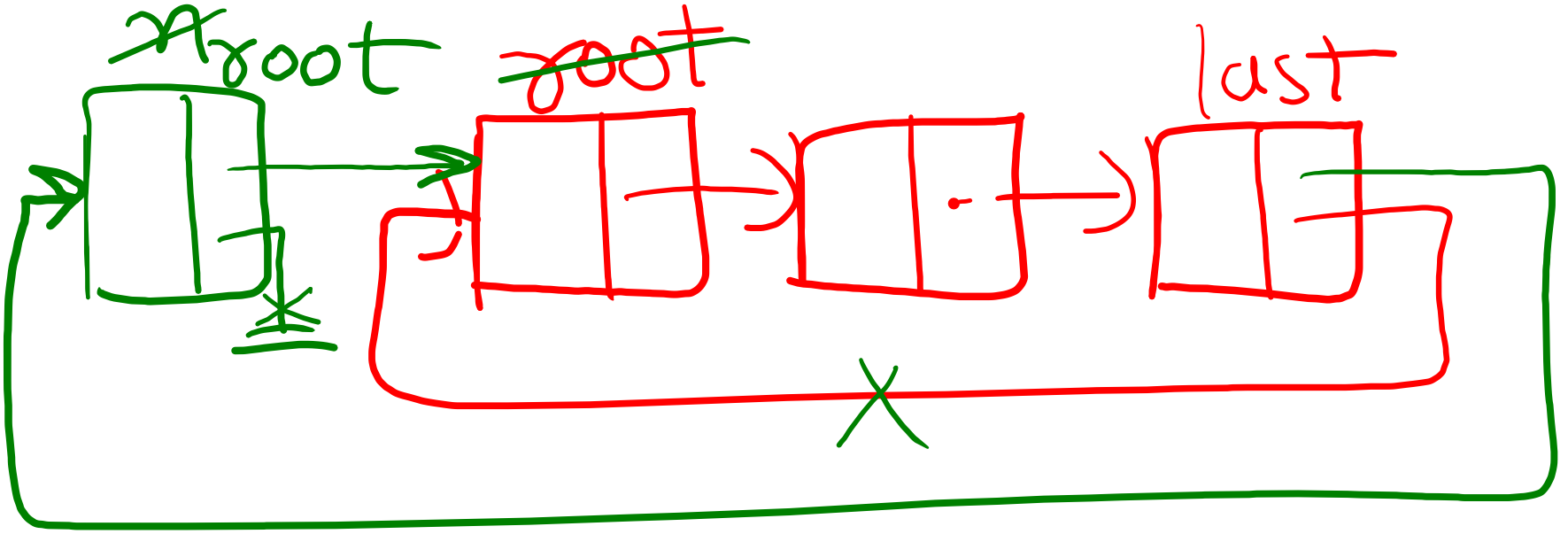
Circular






root
root
last

DataStructures_MET_2022 - NetBeans IDE 8.2

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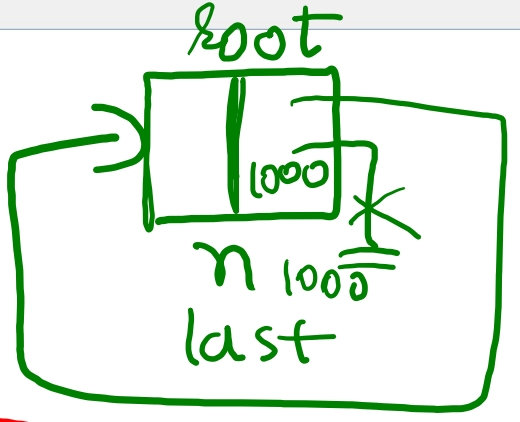
Search (Ctrl+I)

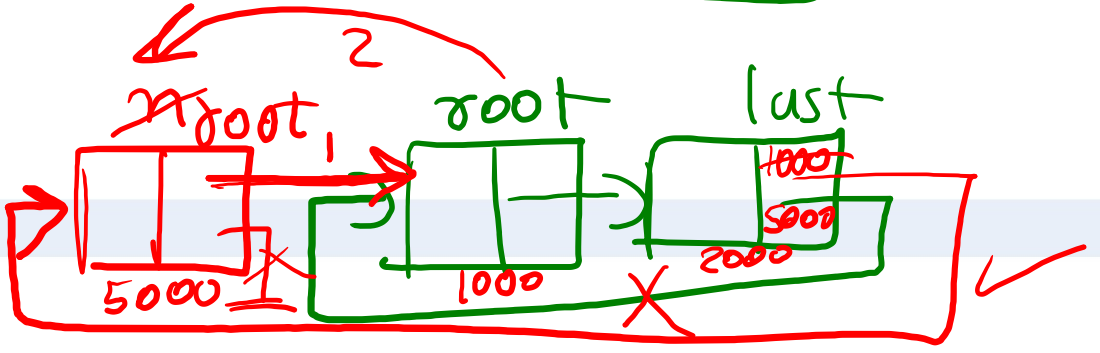
<default confi...

...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
21  {
22      Node n=new Node(data);
23      if(root==null)
24      {
25          root=last=n;
26          last.next=root;
27      }
28      else
29      {
30          n.next=root;//1
31          root=n;//2
32          last.next=root;//3
33      }
34  }
```





Output

31:20 INS

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DataStructures_MET_2022 - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

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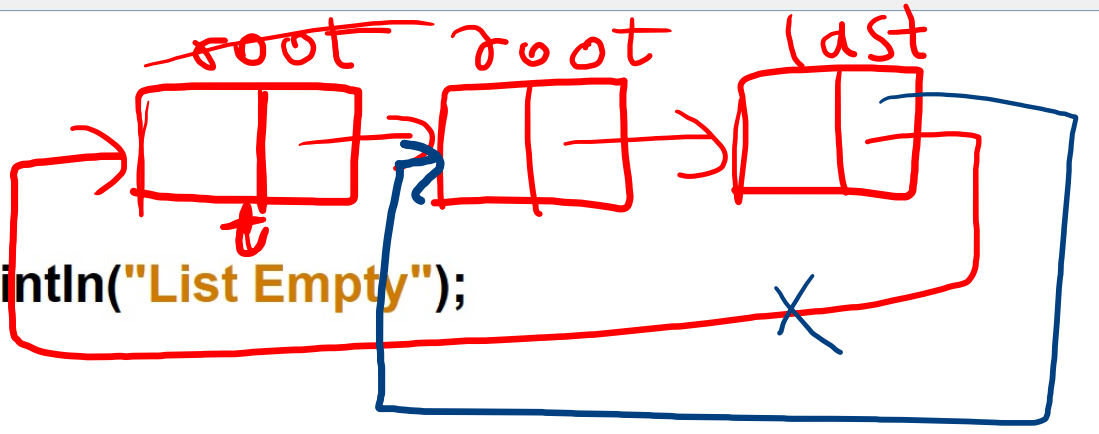
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
35  void deleteLeft()
36  {
37     if(root==null)
38     {
39        System.out.println("List Empty");
40     }
41     else
42     {
43        Node t=root;//1
44        root=root.next;//2
45        System.out.println("Deleted:"+t.data);
46     }
47     }
48  void insertRight(int data)
```



