



**K.R. MANGALAM UNIVERSITY**  
THE COMPLETE WORLD OF EDUCATION

**ACADEMIC SESSION 2025-26**  
**Odd Semester**



**SINGLY LINK LIST OPERATION**

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## **# Singly Linked List Implementation (Insert, Delete, Search, Display)**

**class Node:**

```
def __init__(self, data):  
    self.data = data  
    self.next = None
```

**class SinglyLinkedList:**

```
def __init__(self):  
    self.head = None
```

**# INSERT at end**

```
def insert(self, data):  
    new_node = Node(data)  
  
    if self.head is None:  
        self.head = new_node  
        return
```

```
    temp = self.head  
    while temp.next:  
        temp = temp.next
```

```
    temp.next = new_node
```

**# DELETE a node by value**

```
def delete(self, key):
    temp = self.head

    # Case 1: head node to delete
    if temp and temp.data == key:
        self.head = temp.next
        print(f"{key} deleted.")
        return

    # Case 2: search for the key
    prev = None
    while temp and temp.data != key:
        prev = temp
        temp = temp.next

    if temp is None:
        print(f"{key} not found.")
        return

    prev.next = temp.next
    print(f"{key} deleted.")

# SEARCH a value
def search(self, key):
    temp = self.head
    pos = 1
    while temp:
```

```
    if temp.data == key:
        print(f"{key} found at position {pos}.")
        return
    temp = temp.next
    pos += 1
print(f"{key} not found.")
```

**# DISPLAY the list**

```
def display(self):
    if self.head is None:
        print("List is empty.")
        return

    temp = self.head
    while temp:
        print(temp.data, end=" -> ")
        temp = temp.next
    print("NULL")
```

**# ----- MAIN PROGRAM ----- #**

**ll = SinglyLinkedList()**

```
while True:
    print("\n--- Singly Linked List Menu ---")
    print("1. Insert")
```

```
print("2. Delete")
print("3. Search")
print("4. Display")
print("5. Exit")
```

```
choice = int(input("Enter your choice: "))
```

```
if choice == 1:
```

```
    val = int(input("Enter value to insert: "))
    ll.insert(val)
```

```
elif choice == 2:
```

```
    val = int(input("Enter value to delete: "))
    ll.delete(val)
```

```
elif choice == 3:
```

```
    val = int(input("Enter value to search: "))
    ll.search(val)
```

```
elif choice == 4:
```

```
    ll.display()
```

```
elif choice == 5:
```

```
    print("Exiting...")
    break
```

```
else:
```

```
print("Invalid choice! Try again.")
```