**CT3535 Assignment 3**

**Question 1:**

*Code:*

Library1:

**import** java.util.ArrayList;

**public** **class** Library1 {

//initialising variables

String name;

ArrayList<Book1> bookList = **new** ArrayList<Book1>();

//constructor

**public** Library1(String name) {

**this**.name = name;

}

//accesors

**public** String getName() {

**return** name;

}

**public** ArrayList<Book1> getBooks(){

**return** bookList;

}

//add & remove functions

**public** **void** addBook(Book1 tome) {

bookList.add(tome);

}

**public** **void** removeBook(Book1 tome) {

bookList.remove(tome);

}

//toString method

**public** String toString() {

**return** "Name: " + name + "\n" + "Book List: " + bookList + "\n";

}

}

Book1:

**public** **class** Book1 {

//variables initialisation

**private** String title;

**private** String author;

//constructor

**public** Book1(String title, String author) {

**this**.title = title;

**this**.author = author;

}

//accessors

**public** String getTitle() {

**return** title;

}

**public** String getAuthor() {

**return** author;

}

//mutators

**public** **void** setTitle(String title) {

**this**.title= title;

}

**public** **void** setAuthor(String author) {

**this**.author = author;

}

//toString method

**public** String toString() {

**return** "Title: " + title + ", Author: " + author +"\n";

}

}

DriverClass:

**import** java.io.\*;

**import** java.util.List;

**public** **class** DriverClass {

**public** **static** **void** main(String[] args) {

//intialising variables

Library1 library = **new** Library1("Local Library");

Book1 bookA = **new** Book1("Book A", "Bookie Masterson");

Book1 bookB = **new** Book1("Book B", "Bookenstein Bear");

Book1 bookC = **new** Book1("Book C", "Stupid Name");

//Adding book instances to library instance ArrayList

library.addBook(bookA);

library.addBook(bookB);

library.addBook(bookC);

//calling the functions below

*writeToFile*(library.bookList);

*readFromFile*(library.bookList);

}

**public** **static** **void** writeToFile(List<Book1> list) {

//writes the content of the bookList to the LibraryBookList.txt file

System.***out***.println("Printing to file...\n");

**try** {

FileWriter fileWriter = **new** FileWriter("LibraryBookList.txt");

BufferedWriter writer = **new** BufferedWriter(fileWriter);

writer.write("Library Book List: \n");

//writes each elemet of list into the file

**for**(Book1 element:list) {

writer.write("Book Name: " + element.getTitle() + "\n");

writer.write("Author Name: " + element.getAuthor() + "\n");

}

writer.close();

} **catch** (IOException e) {

e.printStackTrace();

}

System.***out***.println("Done.");

}

**public** **static** **void** readFromFile(List<Book1> list) {

//reads out the content of the .txt file

System.***out***.println("Reading from file: \n");

**try** {

File bookListFile = **new** File("LibraryBookList.txt");

FileReader fileReader = **new** FileReader(bookListFile);

BufferedReader reader = **new** BufferedReader(fileReader);

String line = **null**;

**while** ((line = reader.readLine()) != **null**){

System.***out***.println(line);

}

reader.close();

}**catch** (IOException e) {

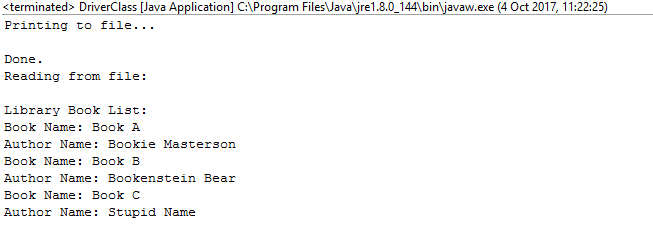
e.printStackTrace();

}

}

}

*Output:*



**Question 2:**

*Code:*

SerialLibrary1:

**import** java.io.Serializable;

**import** java.util.ArrayList;

**public** **class** SerialLibrary1 **implements** Serializable{

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

//initialising variables

String name;

ArrayList<SerialBook1> bookList = **new** ArrayList<SerialBook1>();

//constructor

**public** SerialLibrary1(String name) {

**this**.name = name;

}

//accesors

**public** String getName() {

**return** name;

}

**public** ArrayList<SerialBook1> getBooks(){

**return** bookList;

}

//add & remove functions

**public** **void** addBook(SerialBook1 tome) {

bookList.add(tome);