Navigator Projects Files Services

Output

48:24 INS

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09:20 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

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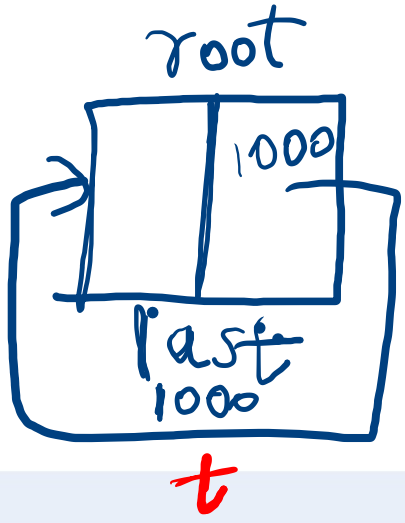
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
35  void deleteLeft()
36  {
37      if(root==null)
38      {
39          System.out.println("List Empty");
40      }
41      else
42      {
43          Node t=root;//1
44          root=root.next;//2
45          last.next=root;//3
46          System.out.println("Deleted:"+t.data);
47      }
48      }
```



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DataStructures_MET_2022 - NetBeans IDE 8.2

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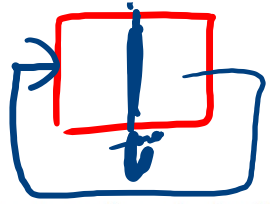
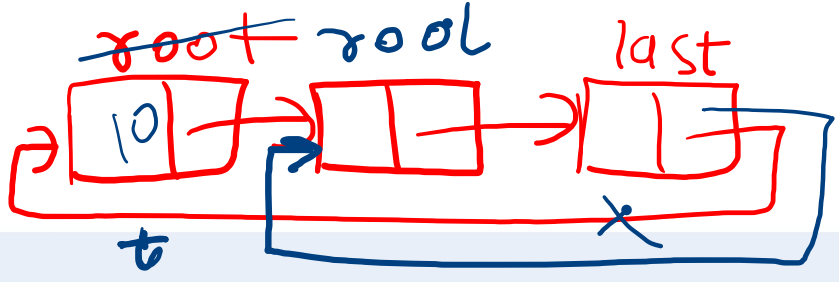
...ve StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
41          else
42          {
43              Node t=root;//1
44              if(root.next==root)
45              {
46                  root=last=null;//single node deletion
47              }
48              else
49              {
50              root=root.next;//2
51              last.next=root;//3
52              }
53              System.out.println("Deleted:"+t.data);
54          }
```





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DataStructures_MET_2022 - NetBeans IDE 8.2

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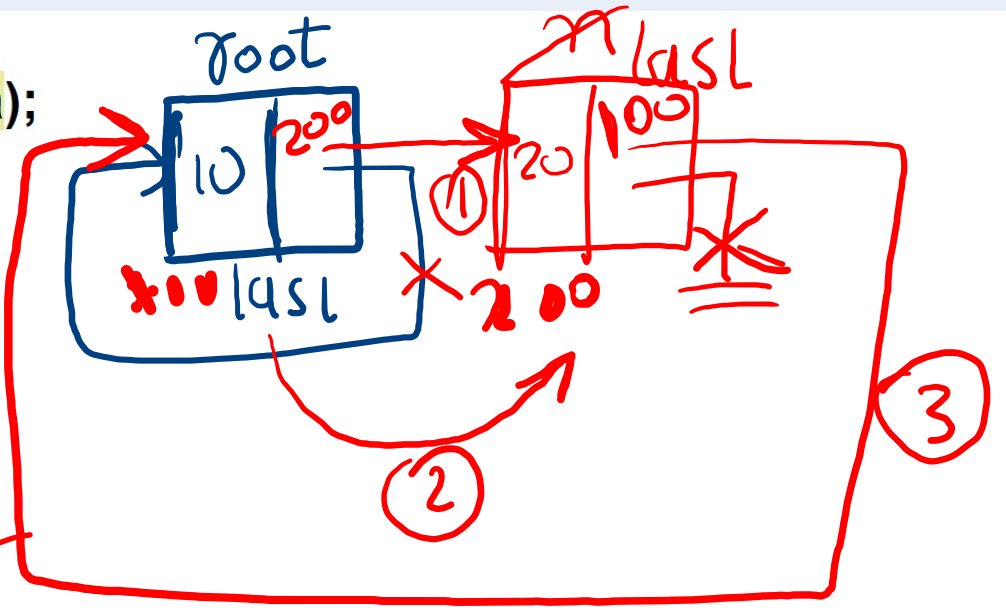
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
56  void insertRight(int data)
57  {
58      Node n=new Node(data);
59      if(root==null)
60      {
61          root=last=n;
62          last.next=root;
63      }
64      else
65      {
66          last.next=n;//1
67          last=n;//2
68          last.next=root;//3
69      }
```



Output

56:24 INS

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DataStructures_MET_2022 - NetBeans IDE 8.2

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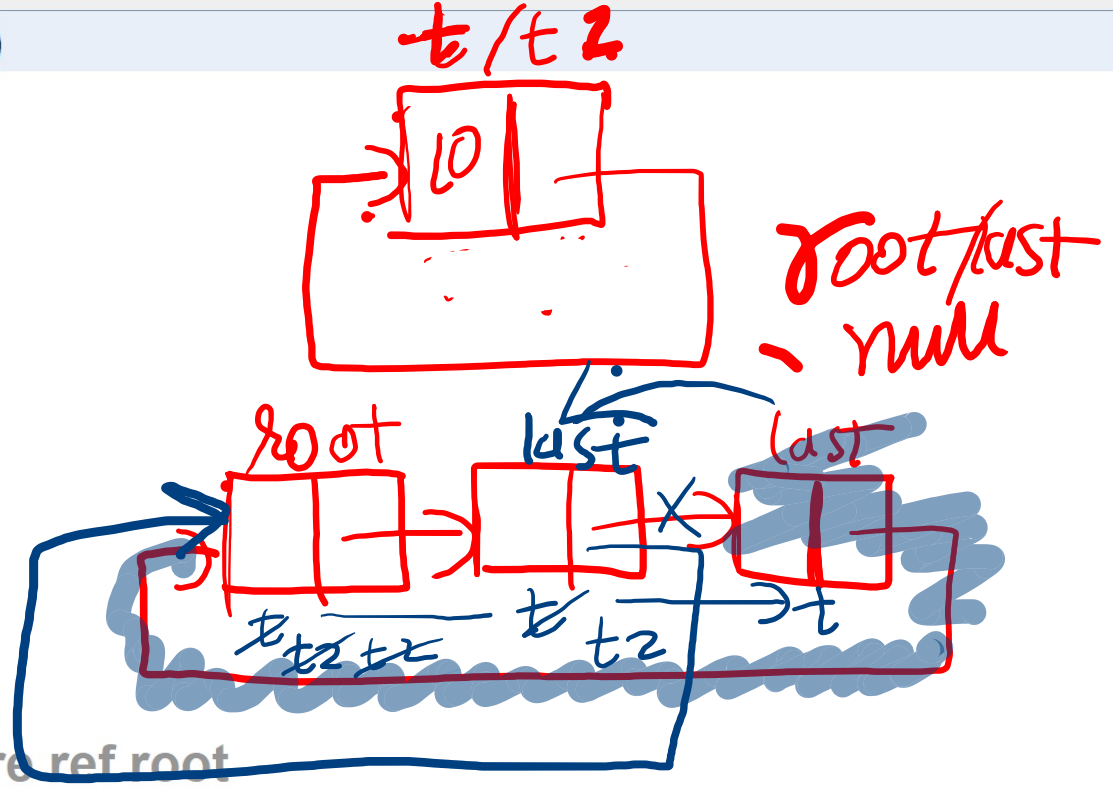
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
82          if(root.next==root)
83          {
84              root=last=null;
85          }
86          else
87          {
88              while(t!=last)//2
89              {
90                  t2=t;
91                  t=t.next;
92              }
93              last=t2;
94              last.next=root;//re ref root
95          }
```



