# CS 116

## Lab Assignment #7 : File Read and Write, Object Serialization

- **Points: 5**
- **Submission**
  - **Deadline: Tuesday, 04/19 11:59 PM**
  - **Submit on Blackboard under assignment "Lab7". Please make sure that you click the "Submit" button and not just "Save".**
- **Late Submission Policy**
  - **You can do a late submission until Thursday, 04/21 11:59PM with a 5% penalty on the total points for this assignment.**
  - **After that solutions will be posted and no submission will be accepted**
- **Early Submission**
  - **You can also get 5% extra point on your score on the assignment for early submission if you submit by Monday, 04/18 11:59PM.**
- **Getting help**
  - **From instructor during office hours in SB228 or by email.**
  - **By seeing one of the TAs during the listed TA office hours in room SB108. (check the course website http://cs.iit.edu/~jkorah/cs116/)**
  - **By visiting the ARC (Academic Resource Center).**
- **Academic Dishonesty Policy**
  - **Working with a partner: You can work with a partner as assigned by the instructor. Otherwise this should be considered individual work.**
    - **Even if you are working with a partner, you and your partner are required to make individual submissions.**
  - **Please note: In case two submissions are declared identical (and if you are not supposed to work together) the excuse: we worked together, does not hold and both submission will be treated according to ethics rules.**

### Objectives:

The list below indicates the Java concepts needed for this exercise.

1. Using Java classes for reading and writing to text files
2. Serializing objects and storing them into files
3. Reading serialized objects from files.

**PROGRAMMING TASK :**

- Please read all steps carefully first, and then start coding.
- You can use the solutions to practice exercises and any other help including lecture presentations and your text book.
- The current directory where your source code files are located should be a folder named <LastName>-<FirstName>-Lab7.

## Programming Task specification

In lab assignment 4 you designed service and client classes to store book information in a Vector object and sort the book records according to its tag and page count values. In this assignment you will extend the application by implementing function for writing the book record information as files and also for reading the serialized objects of book records.

## NOTE: You will modify the solutions for the lab assignments 4 (provided as attachment with this assignment) to implement the specifications provided below. You are free to change/add/delete any part of this code.

1.[2Pts] Modify the client (library.java) and/or service class(BookRecord.java) so that the program will store the book records from the Vector as a text file and an object file.

a) A text file called "output.txt" with information in each line corresponding to a specific record book record. You will follow the following format.

title:genre:author-name-1,author-name-2..authorname-m:tag:No. of page

You will not store the Record IDs in the text file.

b) You will serialize the BookRecord (Service class) objects and store them in a file called "output.ser". You will need to change the recordNo attribute in BookRecord class to *transient* so that its values are not stored in the serialized objects.

You will need to add appropriate methods in the client and/or service classes to implement this new functionality.

2. [2pts] Modify the client class so that it can read the record information from a text input file and also from an input file containing serialized objects of BookRecord class. The client class should now accepts two command line argument: 1) name of the input file (String), 2) file type (int). The argument for the file type can take on two values: 1 if the input file is a text file and 2 if the input file is an object file. Make sure to check for and handle duplicate records as before, before inserting them in the Vector. All other functionalities (such as the options in the user menu) remain the same.

Note that the serialized objects will not contain the Record ID information. In fact they will be set to its default values i.e. 0. You will need to provide the records with unique record IDs before inserting them in Vector/ArrayList.

3. [1pt] You will now add two more options ("A" and "B") in the user menu

Select an option:
Type "S" to list books of a genre
Type "A" to add books from a text file
Type "B" to add serialized book record objects from a file
Type "P" to print out all the book records
Type "T" to search for a record with a specific tag
Type "Q" to Quit

- Option "A": The user should be prompted for the name of the input text file that contains the information of additional book records. You can assume that the input file has the same format as the "books.txt" file. The application should read the book information from the input file, check for duplicate records and then add it to the Vector. Make sure to sort the Vector according to the tag values, as you did in Lab 4.
- Option "B": The user should be prompted for the name of the file that contains the serialized objects of the additional book records. You can assume that the objects do not have Record IDs. The application should read the book information from the input file, assign unique record ids, check for duplicate records and then add it to the Vector. Make sure to sort the Vector according to the tag values, as you did in Lab 4.

Note: If you design your application well, you should be able to reuse the methods you implemented for task #2, and other existing method from Lab 4 solutions, to finish task #3.

Note: In order to test your application for task #3, you are also provided with a text file books2.txt with some additional book records and its corresponding object file books2.ser.

Submission instructions

- In your submission you must include

  a. The source code files and the compiled files for the program.
- Zip all files and name the zip file using your last name followed by your first name followed by the name of the assignment

  i.e. Doe_Jane_Lab7.zip
- Upload the file on assignment folder: Lab7 on Blackboard.