

ประกาศค่าตัวแปรตามใจต้งๆ

## Python Tutor: Visualize code in [Python](#), [JavaScript](#), [C](#), [C++](#), and [Java](#)

Python 3.6  
(known limitations)

```

1 class value():
2     def __init__(self, data):
3         self.key = data
4         self.Left = None
5         self.Right = None
6 def linkedlist(value):
7     if (not value):
8         return
9     linkedlist(value.Left)
10    print(value.key,end = " ")
11    linkedlist(value.Right)
12 def insert(value,key):
13     if not value:
14         Mid = value(key)
15         return
16     q = []
17     q.append(value)
18     while (len(q)):
19         value = q[0]
20         q.pop(0)
21

```

[Edit this code](#)

→ line that just executed  
→ next line to execute

Step 11 of 105

[Customize visualization](#)

Print output (drag lower right corner to resize)

Frames

Global frame

- value
- linkedlist
- insert
- Mid

Objects

value class

__init__	function
__init__(self, data)	

function

linkedlist(value)

function

insert(value, key)

value instance

Left	None
Right	None
key	50

และใส่ค่าเข้าไปในArray ต่างๆ

## Python Tutor: Visualize code in [Python](#), [JavaScript](#), [C](#), [C++](#), and [Java](#)

Python 3.6  
(known limitations)

```

20 q.pop(0)
21
22 if (not value.Left):
23     value.Left = value(key)
24     break
25 else:
26     q.append(value.Left)
27
28 if (not value.Right):
29     value.Right = value(key)
30     break
31 else:
32     q.append(value.Right)
33 if __name__ == '__main__':
34     Mid = value(50)
35     Mid.Left = value(25)
36     Mid.Left.Left = value(75)
37     Mid.Right = value(30)
38     Mid.Right.Left = value(60)
39     Mid.Right.Right = value(40)
40 linkedlist(Mid)

```

[Edit this code](#)

→ line that just executed  
→ next line to execute

Done running (105 steps)

[Customize visualization](#)

Print output (drag lower right corner to resize)

75 25 50 60 30 40

Frames

Global frame

- value
- linkedlist
- insert
- Mid

Objects

value class

__init__	function
__init__(self, data)	

function

linkedlist(value)

function

insert(value, key)

