

## A program that uses Iterator Pattern

```
import java.util.*;
import java.text.SimpleDateFormat;
import java.io.*;
class Student implements Comparable<Student>{
    int ID;
    String Name;
    Date DOB;
    public Student(int ID, String Name, Date DOB){
        this.ID=ID;
        this.Name=Name;
        this.DOB=DOB;
    }
    public int compareTo(Student s){
        return this.ID - s.ID;
    }
    public boolean equals(Student s){
        return this.ID==s.ID && this.Name==s.Name && this.DOB==s.DOB;
    }

    public String toString(){
        SimpleDateFormat df=new SimpleDateFormat("MM/dd/yyyy");
        return "Student ID = "+ID+", Name = "+Name+", DOB = "+df.format(DOB);
    }
}
```

```
class Students{

    /* List to hold Students */
    ArrayList<Student> StudentList=new ArrayList<Student>();

    /** Print this List */
    public static void printList(List L){
        Iterator it=L.iterator();
        while(it.hasNext()){
            System.out.println(it.next());
        }
    }

    /* Read file and populate Student List */
    private void getStudents(File finput) throws Exception{
        FileInputStream fis = new FileInputStream(finput);
        BufferedReader br = new BufferedReader(new InputStreamReader(fis));
        String line = null;
        SimpleDateFormat sdf = new SimpleDateFormat("yyyy-MM-dd");
        while ((line = br.readLine()) != null) {
            String delims = "[";
        }
    }
}
```

```

        String[] tokens = line.split(delims);
        int id = Integer.parseInt(tokens[2].trim());
        String n = tokens[1];
        Date dt = sdf.parse(tokens[0]);
        StudentList.add(new Student(id,n,dt));
    }
    br.close();
}

```

```

public static void writeFile(File F, ArrayList<Student> AL) throws IOException{
    Iterator it=AL.iterator();
    FileWriter fw = new FileWriter(F);
    while (it.hasNext()){
        Student st=(Student)it.next();
        fw.write(st.toString()+System.getProperty("line.separator"));
    }
    fw.close();
}

```

```

public static void main(String[] s) throws Exception{
    Students m=new Students();
    File f=new File("textfile.txt");
    m.getStudents(f);

    File f_dob = new File("students_by_dob.txt");
    File f_name = new File("students_by_name.txt");
    File f_id = new File("students_by_id.txt");
    Collections.sort(m.StudentList);
    writeFile(f_id,m.StudentList);
    System.out.println("_____SORTED BY ID_____");
    printList(m.StudentList);
    Collections.sort(m.StudentList, new cmp_DOB());
    System.out.println("_____SORTED BY DOB_____");
    printList(m.StudentList);
    writeFile(f_dob, m.StudentList);
    System.out.println("_____SORTED BY Name_____");
    Collections.sort(m.StudentList, new cmp_Name());
    writeFile(f_name,m.StudentList);
    printList(m.StudentList);
}
}

```

```

class cmp_Name implements Comparator<Student> {
    public int compare(Student s1, Student s2){
        return s1.Name.compareTo(s2.Name);
    }
}

```

```
    }  
}  
class cmp_DOB implements Comparator<Student> {  
    public int compare(Student s1, Student s2){  
        return s1.DOB.compareTo(s2.DOB);  
    }  
}
```