

Homework 5

This is an individual homework assignment. You may receive help from other class mates, but you may NOT copy their work. Copied work will be considered plagiarism and dealt with according to the syllabus and university policy.

Objective: For this assignment, you will demonstrate that you can properly use several 3rd party libraries to connect to a database and make use of the data retrieved from the connection. Your solution is expected to conform to all Java coding conventions and expectations.

Description: Using 3rd party libraries and databases to store program related data is yet another requirement of contemporary object-oriented programming. Combining these new techniques with the standard Java object-oriented techniques allows us to create very complex client/server solutions using industry standard software such as Oracle's database server. However, database storage formats are not directly compatible with programmatic data storage formats. We must know how to process and translate database queries into Java standard objects for use in a program.

In this assignment, you will create the code using the .jar files provided by your professor to retrieve data from an Oracle database engine, define a Java class with an appropriate static builder class and other necessary functions (e.g. .toString() @Override) to store the database's multiple records into an appropriate data structure. Lastly, output the contents of the data structure to the system output. An example of the expected output is provided below in Table 1.

Assignment:

- Using the ojdbc7.jar & uca-database-wrapper.jar files along with the code exemplified in class, create a command line Java program that performs the following:
 - Create a proper Java class that conforms to all Java conventions and expectations
 - Implement a .toString() @Override that will be responsible for writing the output sentence as shown below in Table 1
 - Implement a static builder class with all expected functions
 - Connects to UCA's Oracle database to query for the results of the following SQL select query:
 - `SELECT * FROM TEXTBOOKS`
 - You may assume the metadata of the table based upon the table shown below in Figure 1
 - **Note:** Pages & Year are integer data types, all other fields are text
 - Using the results of the database query:
 - Instantiate an instance of your Java class for each record in the database (there are 5)
 - Store each individual data element (there are 7) in an appropriate member in your Java class using the appropriate builder's setter method
 - **Helpful tip:** Your class file should treat the data according to each field's correct data type, therefore, you'll need to read from the database using the .getObject(XX) method, convert that to a String data type using the String.valueOf() method, and then convert that to an integer data type using the Integer.valueOf() method, something similar to this:

- TextbookBuilder.setPages(Integer.valueOf(String.valueOf(rs.getObject(2))));
- **Note:** There is an easier mechanic for doing this task, extra credit may be awarded if you find and properly use the easier mechanic
- Store each instance in an appropriate data structure for later processing
- After querying the database and storing the results into a data structure:
 - Iterate through the data structure outputting the details of each specific object in a proper sentence
 - When executed, the output should be like what is shown below in Table 1

➤ Upload your .JAVA code file(s) to the appropriate Blackboard assignment

The textbook for the MIS-3339 course ISBN: 0133594955 Title: Java Software Solutions: Foundations of Program Design, 8th ed. written by: John Lewis in 2015 has 806 pages.

The textbook for the MIS-4329 course ISBN: 1439041284 Title: Oracle 11g: SQL, 2nd ed. written by: Joan Casteel in 2014 has 608 pages.

The textbook for the MIS-3365 course ISBN: 0133544613 Title: Modern Database Management, 12th ed. written by: Jeffrey Hoffer in 2015 has 600 pages.

The textbook for the MIS-3300 course ISBN: 1305656318 Title: Understanding Computers: Today and Tomorrow, 16th ed. written by: Deborah Morley in 2016 has 648 pages.

The textbook for the MIS-3300 course ISBN: 0134444329 Title: Starting Out with Python, 4th ed. written by: Tony Gaddis in 2017 has 744 pages.

Table 1 – Example Output

ISBN	PAGES	YEAR	EDITION	AUTHOR	TITLE	COURSE
0133594955	806	2015	8th	John Lewis	Java Software Solutions: Foundations of Program Design	MIS-3339
1439041284	608	2014	2nd	Joan Casteel	Oracle 11g: SQL	MIS-4329
0133544613	600	2015	12th	Jeffrey Hoffer	Modern Database Management	MIS-3365
1305656318	648	2016	16th	Deborah Morley	Understanding Computers: Today and Tomorrow	MIS-3300
0134444329	744	2017	4th	Tony Gaddis	Starting Out with Python	MIS-3300

Figure 1 – Oracle Table Contents & Metadata