

Session 5 Assignment1

Task 1. Write a simple Timer that can periodically print a timeout message.

Solution: Below is the Java program (also attaching JAVA file “ReminderBeep.java”)

```
import java.awt.Toolkit;
import java.util.Timer;
import java.util.TimerTask;

public class ReminderBeep {

    Toolkit toolkit;
    Timer timer;

    public ReminderBeep(int seconds) {

        toolkit = Toolkit.getDefaultToolkit();
        timer = new Timer();
        timer.schedule(new RemindTask(), seconds * 1000);
    }

    class RemindTask extends TimerTask {

        public void run() {

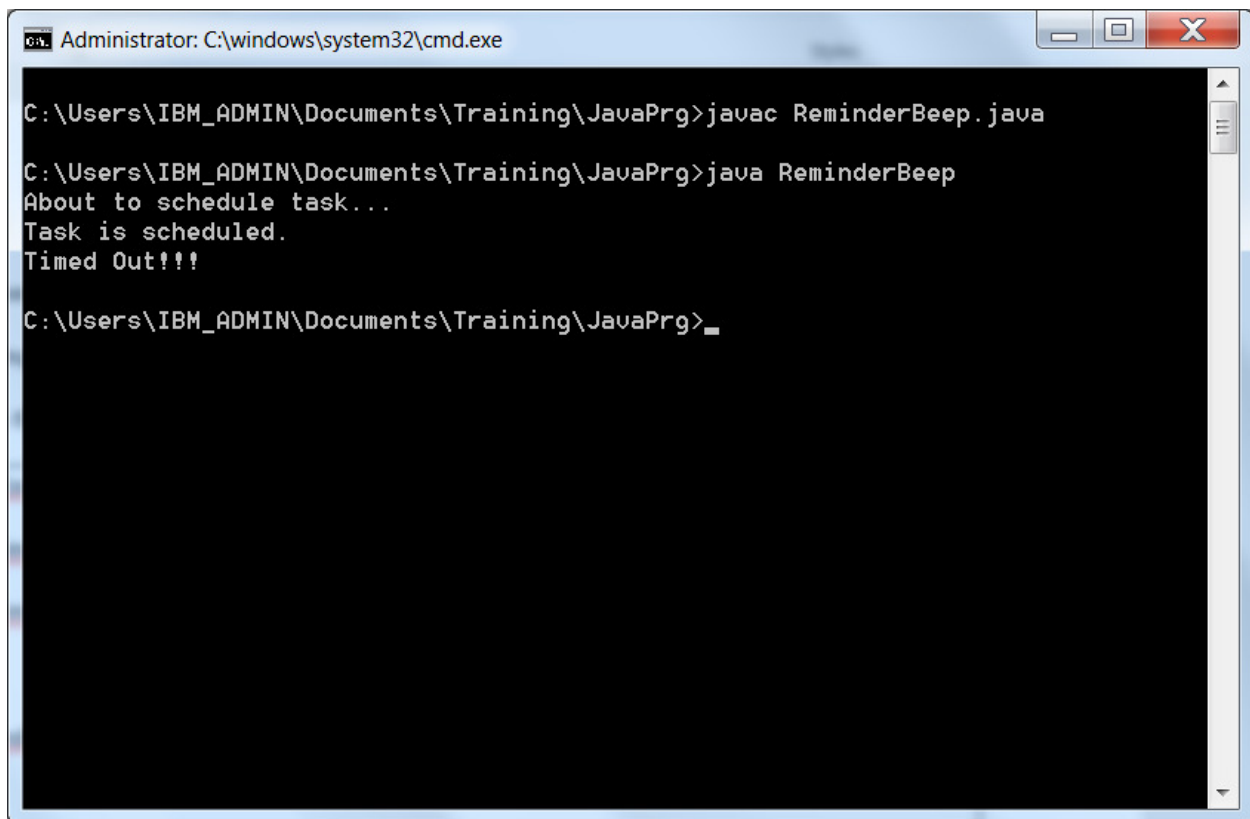
            System.out.println("Timed Out!!!");

            toolkit.beep();

            System.exit(0);
        }
    }
}
```

```
public static void main(String args[]) {  
  
    System.out.println("About to schedule task...");  
  
    new ReminderBeep(5);  
  
    System.out.println("Task is scheduled.");  
  
}  
}
```

Output of the program:



The screenshot shows a Windows command prompt window titled "Administrator: C:\windows\system32\cmd.exe". The prompt is at the directory "C:\Users\IBM_ADMIN\Documents\Training\JavaPrg". The user has entered the command "javac ReminderBeep.java" and then "java ReminderBeep". The output of the program is displayed as follows:

```
C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>javac ReminderBeep.java  
C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>java ReminderBeep  
About to schedule task...  
Task is scheduled.  
Timed Out!!!  
C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>_
```

Task 2. Write a program to build any collection containing duplicates. Create its copy with all duplicates removed.

