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Assignment 3

(Writing to File)

Book1.java

//Book1 Class

```java
public class Book1{


        //Instance Variables

        private String title;

        private String author;


        //Overload Constructor

        public Book1(String Title, String Author){

                this.title = Title;

                this.author = Author;

        }


        //Get and Set methods

        public String getTitle(){

                return this.title;

        }

        public void setTitle(String Title){

                this.title = Title;

        }
```

```java
        public String getAuthor(){

                return this.author;

        }

        public void setAuthor(String Author){

                this.author = Author;

        }


        //toString Override

        public String toString(){

                return "Title: "+this.getTitle()+". Author: "+this.getAuthor()+".";

        }

}
```

Library1.java

```java
//Import ArrayList

import java.util.ArrayList;


//Library1 Class

public class Library1{


        //Instance Variables

        String name;

        ArrayList<Book1> booklist;


        //Overload Constructor

        public Library1(String Name){

                this.name = Name;
```

```java
        booklist = new ArrayList<Book1>();

}


//Get methods

public String getName(){

        return this.name;

}


public ArrayList<Book1> getBooks(){

        return this.booklist;

}


//Add and Remove methods for booklist

public void addBook(Book1 book){

        this.booklist.add(book);

}


public void removeBook(Book1 book){

        this.booklist.remove(book);

}


//toString override

public String toString(){

        return "Name: "+this.getName();

}

}
```

```java
Driver.java

//imports

import java.util.ArrayList;

import java.io.FileWriter;

import java.io.BufferedWriter;

import java.io.File;

import java.io.FileReader;

import java.io.BufferedReader;


//Driver Class

public class Driver{


        //main method

        public static void main(String[] args){


                //Create new Library1 object and 2 Book1 objects

                Library1 library = new Library1("Galway Library");

                Book1 book1 = new Book1("Harry Potter","J.K.Rowling");

                Book1 book2 = new Book1("Hunger Games","Suzanne Collins");


                //Add Book1 objects to Library1's booklist

                library.addBook(book1);

                library.addBook(book2);


                //Call writeToFile and readFromFile methods to test

                writeToFile(library.getBooks());

                readFromFile("Library.txt",library);
```

```java
        }


        //writeToFile method

        public static void writeToFile(ArrayList<Book1> list){

                //try catch statement

                try{

                        //Create new FileWriter and BufferedWriter

                        System.out.println("Writing to File");

                        BufferedWriter writer = new BufferedWriter(new FileWriter("library.txt"));

                        //write each book's title and author to file

                        for(Book1 book:list){

                                writer.write(book.getTitle()+",");

                                writer.write(book.getAuthor());

                                writer.newLine();

                        }

                        //close writer

                        writer.close();

                //catch exceptions

                }catch(Exception e){

                        e.printStackTrace();

                }

        }


        //readFromFile method

        public static void readFromFile(String FileName, Library1 library){

                //try catch statement

                try{
```

```java
        //create new File, FileReader, BufferedReader
        System.out.println("Reading From File");
        File file = new File(FileName);
        FileReader fr = new FileReader(file);
        BufferedReader reader = new BufferedReader(fr);


        //default line variable to null
        String line = null;


        //Code to add read information to booklist again:


        //while((line = reader.readLine()) != null){
        //      String[] Line = line.split(",");
        //      Book1 book = new Book1(Line[0],Line[1]);
        //      library.addBook(book);
        //}
        //for(Book1 book:library.booklist){
        //      System.out.println(book.toString());
        //}


        //If a line is not empty, split it (Title/Author split) and print
        while((line = reader.readLine()) != null){
                String[] Line = line.split(",");
                System.out.println("Title: "+Line[0]+". Author: "+Line[1]+".");
        }
    //Catch exceptions
    }catch(Exception e){
```

```java
                        e.printStackTrace();

                }

        }

}


(Serializable)

Book1.java

//import java.io

import java.io.*;

//Book1 class (Serializable)

public class Book1 implements Serializable{


        //Instance Variables

        private String title;

        private String author;


        //Overload Constructor

        public Book1(String Title, String Author){

                this.title = Title;

                this.author = Author;

        }


        //get and set methods

        public String getTitle(){

                return this.title;

        }

        public void setTitle(String Title){
```

```java
                this.title = Title;

        }


        public String getAuthor(){

                return this.author;

        }

        public void setAuthor(String Author){

                this.author = Author;

        }


        //toString override

        public String toString(){

                return "Title: "+this.getTitle()+". Author: "+this.getAuthor()+".";

        }

}


Library1.java

//import ArrayList and java.io

import java.util.ArrayList;

import java.io.*;

//Library1 class (Serializable)

public class Library1 implements Serializable{


        //Instance Variables

        String name;

        ArrayList<Book1> booklist;
```

```java
//Overload Constructor

public Library1(String Name){

        this.name = Name;

        booklist = new ArrayList<Book1>();

}


//get methods

public String getName(){

        return this.name;

}


public ArrayList<Book1> getBooks(){

        return this.booklist;

}


//Add and remove methods for booklist

public void addBook(Book1 book){

        this.booklist.add(book);

}


public void removeBook(Book1 book){

        this.booklist.remove(book);

}


//toString override

public String toString(){

        return "Name: "+this.getName();
```

```java
        }
}


Driver.java

//import ArrayList and java.io

import java.util.ArrayList;

import java.io.*;


//Driver class

public class Driver{


        //main method

        public static void main(String[] args){

                //Create new Library1 object, 2 new Book1 objects

                Library1 library = new Library1("Galway Library");

                Book1 b1 = new Book1("Harry Potter","J.K.Rowling");

                Book1 b2 = new Book1("Hunger Games","Suzanne Collins");


                //Add Book1 objects to Library1's booklist

                library.addBook(b1);

                library.addBook(b2);


                //Call serialize and deserialize methods

                serialize(library.getBooks());

                deserialize(library.getBooks());

        }
```

```java
//serialize method

public static void serialize(ArrayList<Book1> list){

        //try catch statement

        try{

                //create FileOutputStream, ObjectOutputStream

                FileOutputStream filestream = new FileOutputStream("library.txt");

                ObjectOutputStream os = new ObjectOutputStream(filestream);


                //Write booklist to file

                os.writeObject(list);


                //close stream

                os.close();


        //Catch exceptions

        }catch(Exception e){

                e.printStackTrace();

        }

}

//Suppress warnings

@SuppressWarnings("unchecked")


//deserialize method

public static void deserialize(ArrayList<Book1> list){


        //try catch statement

        try{
```

```java
//Create FileInputStream, ObjectInputStream

FileInputStream filestream = new FileInputStream("library.txt");

ObjectInputStream os = new ObjectInputStream(filestream);


//Read ArrayList from file

ArrayList<Book1> booklist = (ArrayList<Book1>)os.readObject();


//For every Book1 object in Arraylist, print toString of object

for(Book1 book:booklist){

        System.out.println(book.toString());

}


//Close stream

os.close();

//Catch exceptions

}catch(Exception e){

        e.printStackTrace();

}

}

}
```