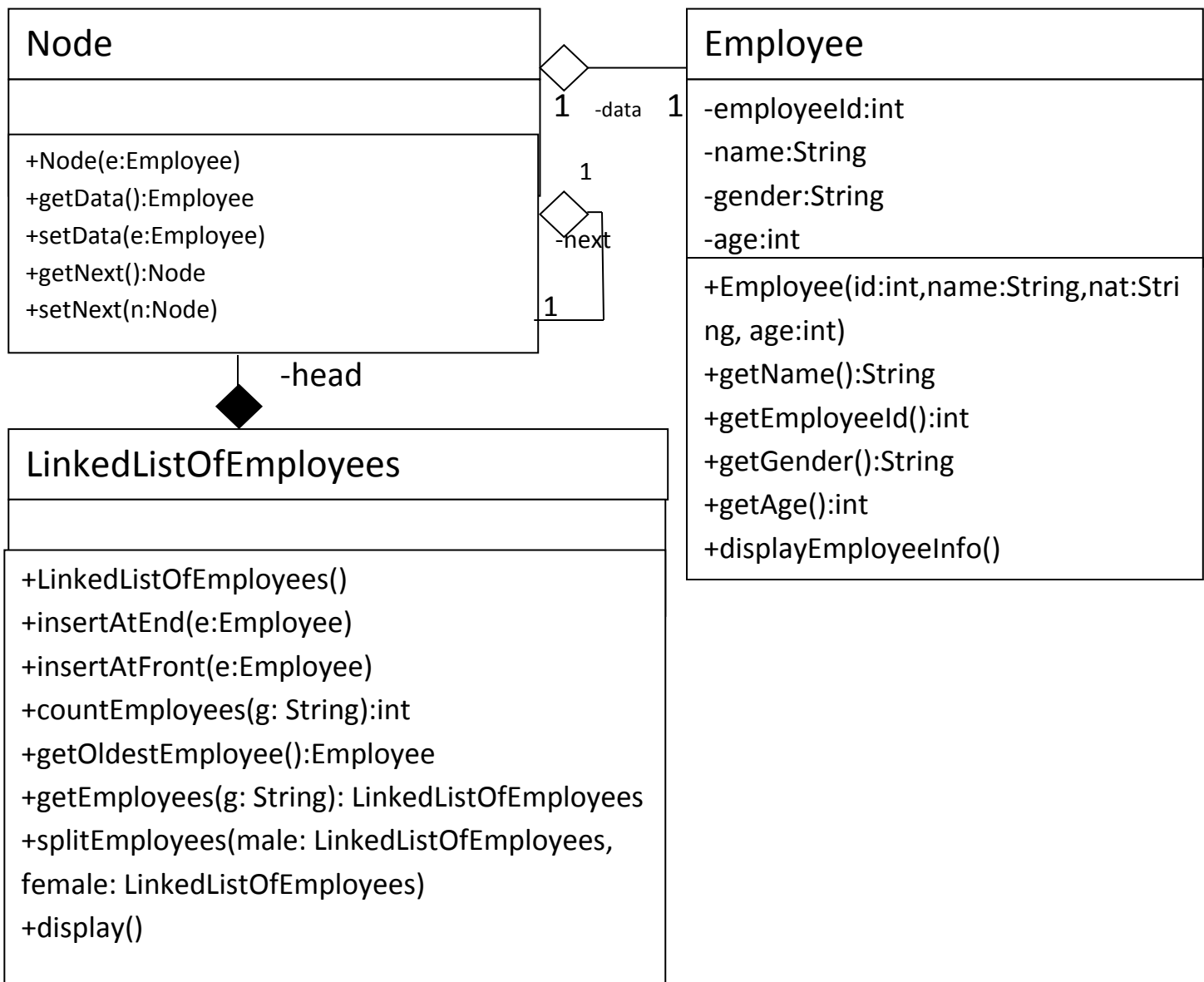




Lab: LinkedList

Create the classes along with the functionality given in the following UML Diagram. To understand the problem, please refer to the description given after the diagram.





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Employee Class:

- Attributes:
 - `employeeId`: unique id of the employee.
 - ***name***: the name of the employee.
 - ***gender***: The gender of the employee.
 - ***Age***: The age of the employee
- Methods:
 - ***Employee(id:int, name: string, gender: String, age: int)***: constructor
 - ***displayEmployeeinfo()***: this method displays all the attributes of the employee.
 - ***Getters***

Node Class:

- Attributes:
- Methods:
 - ***Node(e: Employee)***: constructor
 - ***Getters/Setters***

LinkedListOfEmployees Class:

- Attributes:
- Methods:
 - ***LinkedListOfEmployees***: constructor
 - ***insertAtFront(g:Employee)***: this method inserts an employee at the front of linked list.
 - ***insertAtEnd(g:Employee)***: this method inserts an employee at the end of linked list.
 - ***countEmployee(g:String)***: this method returns the number of employees who are of gender *g*.
 - ***getOldestEmployee()***: this method returns the oldest employee.
 - ***getEmployees(g:String)***: this method returns a linked list of all employees who are of gender *g*.
 - ***splitEmployees(male: LinkedListOfEmployees, female: LinkedListOfEmployees)***: This method inserts all Male employees linked list *male* and Female in to female linked list.
 - ***display()***: displays the data of each employee in the linked list



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Lab: LinkedList

Write a java program that will display following Menu to execute different member functions of these classes.

To add a new employee, Enter 1

To get the number of employees of a given gender, Enter 2

To get and display the oldest employee, Enter 3

To get and display all employees of a given gender, enter 4

To view all Male employees in the Linked List, Enter 5

To Exit, Enter 0

Enter Your Option:_____



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Lab: LinkedList

```
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;
    }
}
```



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

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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Lab: LinkedList

```
}
```

```
////////////////////////////////////
```

```
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;
```



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Lab: LinkedList

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

        return n;
    }

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



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Lab: LinkedList

```
    }

    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());

            current = current.getNext();
        }

    }

    public void display()
    {

        Node current = head;

        while (current != null) {

            current.getData().displayEmployeeInfo();
            current = current.getNext();
        }

    }

}
```

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



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Lab: LinkedList

```
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
");
            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("Employee 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;
            }
        }
    }
}
```



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Lab: LinkedList

```
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;
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);

}
```



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Lab: LinkedList

}