value instance

Left	None
Right	None
key	50

value instance

Left	None
Right	None
key	25

value instance

Left	None
Right	None
key	75

value instance

Left	None
Right	None
key	30

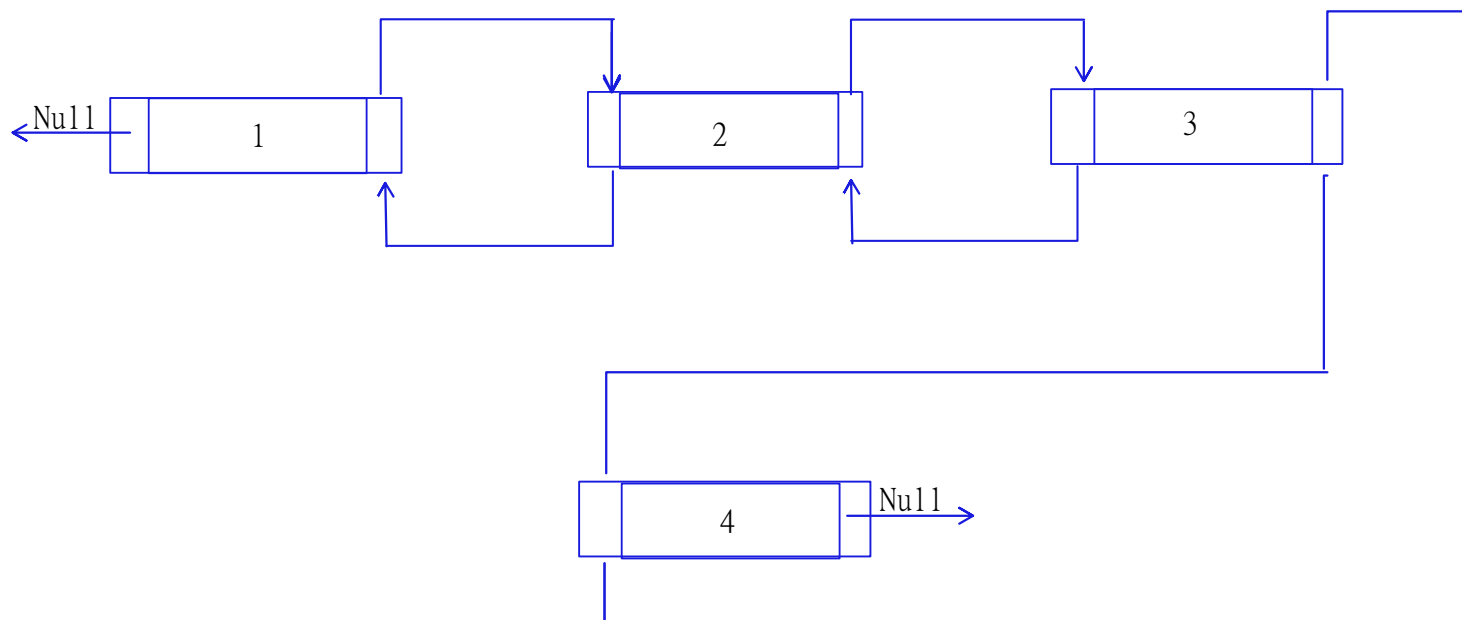
value instance

Left	None
Right	None
key	60

value instance

Left	None
Right	None
key	40

# Forward and backward linked list



## Lab 5.2

## แบ่ง ตัวแปรต่างๆ ในArray

Python Tutor: Visualize code in [Python](#), [JavaScript](#), [C](#), [C++](#), and [Java](#)

Python 3.6  
([known limitations](#))

```

10 print(value.data, end=" ")
11 linkedlist(value.Right)
12 def insert(Mid, key):
13     if(Mid == None):
14         return None
15     if(Mid.Left == None and Mid.Right == None):
16         if(Mid.data == key):
17             return None
18         else:
19             return Mid
20     key_node = None
21     value = None
22     last = None
23     s = []
24     s.append(Mid)
25     while(len(s)):
26         value = s.pop(0)
27         if(value.data == key):
28             key_node = value
29         if(value.Left):
30             last = value
31             s.append(value.Left)

```

[Edit this code](#)

→ line that just executed  
→ next line to execute

Step 47 of 228

[Customize visualization](#)

Print output (drag lower right corner to resize)

Frames

Global frame	
value	→
linkedlist	→
insert	→
Mid	→
key	30

Objects

value class	
__init__	function
__init__(self, data)	

function	
linkedlist(value)	

function	
insert(Mid, key)	

insert	
Mid	→
key	30
key_node	None

value instance	
Left	→
Right	→
data	50

value instance	
Left	→
Right	None
data	25

value instance	
Left	→
Right	None
data	75

## จบการทำงาน

Python Tutor: Visualize code in [Python](#), [JavaScript](#), [C](#), [C++](#), and [Java](#)

```

Python 3.6
# Known limitations
>> if key_node := None:
36     key_node.data = value.data
37     if last.Right == value:
38         last.Right = None
39     else:
40         last.Left = None
41     return Mid
42 if __name__ == '__main__':
43     Mid = value(50)
44     Mid.Left = value(25)
45     Mid.Left.Left = value(75)
46     Mid.Right = value(30)
47     Mid.Right.Left = value(60)
48     Mid.Right.Right = value(40)
49     key = 30
50     Mid = insert(Mid, key)
51     key = 75
52     Mid = insert(Mid, key)
53     key = 40
54     Mid = insert(Mid, key)
55     linkedlist(Mid)