Solution: Below is the Java program (also attaching JAVA program “LinkedList.java”)

```
class LinkedList {  
  
    static Node head;  
  
    static class Node {  
  
        int data;  
  
        Node next;  
  
        Node(int d) {  
  
            data = d;  
  
            next = null;  
  
        }  
    }  
}  
  
/* Function to remove duplicates from an unsorted linked list */  
void remove_duplicates() {  
  
    Node ptr1 = null, ptr2 = null, dup = null;  
  
    ptr1 = head;  
  
  
    /* Pick elements one by one */  
    while (ptr1 != null && ptr1.next != null) {  
  
        ptr2 = ptr1;  
  
  
        /* Compare the picked element with rest of the elements */  
        while (ptr2.next != null) {  
  
            /* If duplicate then delete it */  
            if (ptr1.data == ptr2.next.data) {
```

```
        /* sequence of steps is important here */  
        dup = ptr2.next;  
        ptr2.next = ptr2.next.next;  
        System.gc();  
    } else {  
        ptr2 = ptr2.next;  
    }  
}  
ptr1 = ptr1.next;  
}  
}
```

```
void printList(Node node) {  
    while (node != null) {  
        System.out.print(node.data + " ");  
        node = node.next;  
    }  
}
```

```
public static void main(String[] args) {  
    LinkedList list = new LinkedList();  
    list.head = new Node(10);  
    list.head.next = new Node(12);  
    list.head.next.next = new Node(11);  
}
```

```

list.head.next.next.next = new Node(11);

list.head.next.next.next.next = new Node(12);

list.head.next.next.next.next.next = new Node(11);

list.head.next.next.next.next.next.next = new Node(10);

System.out.println("Linked List before removing duplicates : \n ");

list.printList(head);

list.remove_duplicates();

System.out.println("");

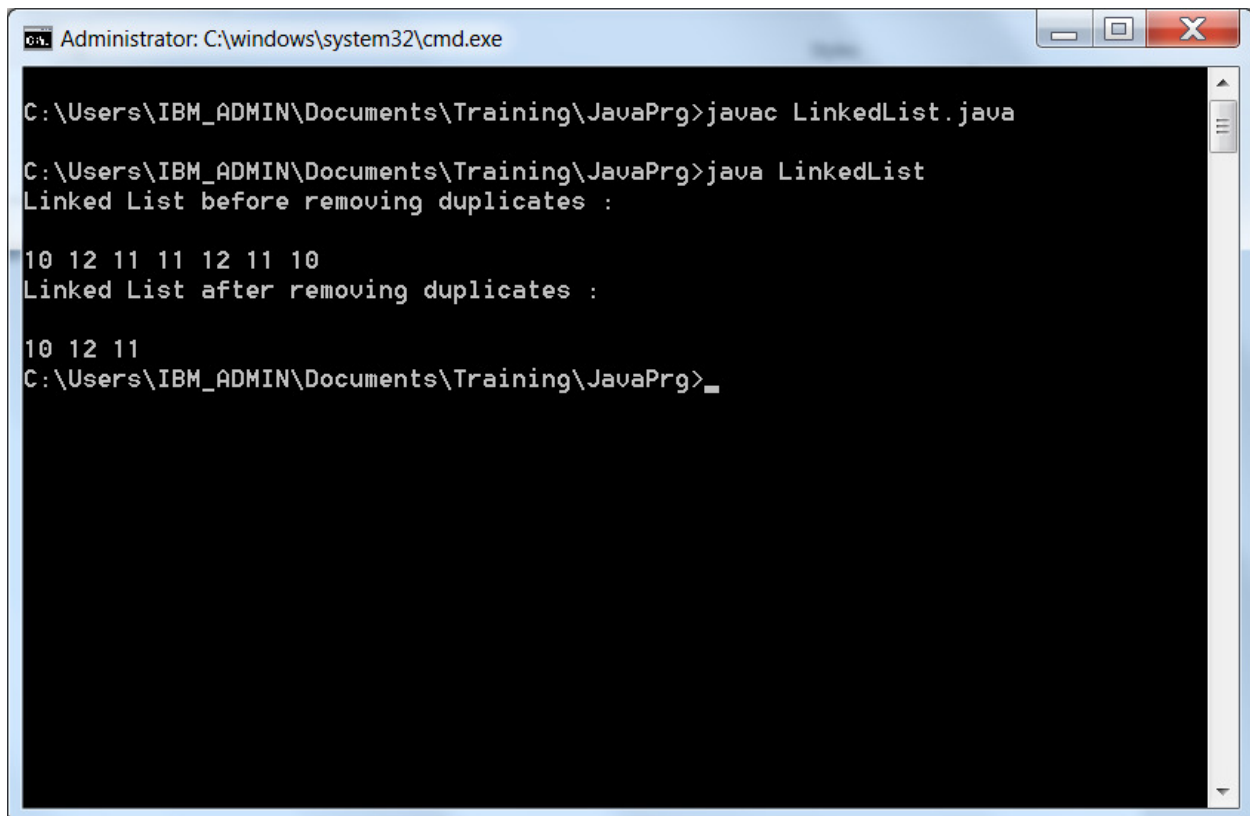
System.out.println("Linked List after removing duplicates : \n ");

list.printList(head);

}
}

```

Output of the Program:



The screenshot shows a Windows command prompt window titled "Administrator: C:\windows\system32\cmd.exe". The user has navigated to the directory "C:\Users\IBM_ADMIN\Documents\Training\JavaPrg" and executed the following commands:

```

C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>javac LinkedList.java
C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>java LinkedList

```

The output of the program is displayed as follows:

```

Linked List before removing duplicates :

10 12 11 11 12 11 10
Linked List after removing duplicates :

10 12 11
C:\Users\IBM_ADMIN\Documents\Training\JavaPrg>_

```