

Experiment Number: 10 (Generics with LinkedList)

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| Class | TE IT |
| Batch | D |
| Subject | OOP Lab |

Aim: Use LinkedList to perform following operations:

1. To enter age of 5 people. Use generics.
2. Remove all age>60 and age<10.
3. Add one element at the start of List
4. Print the index of all the age >40
5. Print the List

Program:

```
package oopExp10;
import java.util.*;
class AgeLinkedList
{
    // Taking input of Age of people
    public static LinkedList<Integer> take_input(int n)
    {
        Scanner ip = new Scanner(System.in);
        LinkedList<Integer> linked_list = new LinkedList<Integer>();
        System.out.println("Enter the age of people : ");
        for (int i = 0; i<n; i++)
        {
            linked_list.add(ip.nextInt());
        }
        return linked_list;
    }
    // Removing all age>60 & age<10
    public static LinkedList<Integer> remove_age(LinkedList<Integer>
linked_list)
    {
        System.out.println("Initial LinkedList is " + linked_list);
        int i=0;
        while (i < linked_list.size())
        {
            if(linked_list.get(i)>60 || linked_list.get(i) <10)
            {
                System.out.println("Removing age
"+linked_list.get(i)+" present in the LinkedList at index "+i);
                linked_list.remove(i);
            }
        }
    }
}
```

```

        // System.out.println("Updated LinkedList is " +
linked_list);
    }
    else
        i++;
    }
    System.out.println("Updated LinkedList is " + linked_list);
    return linked_list;
}
// Adding element in the start
public static LinkedList<Integer>
add_start_element(LinkedList<Integer> linked_list)
{
    Scanner ip = new Scanner(System.in);
    System.out.print("Enter the age to be added in the beginning
: ");
    Integer age=ip.nextInt();
    System.out.println("Initial LinkedList is " + linked_list);
    System.out.println("Adding age "+age+"in the begiining of
the list");
    linked_list.addFirst(age);
    System.out.println("Updated LinkedList is " + linked_list);
    return linked_list;
}
// Printing index of all age>40
public static void print_greater_age(LinkedList<Integer>
linked_list)
{
    print_list(linked_list);
    System.out.print("Index with Age>40 are : ");
    int t=0;
    for(int i=0;i<linked_list.size();i++)
    {
        if(linked_list.get(i)>40)
        {
            System.out.print(i+" ");
            t++;
        }
    }
    if(t==0)
        System.out.println("NULL");
}
// Printing Linked List
public static void print_list (LinkedList<Integer> linked_list)
{
    System.out.print("Linked List is : ");
    for (int i = 0; i < linked_list.size(); i++)
    {
        System.out.print(linked_list.get(i));
    }
}

```

```

        if(i<linked_list.size()-1)
            System.out.print(" -> ");
        else
            System.out.print("\n");
    }
}

}

public class Exp10 {
    public static void main(String[] args)
    {
        Scanner ip=new Scanner(System.in);
        // AgeLinkedList obj = new AgeLinkedList();
        // PrintWriter writer= new PrintWriter(System.out);
        System.out.println("\n***** Taking
input of Age of people *****\n");
        System.out.print("Enter the number of elements in the
LinkedList : ");
        int num=ip.nextInt();
        LinkedList<Integer>
linked_list=AgeLinkedList.take_input(num);
        System.out.println("\nAges of People in LinkedList : "+
linked_list);

        System.out.println("\n*****
*****\n");

        System.out.println("\n***** Remove all
age>60 and age<10 *****\n");
        linked_list=AgeLinkedList.remove_age(linked_list);

        System.out.println("\n*****
*****\n");

        System.out.println("\n***** Add one element
at the start of List *****\n");
        linked_list=AgeLinkedList.add_start_element(linked_list);

        System.out.println("\n*****
*****\n");

        System.out.println("\n***** Print the
index of all the age > 40 *****\n");
        AgeLinkedList.print_greater_age(linked_list);
        System.out.println("\n\n*****
*****\n");

        System.out.println("\n*****
Printing the List *****\n");
    }
}

```

```

        AgeLinkedList.print_list(linked_list);
System.out.println("\n*****\n");
    }
}

```

Output:

```

PS D:\PROJECT_AND_CODES> & 'C:\Program Files\Java\jdk-11.0.12\bin\java.exe' '-cp' '
D:\PROJECT_AND_CODES\Java' 'oopExp10.Exp10'

***** Taking input of Age of people *****

Enter the number of elements in the LinkedList : 5
Enter the age of people :
18
4
65
28
45

***** Remove all age>60 and age<10 *****

Initial LinkedList is [18, 4, 65, 28, 45]
Removing age 4 present in the LinkedList at index 1
Removing age 65 present in the LinkedList at index 1
Updated LinkedList is [18, 28, 45]

*****

***** Add one element at the start of List *****

Enter the age to be added in the beginning : 41
Initial LinkedList is [18, 28, 45]
Adding age 41 in the beginning of the list
Updated LinkedList is [41, 18, 28, 45]

*****

***** Print the index of all the age > 40 *****

Linked List is : 41 -> 18 -> 28 -> 45
Index with Age>40 are : 0 3

*****

***** Printing the List *****

Linked List is : 41 -> 18 -> 28 -> 45

*****

PS D:\PROJECT_AND_CODES> 

```