

Tutorial 4

September 21, 2018

1 Linked List

1.1 Define a Node Class

```
In [ ]: class Node:
    def __init__(self, initdata):
        self.data = initdata
        self.next = None

    def getData(self):
        return self.data

    def getNext(self):
        return self.next

    def setData(self, newdata):
        self.data = newdata

    def setNext(self, newnext):
        self.next = newnext
```

1.2 Define a Linked List Class

```
In [ ]: class LinkedList:
    def __init__(self):
        self.head = None

    def isEmpty(self):
        return self.head == None

    def add(self, item):
        temp = Node(item)
        temp.setNext(self.head)
        self.head = temp

    def size(self):
        current = self.head
        count = 0
```

```

while current != None:
    count = count + 1
    current = current.getNext()
return count

def printList(self):
    current = self.head
    while current is not None:
        print (current.data)
        current = current.getNext()

def search(self,item):
    current = self.head
    found = False
    while current != None and not found:
        if current.getData() == item:
            found = True
        else:
            current = current.getNext()
    return found

def remove(self,item):
    current = self.head
    previous = None
    found = False
    while not found:
        if current.getData() == item:
            found = True
        else:
            previous = current
            current = current.getNext()
    if previous == None:
        self.head = current.getNext()
    else:
        previous.setNext(current.getNext())

```

1.3 Create a Simple Linked List

```

In [ ]: # Create a Linked List
        mylist = LinkedList()

        # Add Node to List
        mylist.add(31)
        mylist.add(77)
        mylist.add(17)
        mylist.add(93)
        mylist.add(26)
        mylist.add(54)

```

2 Print the Linked List

```
In [ ]: # Print the element in the list
        mylist.printList()
```

2.1 Searching in Linked List

```
In [ ]: # Search for element "17"
        mylist.search(17)
```

2.2 Remove Element from Linked List

```
In [ ]: # Remove a element
        mylist.remove(17)

        # Print the element in the list
        mylist.printList()
```