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09:35 28-11-2022

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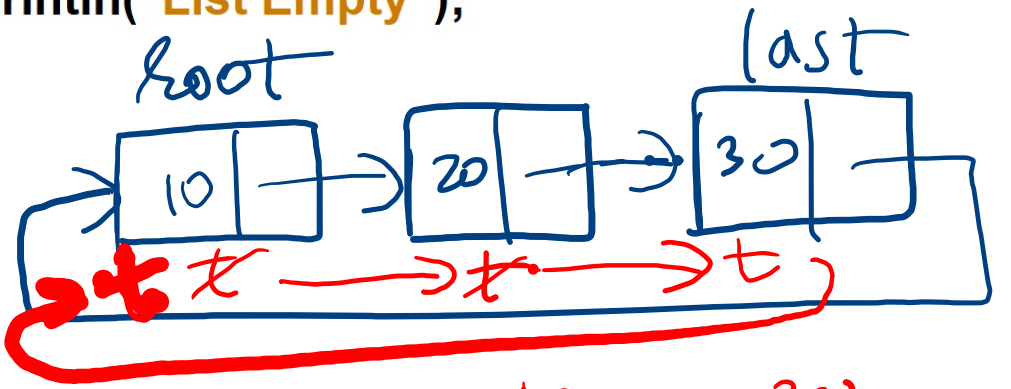
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
99  {
100     if(root==null)
101     {System.out.println("List Empty");
102     }
103     else
104     {
105        Node t;
106        t=root;
107        do
108        {
109           System.out.println(t.data);
110           t=t.next;
111        } while(t!=root);//2
112     }
```



Output

111:28 INS

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10:05 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

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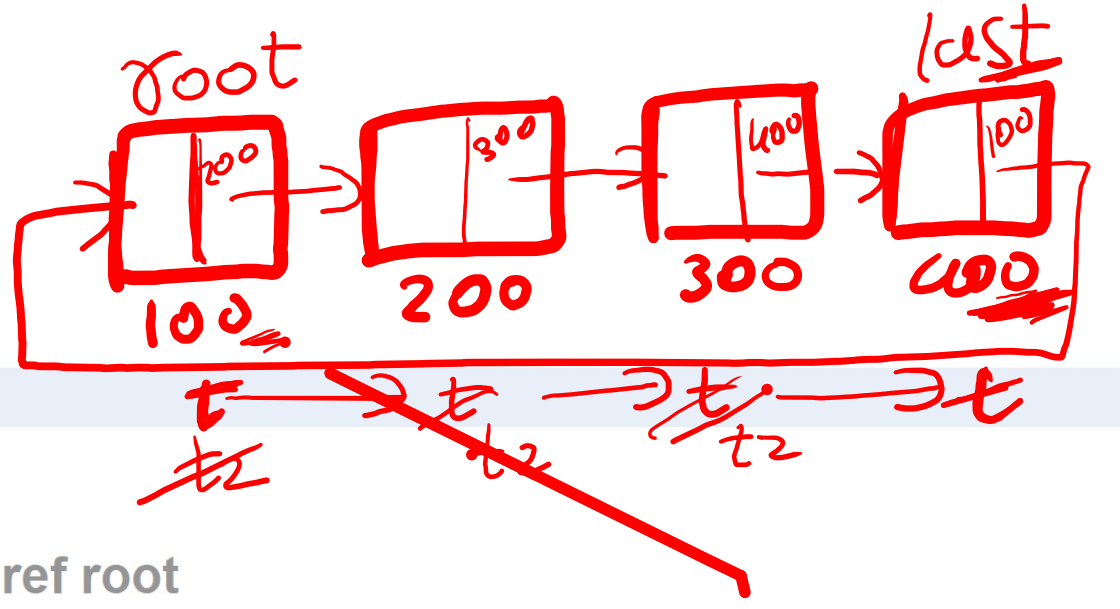
...va StackDemo.java | QueueLinearDemo.java | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java

Source History

```
83              root=last=null;
84          }
85          else
86          {
87            while(t!=last)//2
88            {
89               t2=t;
90               t=t.next;
91            }
92            last=t2;
93            last.next=root;//re ref root
94          }
95          System.out.println("Deleted:"+t.data);
96      }
```



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10:14 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

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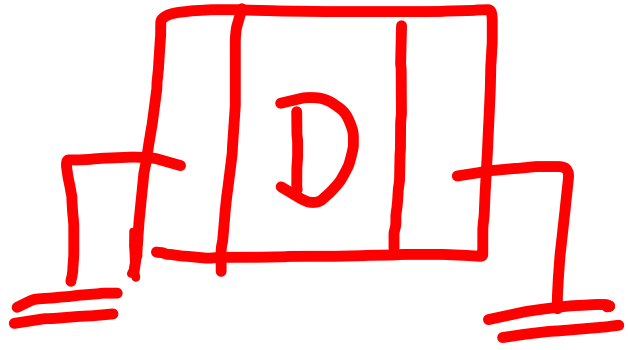
<default confi...

...ve CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
10   */
     class Dnode
12   {
13      int data;
14      Dnode left,right;
15      Dnode(int data)
16      {
17         this.data=data;
18         left=right=null;
19      }
20   }
21   public class DoublyLinkedListDemo {
22
23   }
```



