

Single Linked List Implementation

```
class Node:
```

```
    def __init__(self,data):
```

```
        self.data = data
```

```
        self.next = None
```

```
class SLL:
```

```
    def __init__(self):
```

```
        self.head = None
```

```
    def insert(self,data):
```

```
        new_node = Node(data)
```

```
        if(self.head is None):
```

```
            self.head = new_node
```

```
            return
```

```
        current = self.head
```

```
        while(current.next is not None):
```

```
            current = current.next
```

```
        current.next = new_node
```

```
    def insertFirst(self,data):
```

```
        new_node = Node(data)
```

```
        new_node.next = self.head
```

```
        self.head = new_node
```

```
    def insertAtPosition(self,pos,data): #1 2 3 4
```

```
        new_node = Node(data)
```

```
        if(pos == 0):
```

```
            new_node.next = self.head
```

```
            self.head = new_node
```

```
current = self.head
pointer = 0
while(current and pointer < pos - 1):
    current = current.next
    pointer += 1
new_node.next = current.next
current.next = new_node
```

```
def delete_at_position(self,pos):
    if(self.head is None):
        return("List is Empty...")
    if(pos == 0):
        delete_node = self.head
        self.head = self.head.next
        delete_node.next = None
        return("Deletion successful...")
    current = self.head
    pointer = 0
    while(current and pointer < pos - 1):
        current = current.next
        pointer += 1
    delete_node = current.next
    current.next = delete_node.next
    delete_node.next = None
    return "Deletion successful..."
```

```
def print_list(self):
    current = self.head
    while(current):
```

```
    print(current.data,end = "-->")
    current = current.next
print()
```

```
def print_reverse_list(self):
    lst = []
    current = self.head
    while(current is not None):
        lst.append(current.data)
        current = current.next
    print(lst[::-1])
```

```
def size_of_list(self):
    count = 0
    current = self.head
    while(current is not None):
        count+=1
        current = current.next
    print(count)
```

```
def search_element(self,key):
    if(self.head is None):
        return "List is empty..."
    current = self.head
    pos = -1
    while(current is not None):
        pos+=1
        if(current.data == key):
            return pos
        current = current.next
```

```
return -1
```

```
sll = SLL()
sll.insert(12)
sll.insert(123)
sll.insert(24)
sll.insert(33)
sll.insert(29)
sll.print_list()
sll.insertAtPosition(2,52)
sll.print_list()
sll.print_reverse_list()
sll.size_of_list()
sll.delete_at_position(3)
sll.print_list()
sll.size_of_list()
print(sll.search_element(111))
```