Illustrate the usage of Collection and Generics through a sample program – Develop an application that manipulates Student Data in an Institution. Ensure that your messages are properly logged in a log file

Main Method:

```
package CC_221047012;
import java.util.Scanner; public class Main {
public static void main(String args[])
{
int ch;
Studentarray student=new Studentarray();
 do
{
System.out.println("1. Add Student Record");
System.out.println("2. View Student Record");
System.out.println("3. Search Student Record");
System.out.println("4. Delete Student Record");
System.out.println("5. Update Student Record");
System.out.println("0. Exit");
Scanner sc = new Scanner(System.in);
ch = sc.nextInt();
switch (ch)
{
case 1: student.addStudent();
break;
case 2: student.viewStudent();
break;
case 3: student.searchStudent();
break;
case 4:
student.deleteStudent();
break;
case 5: student.updateStudent();
break;
case 0: break; default:
}
}while(ch !=0);
}
}
```

StudentArray Class

```
package CC_221047012;

import java.io.IOException;
import java.util.ArrayList;
```

```
import java.util.Iterator;
import java.util.List;
import java.util.ListIterator;
import java.util.Scanner;
import java.util.logging.FileHandler;
import java.util.logging.Logger;
import java.util.logging.SimpleFormatter;

public class Studentarray {

private static final Logger logger = Logger.getLogger("MyLogA");
 private static void configureRootLogger() {
try
{
FileHandler fh = new FileHandler("StudentLogFile.log");
fh.setFormatter(new SimpleFormatter());
Logger.getLogger("").addHandler(fh);
}
catch (IOException e) {
logger.warning("Could not add handler to log to file");
}
}
List<Student> c=new ArrayList<Student>();
int studID; String studName,course;
Scanner sc = new Scanner(System.in);
Scanner s1 = new Scanner(System.in);
Iterator<Student> i=c.iterator();
boolean found;

public void addStudent()
{
configureRootLogger();
System.out.println("1. Enter Student ID: ");
studID = sc.nextInt();
System.out.println("2. Enter Student Name");
studName = s1.next();
System.out.println("3. Enter Student course");
course = s1.next();
c.add(new Student(studID,studName,course));
logger.info("Adding new student record");
}
public void viewStudent()
{
configureRootLogger();
Iterator<Student> i2=c.iterator();
```

```
while(i2.hasNext())
{
Student s1=i2.next();
System.out.println(s1);
}
logger.info("Viewing student records");
}
public void searchStudent()
{
configureRootLogger();
found=false;
System.out.println("Enter StudentID to search");
studID=sc.nextInt();
i=c.iterator();
while(i.hasNext())
{
Student s=i.next();
if(s.getstudID()==studID)
{
System.out.println(s);
found=true;
}
}
logger.info("Searching student record");
if(!found) {
logger.info("Record not found");
}
}
public void deleteStudent()
{
configureRootLogger(); found=false;
System.out.println("Enter StudentID to delete");
studID=sc.nextInt();
i=c.iterator();
while(i.hasNext())
{
Student s=i.next();
if(s.getstudID()==studID)
{
i.remove(); found=true;
} }
logger.info("Deleting student record");
 if(!found) {
logger.info("Record not found");
}
}
```

```
public void updateStudent()
{ configureRootLogger(); found=false;
System.out.println("Enter StudentID to update");
studID=sc.nextInt();
ListIterator<Student> l= c.listIterator();
while(l.hasNext())
{
Student p=l.next();
if(p.getstudID()==studID)
{
System.out.print("Enter new Student name");
studName=s1.next();

System.out.print("Enter course");
course=s1.next();
l.set(new Student(studID,studName,course));
found=true;
}
}
logger.info("Updating student record");
if(!found)
{
logger.info("Record not found");
}
else
{
logger.info("Record updated");
}
}
}
```

Student class code:

```
package CC_221047012;

public class Student
{
private int studID; private String studName,course;
public Student(int studID, String studName, String course)
{ this.studID = studID;
this.studName = studName;
this.course=course;
}
public int getstudID() { return studID;
}
public void setrollno(int studID) { this.studID = studID;
```

```
}

public String getstudName() { return studName;
}

public String getcourse() { return course;
}
public String toString()
{
return studID+" "+studName+" " +course; }
public void setstudName(String studName)
{
 this.studName = studName;
}
public void setcourse(String course)
{
this.course = course;
}
}
```