Navigator Projects Files Services

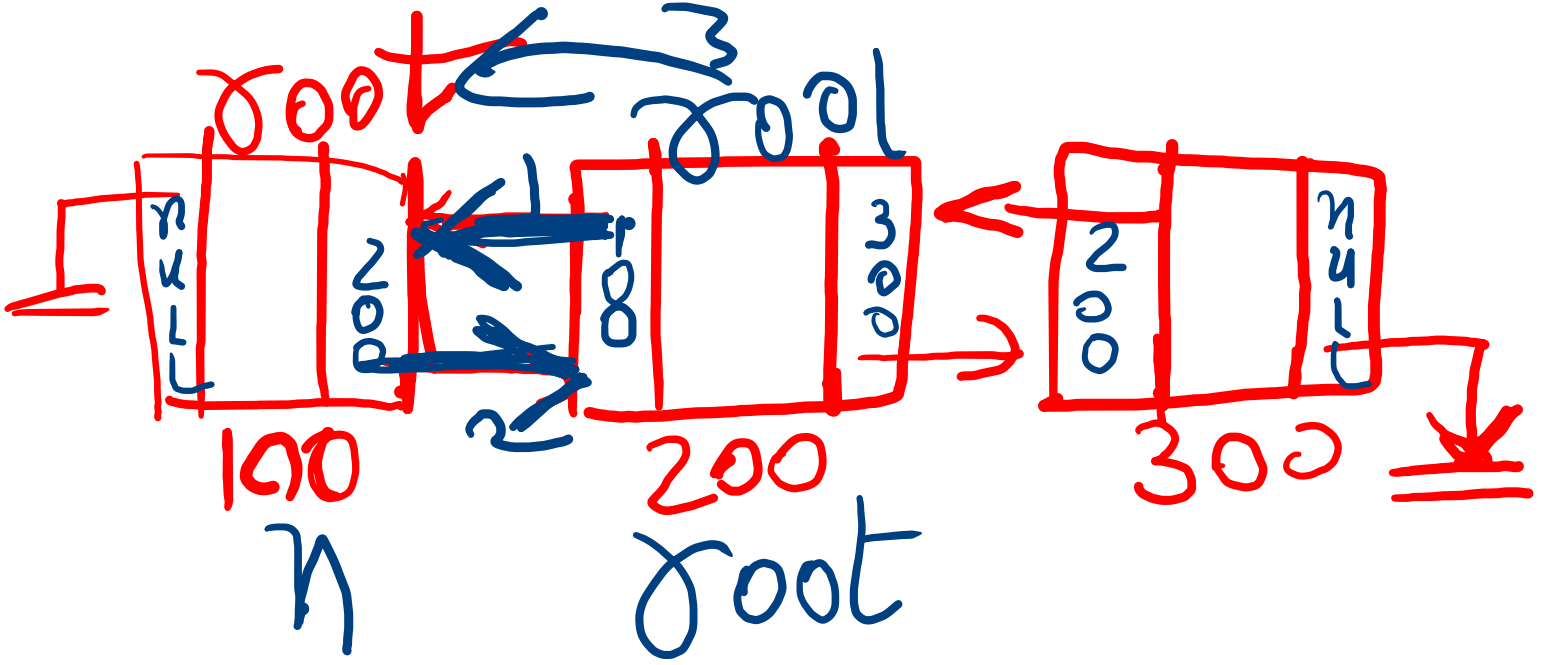
Output

11:7 INS

Search

ENG IN

10:51 28-11-2022


root
3
root
1
NULL
200
100
2
NULL
300
200
200
NULL
300
n
root

DataStructures_MET_2022 - NetBeans IDE 8.2

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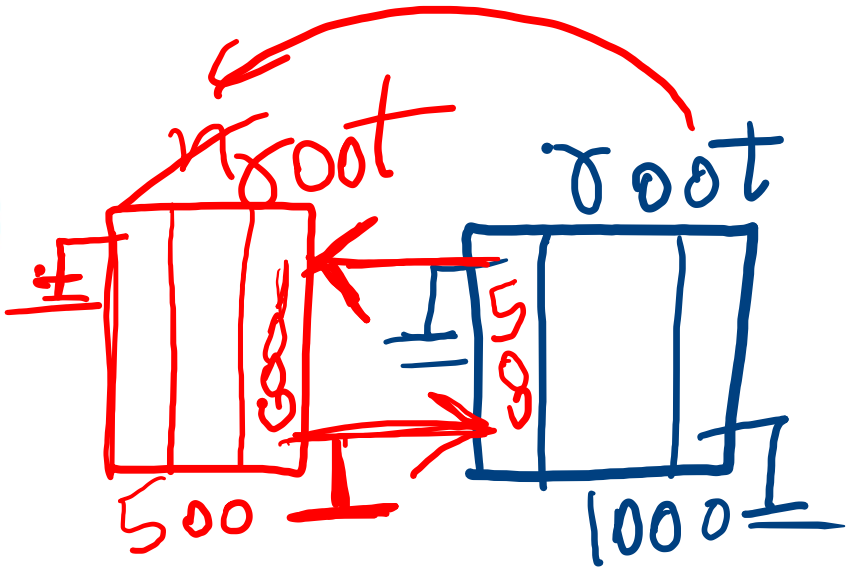
Search (Ctrl+I)

<default confi...

