

King Saud University
College of Computer and Information Systems
Department of Computer Science
CSC 113: Java Programming-II, Spring 2020

Lab 10: Linked List

```
public class Employee {
    private int empId;
    private String name;
    private String gender;
    private int age;

    public Employee(int empId, String name, String gender, int age) {

        this.empId = empId;
        this.name = name;
        this.gender = gender;
        this.age = age;
    }

    public int getEmpId() {
        return empId;
    }

    public void setEmpId(int empId) {
        this.empId = empId;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getGender() {
        return gender;
    }

    public void setGender(String gender) {
        this.gender = gender;
    }

    public int getAge() {
        return age;
    }
}
```

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```
public void setAge(int age) {
    this.age = age;
}

public void displayEmployeeInfo()
{
    System.out.println("Employee Id: "+empId);
    System.out.println("Employee Name: "+name);
    System.out.println("Employee Gender: "+gender);
    System.out.println("Employee Age: "+age);
}
}
```

////////////////////////////////////

```
public class Node {

    private Employee data;
    private Node next;
    public Node(Employee data) {

        this.data = data;
        this.next = null;
    }
    public Employee getData() {
        return data;
    }
    public void setData(Employee data) {
        this.data = data;
    }
    public Node getNext() {
        return next;
    }
    public void setNext(Node next) {
        this.next = next;
    }
}
```

////////////////////////////////////

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```
public class LinkedListOfEmployees {
    private Node head;

    public LinkedListOfEmployees() {
        head = null;
    }

    public void insertAtFront ( Employee e) {

        Node newNode = new Node(e);
        newNode.setNext(head);
        head = newNode;

    }

    public void insertAtBack ( Employee e) {

        Node newNode = new Node(e);
        if(head==null) {
            head = newNode;
        }
        else {
            Node curr = head;
            while (curr.getNext()!=null) {
                curr = curr.getNext();
            }
            curr.setNext(newNode);
        }

    }

    public int countEmployees(String g) {
        int n = 0;
        Node current = head;

        while (current != null) {
            if
            (current.getData().getGender().equalsIgnoreCase(g))
                n++;
            current = current.getNext();
        }

        return n;
    }

    Employee getOldestEmployee()
    {
        if(head==null)
```

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```
        return null;

Node current = head;
Employee oldest=current.getData();
current = current.getNext();

while (current != null) {
    if (current.getData().getAge()>oldest.getAge())
        oldest=current.getData();

    current = current.getNext();
}

return oldest;
}

public LinkedListOfEmployees getEmployees(String g)
{
    LinkedListOfEmployees newList=new LinkedListOfEmployees();

    Node current = head;

    while (current != null) {

        if (current.getData().getGender().equalsIgnoreCase(g))
            newList.insertAtBack(current.getData());

        current = current.getNext();
    }

    return newList;
}

public void split(LinkedListOfEmployees male, LinkedListOfEmployees
female) {

    Node current = head;

    while (current != null) {

        if
(current.getData().getGender().equalsIgnoreCase("male"))
            male.insertAtBack(current.getData());
        else
            female.insertAtFront(current.getData());
    }
}
```

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```
        current = current.getNext();
    }

}

public void display()
{
    Node current = head;

    while (current != null) {
        current.getData().displayEmployeeInfo();
        current = current.getNext();
    }
}

}

////////////////////////////////////

import java.util.Scanner;
public class Main {

    /**
     * @param args
     */
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        //This program assumes single word String input.

        Scanner input=new Scanner(System.in);
        LinkedListOfEmployees list=new LinkedListOfEmployees();
        int choice;
        String gender;
        int nEmployees;

        do
        {
            System.out.println("To Add a new Employee Enter 1 ");
            System.out.println("To get the number of Employees of given
gender Enter 2 ");
            System.out.println("To get and display oldest Employee Enter 3
");

```

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```
        System.out.println("To get and display all Employees of a given
gender Enter 4 ");
        System.out.println("To view all Male Employees Enter 5 ");
        System.out.println("To Exit Enter 0 ");
        System.out.println("Enter Option___");
        choice=input.nextInt();

        switch(choice)
        {
            case 1:
                System.out.println("Enter Id,Name,Gender and Age of
Employee ");
                Employee e=new
Employee(input.nextInt(),input.next(),input.next(),input.nextInt());
                list.insertAtBack(e);
                System.out.println("Guest Added Successfully");

                break;
            case 2:
                System.out.println("Enter Gender");
                gender=input.next();
                System.out.println("No Of "+gender+" Employees are
"+list.countEmployees(gender));
                break;
            case 3:
                Employee oldest=list.getOldestEmployee();
                if(oldest!=null)
                {
                    System.out.println("Oldest Employee in the List is
");
                    oldest.displayEmployeeInfo();
                }
                else
                    System.out.println("List is Empty");

                break;
            case 4:
                System.out.println("Enter Gender");
                gender=input.next();
                nEmployees=list.countEmployees(gender);
                if(nEmployees==0)
                    System.out.println("No Employee of this Gender
Found");
                else
                {
                    LinkedListOfEmployees l=list.getEmployees(gender);
                    l.display();
                }
                break;
        }
```

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```
        case 5:
            nEmployees=list.countEmployees("Male");
            if(nEmployees==0)
                System.out.println("No Employee of Male Gender
Found");

            else
            {
                LinkedListOfEmployees l=list.getEmployees("Male");
                l.display();
            }
            break;

    }

}

while(choice !=0);

}

}
```