```

Print output (drag lower right corner to resize)  
25 50 60

Frames

Global frame	
value	
linkedlist	
insert	
Mid	
key	40

Objects

value class

__init__	function __init__(self, data)
----------	----------------------------------

function

linkedlist(value)
-------------------

function

insert(Mid, key)
------------------

value instance

Left	
Right	
data	50

value instance

Left	None
Right	None
data	25

value instance

Left	None
Right	None
data	60

→ line that just executed

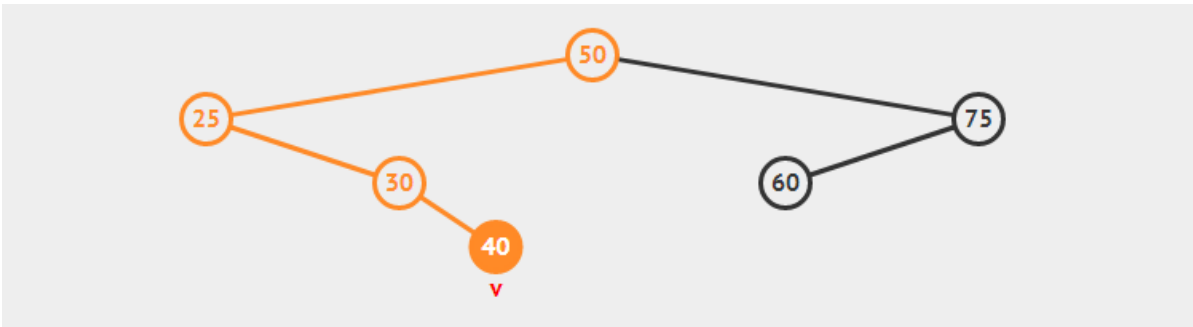
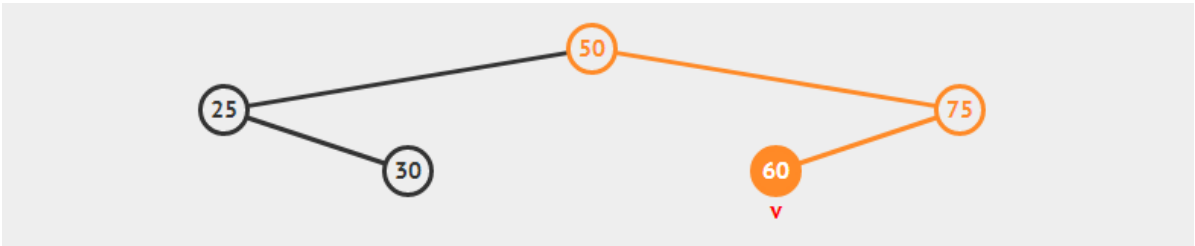
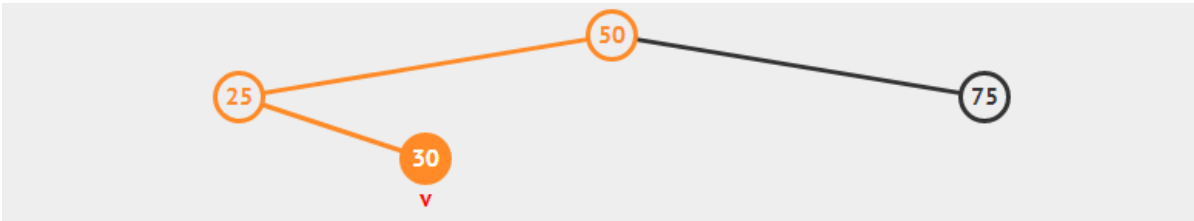
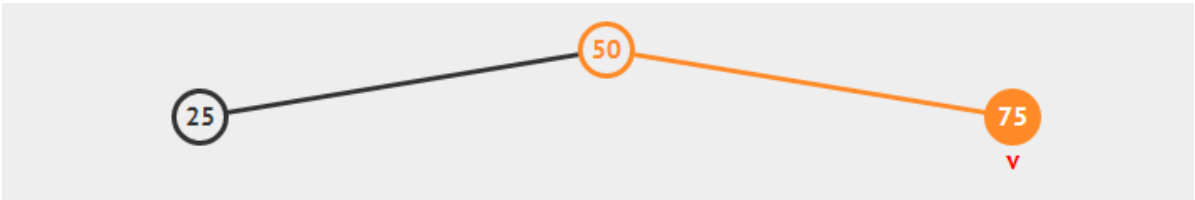
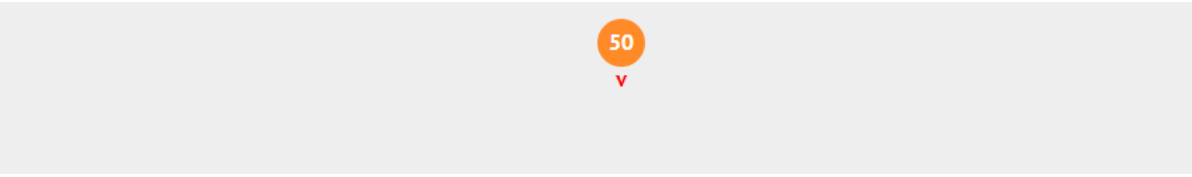
→ next line to execute

<< First
< Prev
Next >
Last >>

Done running (228 steps)

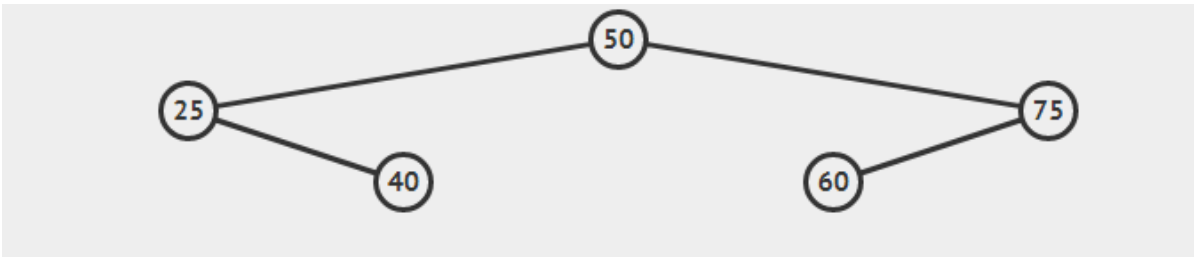
[Customize visualization](#)

Lab-5.1.2



Lab5.2.2

Delete 30



Delete 75



Delete 40