...va CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
26          root=null;
27      }
28      void insertLeft(int data)
29      {
30          Dnode n=new Dnode(data);
31          if(root==null)
32              root=n;
33          else
34          {
35              n.right=root;//1
36              root.left=n;//2
37              root=n;//3
38          }
39      }
```



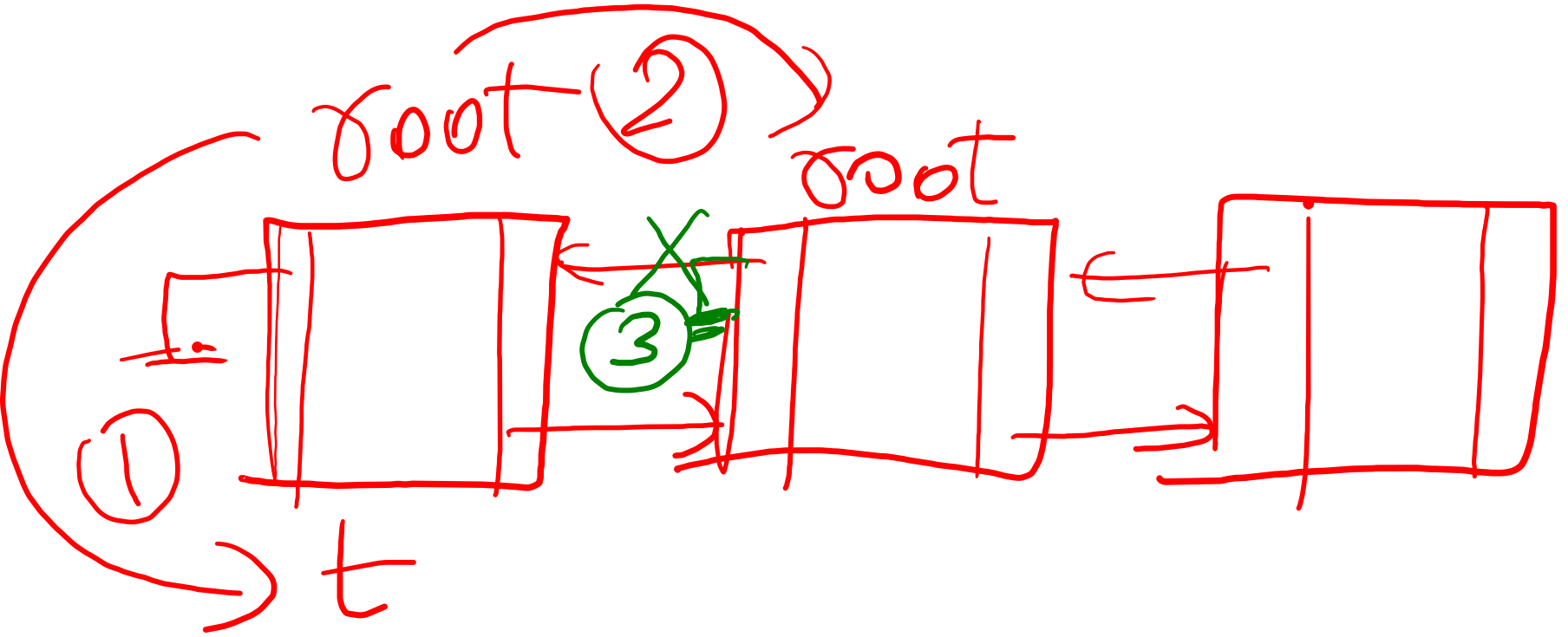
Output

37:23 INS

Search

ENG IN

10:57 28-11-2022


root
2
root
3
1
t

DataStructures_MET_2022 - NetBeans IDE 8.2

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Search (Ctrl+I)

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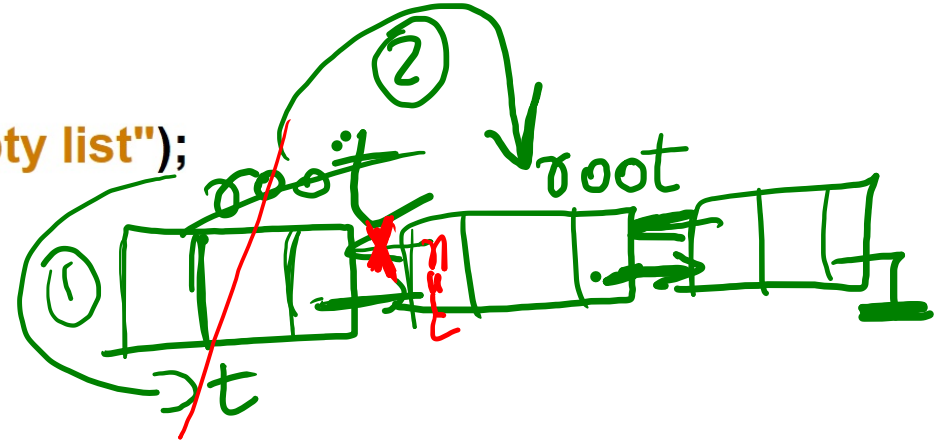
...va CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
40      void deleteLeft()
41      {
42          if(root==null)
43              System.out.println("Empty list");
44          else
45          {
46              Dnode t=root;//1
47              root=root.right;//2
48              root.left=null;//3
49              System.out.println("Deleted:"+t.data);
50          }
51      }
52  }
53
```



Output

53:1 INS

Search

ENG IN

11:02 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

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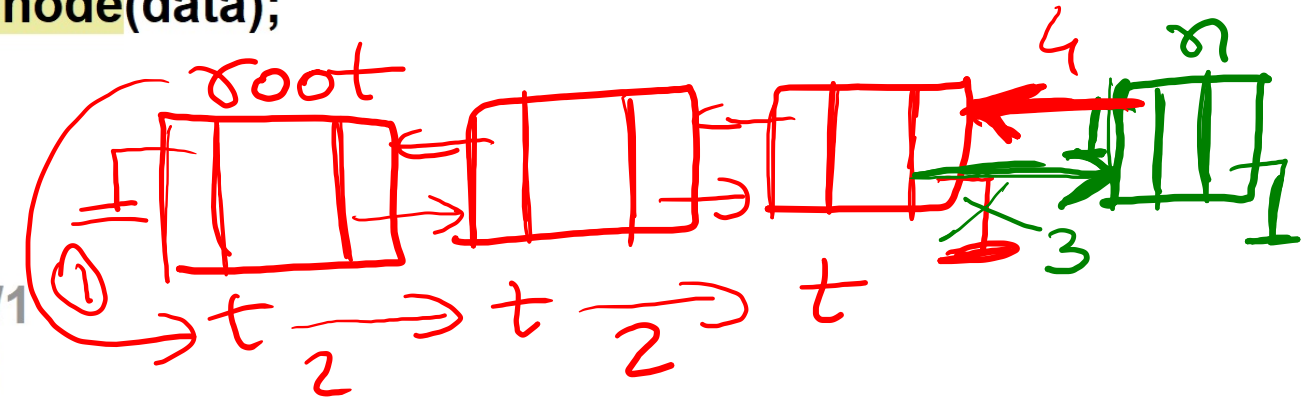
...va CircularQueueDemo.java PriorityQueueDemo.java LinkedListLinear.java DynamicStackDemo.java DynamicQueueDemo.java CircularLinkedListDemo.java **DoublyLinkedListDemo.java**

Source History

Airplane mode off

```
53      void insertRight(int data)
54
55      {
56          Dnode n=new Dnode(data);
57          if(root==null)
58              root=n;
59          else
60          {
61              n.right=root;//1
62              root.left=n;//2
63              root=n;//3
64          }
65      }
66  }
```



Navigator Projects Files Services

Output

66:2 INS

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ENG IN 11:04 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

