160120733167
M.Sai Teja

WEEK – 5

1. Develop an application to implement circular linked list with following operations.
a. Insertion
b. Deletion
c. Display
d. Count
e. Search

AIM: A program to implement circular linked list with given following operations.

PROGRAM:

```
class Node:
def __init__(self,data):
self.data=data
self.next=None
class CLL:
def __init__(self):
self.header=None
self.tail=None
def insertion(self):
item=int(input("Enter the value: "))
newnode=Node(item)
if self.header is None:
self.header=newnode
self.tail=newnode
else:
choice=int(input("1. Start\t2. Middle\t3. End\nEnter where you want to insert: "))
if choice==1:
newnode.next=self.header
self.header=newnode
self.tail.next=newnode
elif choice==2:
ptr=self.header
pos=int(input("Enter the position: "))
for i in range(1,pos-1):
ptr=ptr.next
newnode.next=ptr.next
ptr.next=newnode
elif choice==3:
self.tail.next=newnode
newnode.next=self.header
self.tail=newnode
def display(self):
ptr=self.header
if self.header==None:
print("list is empty")
else:
while ptr!=self.tail:
print(ptr.data,end=' ')
ptr=ptr.next
print(ptr.data)
```

160120733167
M.Sai Teja

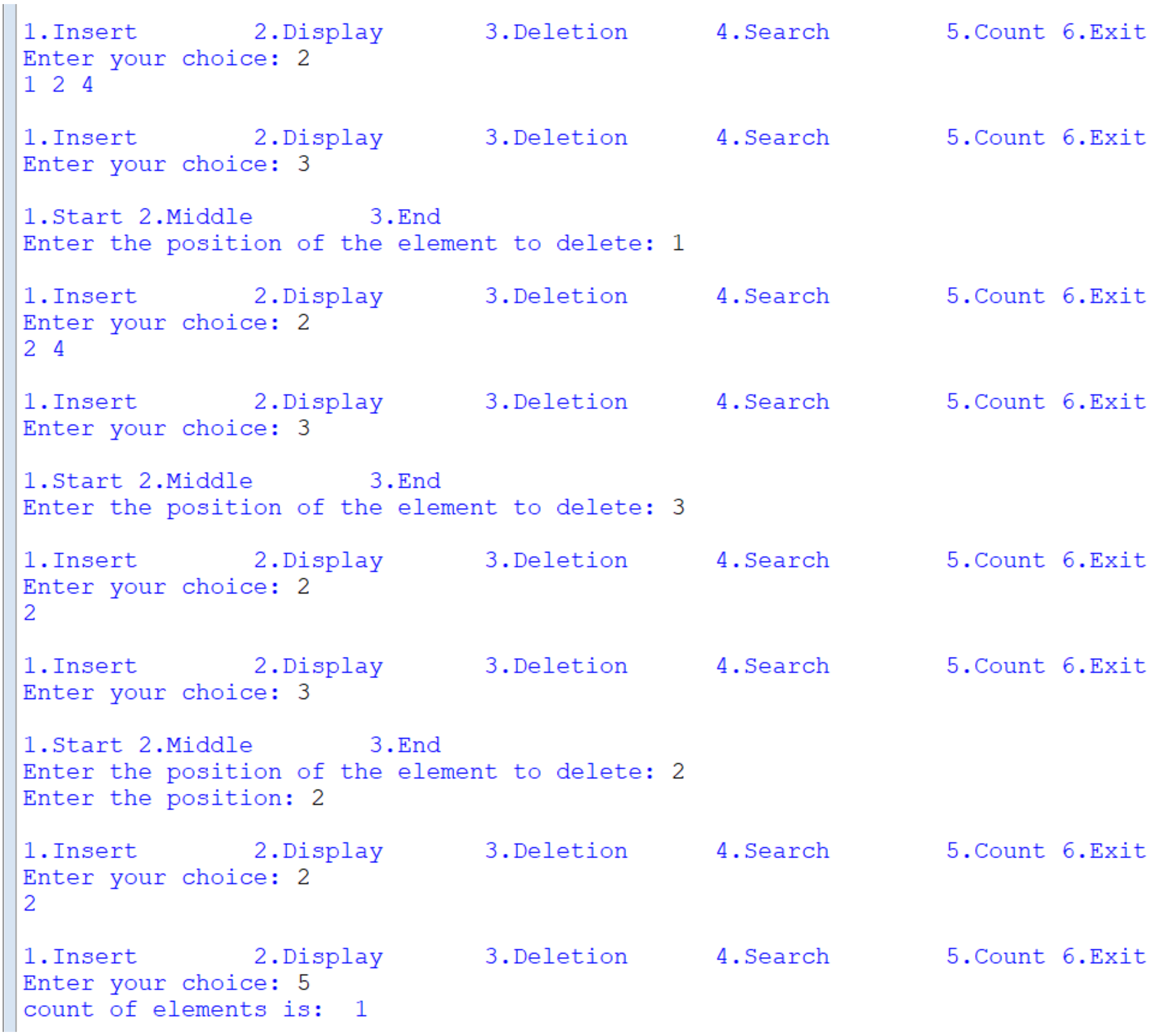
```
def deletion(self):
ptr=self.header
if self.header is None:
print("List is empty")
else:
n=int(input("\n1.Start\t2.Middle\t3.End\nEnter the position of the element to delete: "))
if n==1:
self.header=self.header.next
self.tail.next=self.header
if n==2:
pos=int(input("Enter the position: "))
for i in range(pos-1):
ptr=ptr.next
ptr.next=ptr.next.next
if n==3:
while ptr.next!=self.tail:
ptr=ptr.next
self.tail=ptr
self.tail.next=self.header
```