}

**public** **void** removeBook(SerialBook1 tome) {

bookList.remove(tome);

}

//toString method

**public** String toString() {

**return** "Name: " + name + "\n" + "Book List: " + bookList + "\n";

}

}

SerialBook1:

**import** java.io.Serializable;

**public** **class** SerialBook1 **implements** Serializable{

**private** **static** **final** **long** ***serialVersionUID*** = 1L;

//variables initialisation

**private** String title;

**private** String author;

//constructor

**public** SerialBook1(String title, String author) {

**this**.title = title;

**this**.author = author;

}

//accessors

**public** String getTitle() {

**return** title;

}

**public** String getAuthor() {

**return** author;

}

//mutators

**public** **void** setTitle(String title) {

**this**.title= title;

}

**public** **void** setAuthor(String author) {

**this**.author = author;

}

//toString method

**public** String toString() {

**return** "Title: " + title + ", Author: " + author +"\n";

}

}

SerialDriver:

**import** java.io.\*;

**import** java.util.List;

**public** **class** SerialDriverClass {

**public** **static** **void** main(String[] args) {

//intialising variables

SerialLibrary1 library = **new** SerialLibrary1("Local Library");

SerialBook1 bookA = **new** SerialBook1("Book A", "Bookie Masterson");

SerialBook1 bookB = **new** SerialBook1("Book B", "Bookenstein Bear");

SerialBook1 bookC = **new** SerialBook1("Book C", "Stupid Name");

//Adding book instances to library instance ArrayList

library.addBook(bookA);

library.addBook(bookB);

library.addBook(bookC);

//calling the functions below

*writeToFile*(library.bookList);

*readFromFile*(library.bookList);

*serialise*(library.bookList);

*deserialise*(library.bookList);

}

**public** **static** **void** serialise(List<SerialBook1> list){

System.***out***.println("Serialising... \n");

**try** {

// create a connection stream (to write bytes)

FileOutputStream fileStream = **new** FileOutputStream("LibraryBookList.dat");

// create a chain stream (turns objects into data that can be written to a stream)

ObjectOutputStream os = **new** ObjectOutputStream(fileStream);

// call writeObject() on the Object stream

os.writeObject(list);

os.close();

}**catch** (Exception e) {

e.printStackTrace();

}

}

@SuppressWarnings("unchecked")

**public** **static** **void** deserialise(List<SerialBook1> list){

System.***out***.println("Deserialising... \n");

**try**{

FileInputStream fileStream = **new** FileInputStream("LibraryBookList.dat");

ObjectInputStream os = **new** ObjectInputStream(fileStream);

List<SerialBook1> emp = (List<SerialBook1>)os.readObject();

**for** (SerialBook1 element:emp){

System.***out***.println(element.toString());

}

os.close();

} **catch** (Exception e) {

e.printStackTrace();

}

} // end deserialise method

**public** **static** **void** writeToFile(List<SerialBook1> list) {

//writes the content of the bookList to the LibraryBookList.txt file

System.***out***.println("Printing to file... \n");

**try** {

FileWriter fileWriter = **new** FileWriter("LibraryBookList.txt");

BufferedWriter writer = **new** BufferedWriter(fileWriter);

writer.write("Library Book List: \n");

//writes each elemet of list into the file

**for**(SerialBook1 element:list) {

writer.write("Book Name: " + element.getTitle() + "\n");

writer.write("Author Name: " + element.getAuthor() + "\n");

}

writer.close();

} **catch** (IOException e) {

e.printStackTrace();

}

System.***out***.println("Done.");

}

**public** **static** **void** readFromFile(List<SerialBook1> list) {

//reads out the content of the .txt file

System.***out***.println("Reading from file: \n");

**try** {

File bookListFile = **new** File("LibraryBookList.txt");

FileReader fileReader = **new** FileReader(bookListFile);

BufferedReader reader = **new** BufferedReader(fileReader);

String line = **null**;

**while** ((line = reader.readLine()) != **null**){

System.***out***.println(line);

}

reader.close();

}**catch** (IOException e) {

e.printStackTrace();

}

}

}

*Output:*