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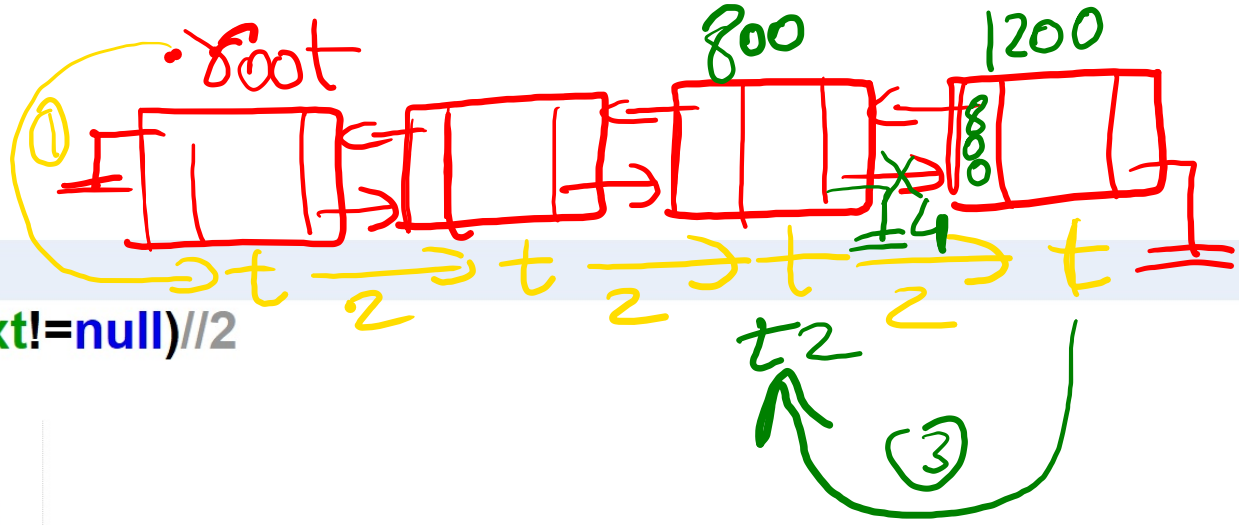
...va CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
73      }
74      else
75      {
76          Node t,t2;
            t=t2=root;
78          while(t.next!=null)//2
79          {
80              t2=t;
81              t=t.next;
82          }
83          t2.next=null;//break link
84          System.out.println("Deleted:"+t.data);
85      }
86  }
```



Output

77:2 INS

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ENG IN

11:08 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

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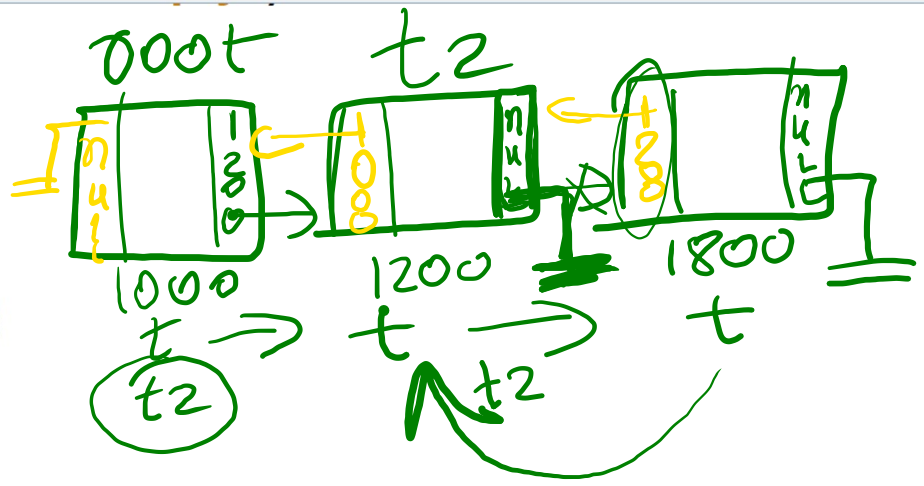
<default confi...

CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
73      }
74      else
75      {
76          Dnode t,t2;
            t=t2=root;
78          while(t.right!=null)//2
79          {
80              t=t.right;
81          }
82          t2=t.left;
83          t2.right=null;//break link
84          System.out.println("Deleted:"+t.data);
85      }
86  }
```



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84:16 INS

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ENG IN 11:14 28-11-2022

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...va CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
88  void printList()
89  {
90      if(root==null)
91              System.out.println("List Empty");
92      else
93      {
94          Dnode t;
95          t=root;
96          while(t!=null)//2
97          {
98              System.out.println(t.data);
99              t=t.right;
100         }
101     }
```

Output

100:11 INS

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ENG IN 11:23 28-11-2022

DataStructures_MET_2022 - NetBeans IDE 8.2

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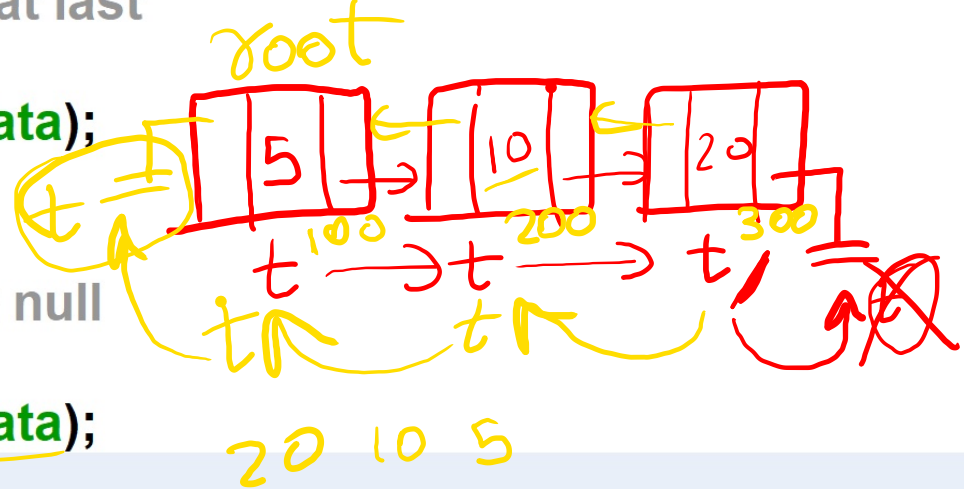
...va | CircularQueueDemo.java | PriorityQueueDemo.java | LinkedListLinear.java | DynamicStackDemo.java | DynamicQueueDemo.java | CircularLinkedListDemo.java | DoublyLinkedListDemo.java

Source History