DATE: 4-11-2021

```
def search(self):
ptr=self.header
key=int(input("Enter the element to be searched: "))
while ptr.next!=self.tail and ptr.data!=key:
ptr=ptr.next
if ptr.data!=key and ptr.next==self.header:
print("Not found")
elif ptr.data==key:
print("Found")
def count(self):
ptr=self.header
if self.header is None:
count=0
else:
count=1
while ptr!=self.tail:
count+=1
ptr=ptr.next
print("count of elements is: ",count)
l=CLL()
while True:
n=int(input("\n1.Insert\t2.Display\t3.Deletion\t4.Search\t5.Count\t6.Exit\nEnter your choice: "))
if n==1:
l.insertion()
elif n==2:
l.display()
elif n==3:
l.deletion()
elif n==4:
```

```
l.search()
elif n==5:
l.count()
elif n==6:
exit()
else:
print("Wrong choice, try again")
```

OUTPUT:



```
1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 2
1 2 4

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 3

1.Start 2.Middle        3.End
Enter the position of the element to delete: 1

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 2
2 4

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 3

1.Start 2.Middle        3.End
Enter the position of the element to delete: 3

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 2
2

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 3

1.Start 2.Middle        3.End
Enter the position of the element to delete: 2
Enter the position: 2

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 2
2

1.Insert        2.Display       3.Deletion      4.Search        5.Count 6.Exit
Enter your choice: 5
count of elements is:  1
```

2. Develop an application to implement doubly circular linked list with following operations.
a. Insertion
b. Deletion
c. Display (forward and backward)
AIM: A program to implement doubly circular linked list with given following operations.

160120733167
M.Sai Teja

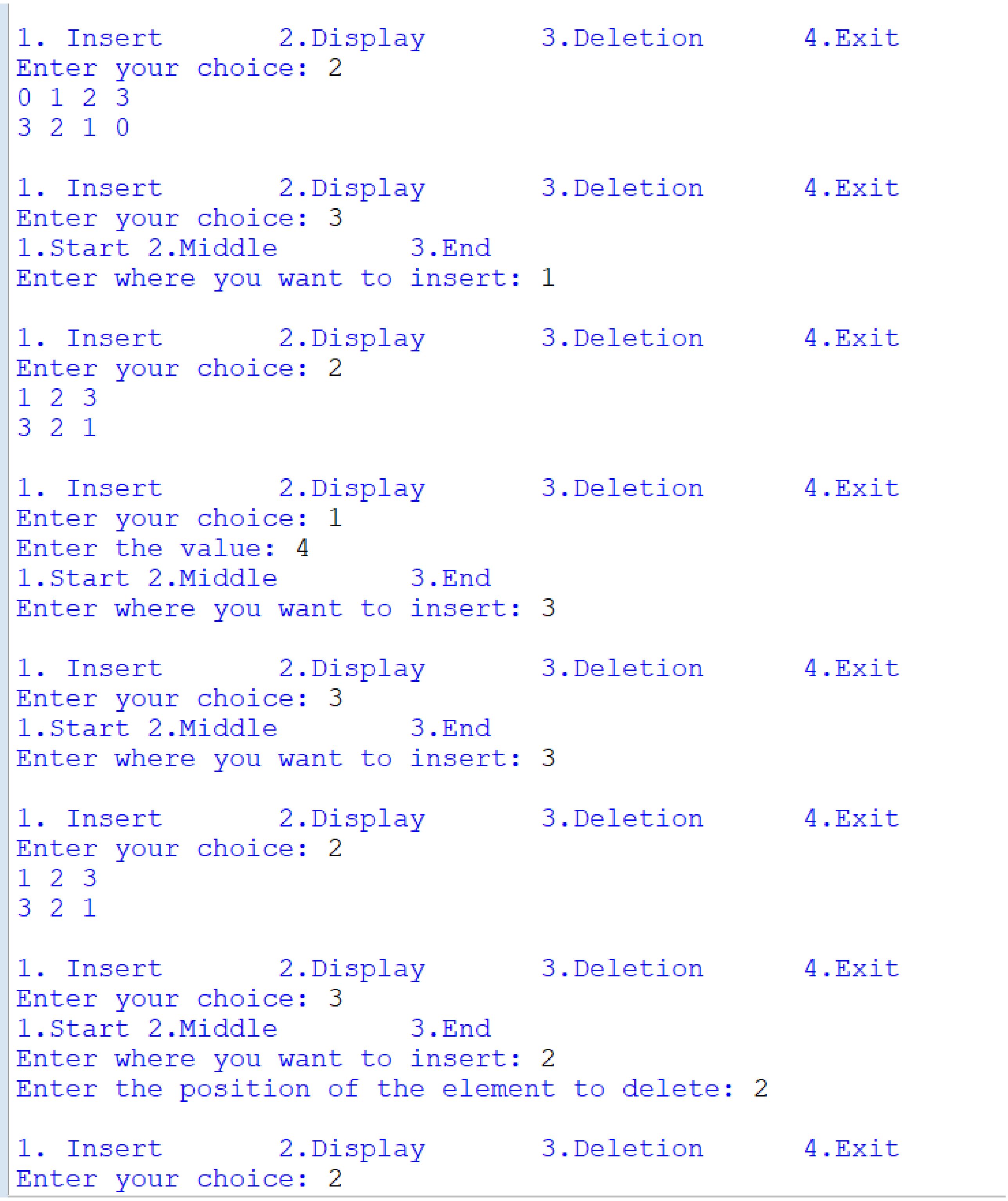
PROGRAM:

```
class Node:
def __init__(self,data):
self.data=data
self.next=None
self.prev=None
class DCLL:
def __init__(self):
self.head=None
self.tail=None
def insertion(self):
item=int(input("Enter the value: "))
newnode=Node(item)
if self.head is None:
self.head=newnode
self.prev=newnode
self.tail=newnode
else:
choice=int(input("1.Start\t2.Middle\t3.End\nEnter where you want to insert: "))
if choice==1:
newnode.next=self.head
self.head.prev=newnode
self.head=newnode
self.tail.next=newnode
if choice==2:
ptr=self.head
pos=int(input("Enter position: "))
for i in range(1,pos-1):
ptr=ptr.next
newnode.next=ptr.next
ptr.next.prev=newnode
ptr.next=newnode
newnode.prev=ptr
if choice==3:
self.tail.next=newnode
newnode.prev=self.tail
self.tail=newnode
self.tail.next=self.head
def display(self):
ptr=self.head
if self.head is None:
print("list is empty")
else:
while ptr!=self.tail:
print(ptr.data,end=' ')
ptr=ptr.next
print(ptr.data)
while ptr!=self.head:
print(ptr.data,end=' ')
```

```
ptr=ptr.prev
print(ptr.data)
def deletion(self):
ptr=self.head
if self.head is None:
print("list is empty")
else:
choice=int(input("1.Start\t2.Middle\t3.End\nEnter where you want to insert: "))
if choice==1:
self.head=self.head.next
self.head.prev=self.tail
if choice==2:
pos=int(input("Enter the position of the element to delete: "))
for i in range(0,pos-1):
ptr=ptr.next
ptr1=ptr.prev
ptr2=ptr.next
ptr1.prev=ptr2
ptr2.next=ptr1
if choice==3:
while ptr.next!=self.tail:
ptr=ptr.next
self.tail=ptr
ptr.next=self.head
self.head.prev=self.tail
l=DCLL()
while True:
n=int(input("\n1. Insert\t2.Display\t3.Deletion\t4.Exit\nEnter your choice: "))
if n==1:
l.insertion()
elif n==2:
l.display()
elif n==3:
l.deletion()
elif n==4:
exit()
else:
print("Wrong choice, try again")
```

OUTPUT:

160120733167
M.Sai Teja



```
1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 2
0 1 2 3
3 2 1 0

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 3
1.Start 2.Middle        3.End
Enter where you want to insert: 1

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 2
1 2 3
3 2 1

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 1
Enter the value: 4
1.Start 2.Middle        3.End
Enter where you want to insert: 3

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 3
1.Start 2.Middle        3.End
Enter where you want to insert: 3

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 2
1 2 3
3 2 1

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 3
1.Start 2.Middle        3.End
Enter where you want to insert: 2
Enter the position of the element to delete: 2

1. Insert       2.Display       3.Deletion      4.Exit
Enter your choice: 2
```