```
109         Dnode t;
110         t=root;
111         while(t.right!=null)//stop at last
112         {
113             System.out.println(t.data);
114             t=t.right;
115         }
116         while(t!=null)//stop when null
117         {
118             System.out.println(t.data);
119             t=t.left;
120         }
121     }
122 }
```



Output

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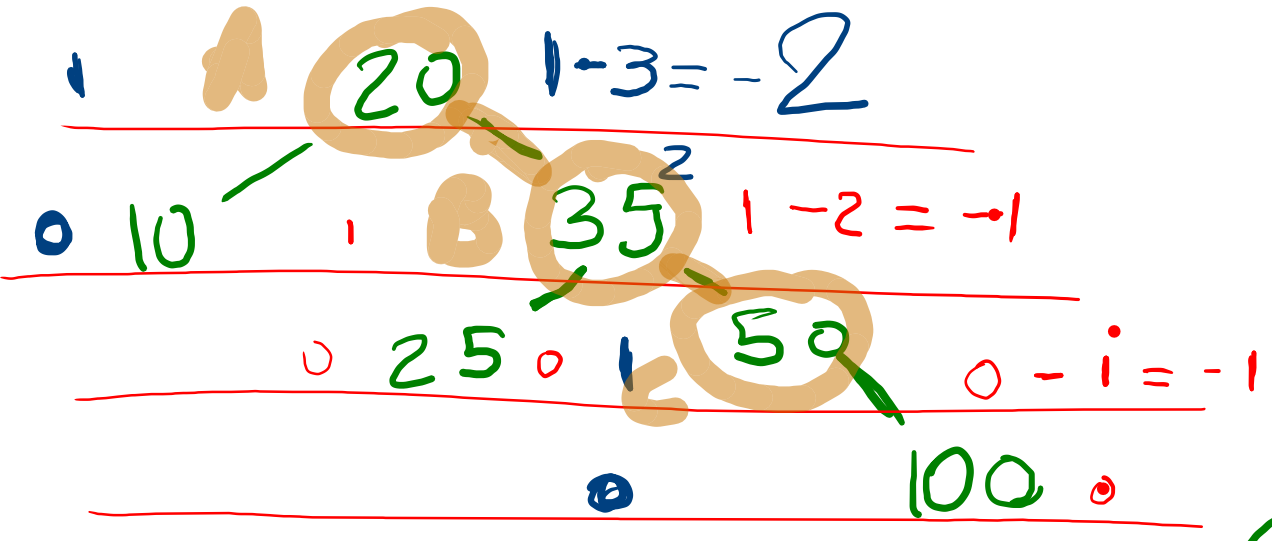
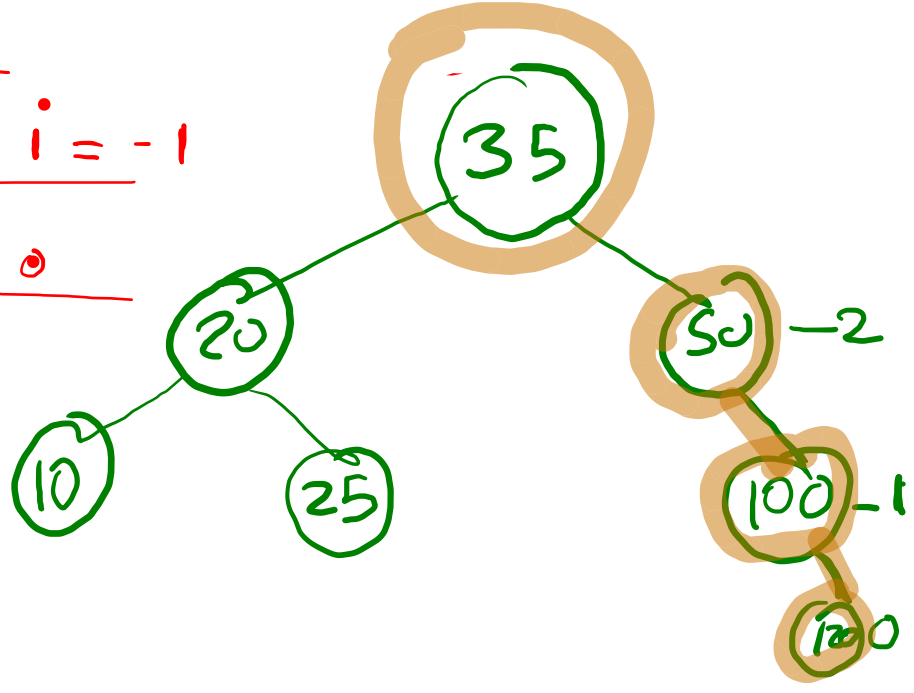


100



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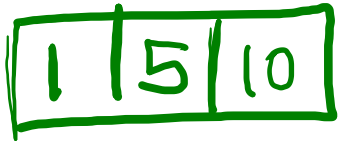
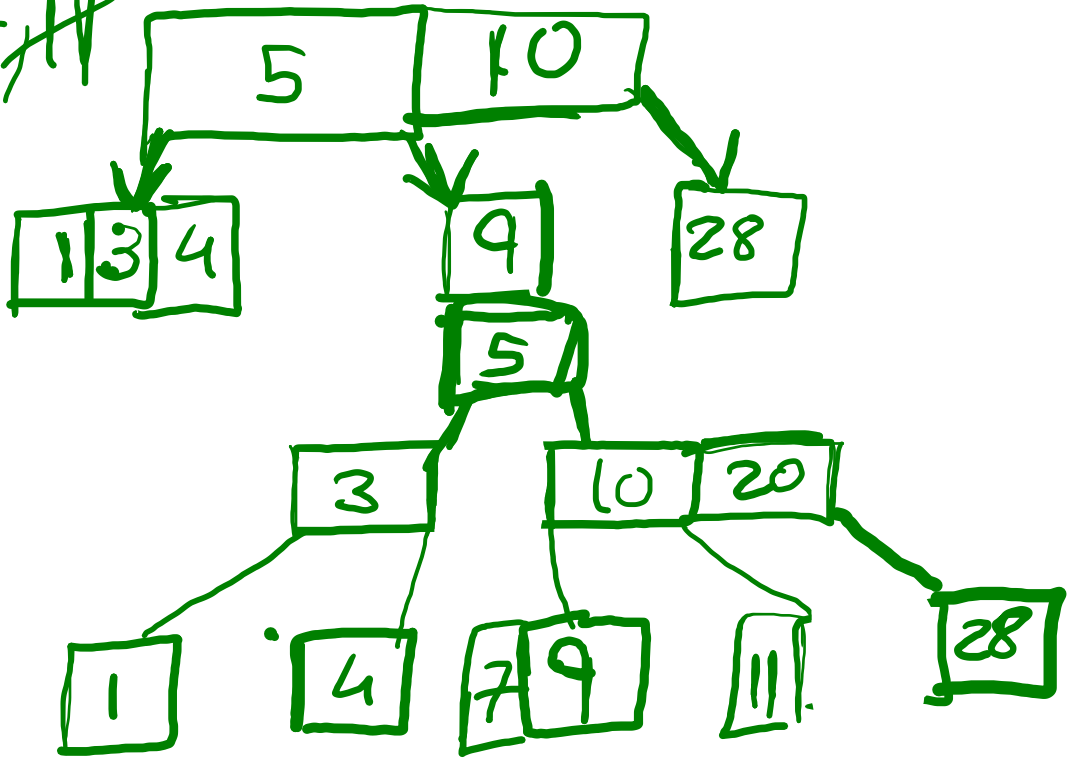
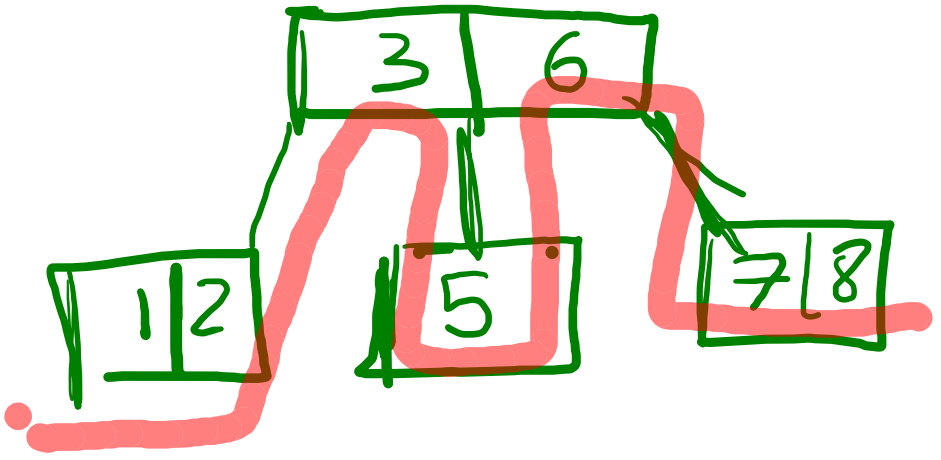
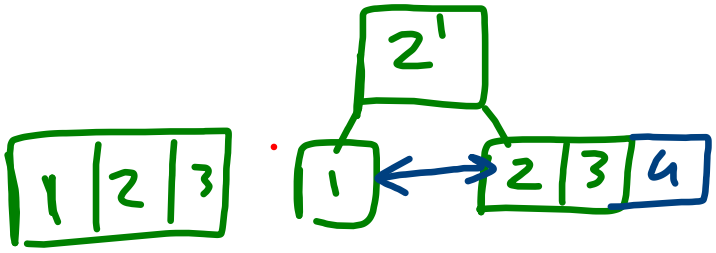
5, 10, 1, 3, 9, 28, 7, 11, 20

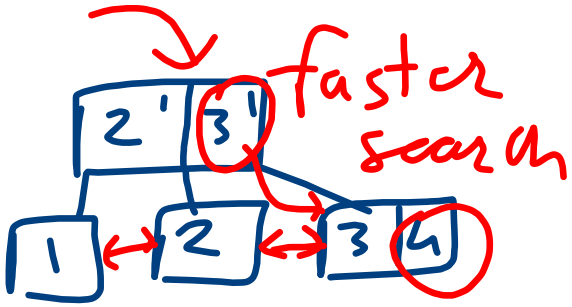


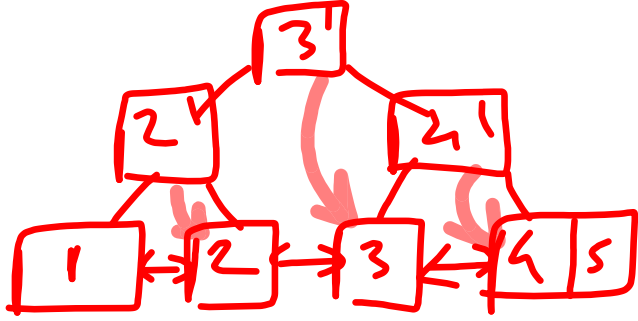



3
6
1
2
5
7
8

m = 3





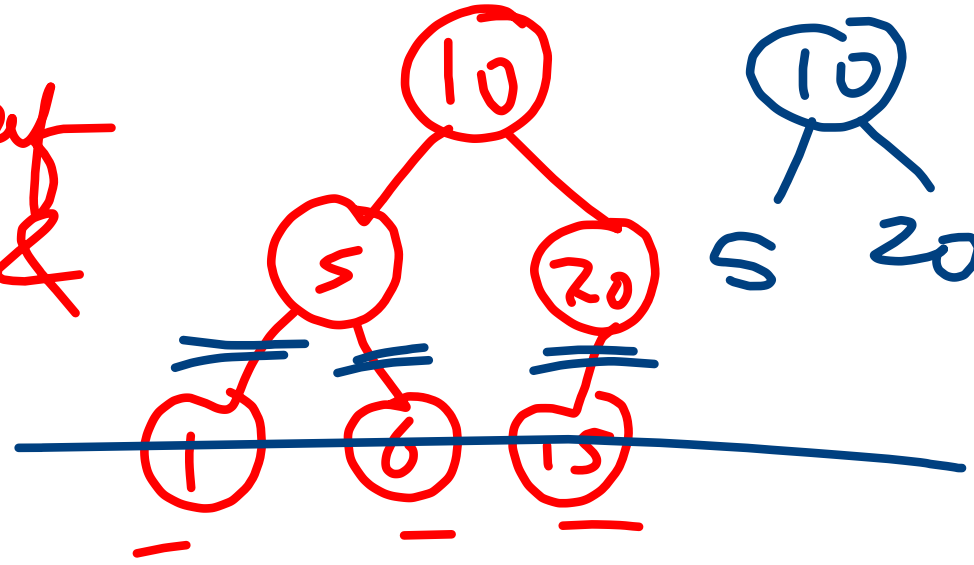


↳ Ep

Deletion

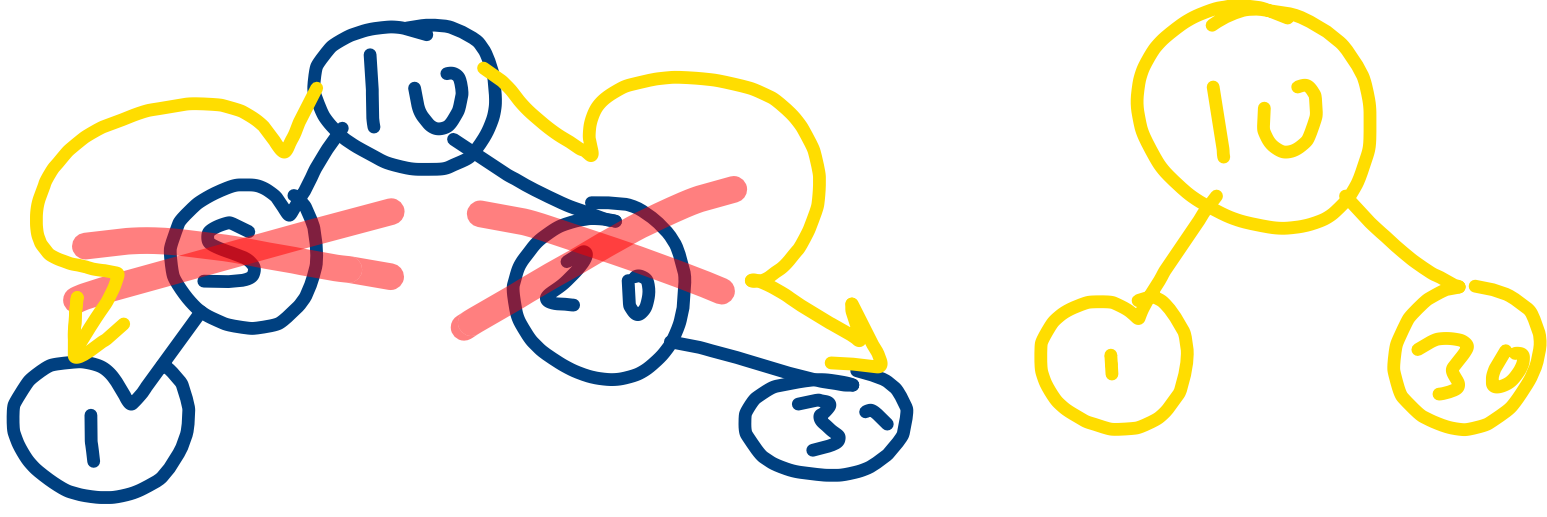
Case-1: Deletion of leaf

Sol: cut parent's link & Remove node



Case 2: Parent with single Child

Sol: Child takes over Parent



Case3: Del with both sub tree.

Sol: Inorder next takes over

5,10,15,20,30