

IS 313

Business Applications Development in Java

Spring 2003 – Section 601
Tu / Th 10:10 – 11:40, CST 216

Professor: Robin Burke
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Office: CS&T 453
Office hours: Tuesdays 12 noon – 3:00 pm and by appointment
Prerequisite: CSC 212 or CSC 224

Description

This course is a continuation of the study of the Java programming language that emphasizes advanced features of the programming language and its associated APIs. The course will look particularly at the Collections framework, Java Database Connectivity, advanced graphical user interface topics, multithreading and networking. Use of these features in business applications will be emphasized.

Readings

Required: *Core Java 2, Volume II: Advanced Features* by Cay S. Horstmann and Gary Cornell. 5th edition, ISBN 0-13-092738-4.

Recommended: *The Java Tutorial Third Edition*, by M. Campione, Kathy Walrath, and Alison Huml. Addison-Wesley, 2000. ISBN 0-201-70393-9. *The Java Tutorial Continued: The Rest of the JDK*, by M. Campione et al. Addison-Wesley. ISBN 0-201-48558-3. The full text of this book is available on-line.¹ Only buy these books if you like to have a paper version around.

Tools

Java 2 Platform, Standard Edition Version 1.4.1 (also known as JDK 1.4.1) is available from Sun Microsystems² as a free download. Your text comes with an earlier version of the JDK, which can be used for this course. The JDK is a set of DOS-based command line tools. All students will be expected to become familiar with the use of the JDK, but you may also find it useful to make use of more advanced programming tools including

- BlueJ: a free development environment. Downloadable at <http://www.bluej.org/>
- TextPad: a simple general-purpose editor, useful for developing Java programs.

All of these software tools are available in the Student Microcomputing Labs.

Note

The schedule and other information in the syllabus is subject to change. Consult the Course On-Line website (can be found at <http://dlweb.cti.depaul.edu/>) for the most up-to-date information.

Resources

We will make extensive use of the “Class Forum” feature of DLWeb. General questions about course material should be posted to the “General” forum and homework-specific questions should be directed to the “Homework” forum. Do not, however, post lengthy code excerpts from your homework. If you have a question that requires examination of your full program, please email your code to me (usually it is best to send all of the source files in a zip archive).

In addition to the resources on the DLWeb site, additional information such as lecture notes and assignments can be found at <http://josquin.cti.depaul.edu/~rburke/courses/s03/is313/>.

¹ <http://java.sun.com/docs/books/tutorial>

² <http://java.sun.com/j2se/>

Assessment

Student progress will be assessed through a combination of 4 programming assignments, 4 in-class quizzes and a comprehensive final exam. The weights of these components are as follows:

Programming assignments: 50%

Quizzes: 30%

Final Exam: 20%

Grading will be based on a curve, taking into consideration the performance of the whole class. However, students receiving more than 90% of possible points are guaranteed at least an A-, more than 80% at least a B-, more than 70% at least a C-, and more than 60% at least a D.

Programming assignments will be graded using a three-part rubric that includes scores for knowledge (of programming language elements and constructs), computational reasoning and problem-solving, and communication (effective style and documentation).

Tentative Schedule

4/1: Introduction

Introduction to the course. Scope and organization of the course. Key features of Java. Using the java command line.

4/3: Java Programming Review

Reading: Handout

Designing and implementing classes and methods.

4/8: Dates and Lists

Reading: Horstmann, Chapter 2, pg. 115-182; Tutorial, Collections

Java Date and Calendar classes. Display using formatting objects. List and Iterator interfaces. ArrayList and LinkedList implementations. Sorting using Comparator and Comparable classes.

4/10: Sets and Maps

Set, SortedSet, Map and SortedMap interfaces. HashSet, TreeSet, HashMap and TreeMap implementations. Collections static class. Program #1 assigned.

4/15: JDBC I

Reading: Horstmann, Chapter 4; Tutorial, JDBC

JDBC connections, tables, statements and result sets. SQL statements, data types and parameters.

4/17: JDBC II

Quiz #1: Collections and Dates

Advanced SQL. Scrollable and updatable result sets.

4/22: JDBC III

Prepared statements and callable statements. Transactions and batch processing.

4/24: JDBC Programming

Program #1 due

Programming examples using JDBC.

4/29: Graphical User Interfaces I

Reading: Tutorial, Swing

Swing basics: components and containers. Fundamental Swing components.

5/1: Graphical User Interfaces II

Quiz #2: JDBC

Building GUI applications. Layout management.

5/6: Graphical User Interfaces III

Reading: Horstmann, Chapter 6, pg. 409-427, 471-521, 528-557

Event handling. JTable and the model-view-controller pattern.

5/8: GUI Programming

Program #2 due

Programming examples using Swing.

5/13: Threads I

Reading: Horstmann, Chapter 1; Tutorial, Threads

Threads. Timers. The run method. The Runnable interface.

5/15: Threads II

Quiz #3: Swing

Synchronization. Deadlock, starvation and other problems in parallel computation. Programming with threads.

5/20: Networking

Reading: Horstmann, Chapter 3

Internet protocols and programming. Sockets and network I/O. HTTP programming.

5/22: Network programming

Program #3 due

Programming examples using threads and sockets.

5/27: Remote Method Invocation

Reading: Horstmann, Chapter 5, pg. 329-385; Tutorial, RMI

Distributed objects and distributed computing. Comparison of RMI, CORBA and Web Services. Stubs and interfaces. Client and server applications. RMI APIs and development process. RMI registry and remote activation.

5/29: RMI Programming

Reading: Horstmann, Chapter 5, pg. 385-407

Quiz #4: Threads and Network programming

Programming examples using RMI.

Week 10

6/3: XML

Reading: Horstmann, Chapter 12

XML documents. XML parsing and DOM representation. Java DOM APIs. Loading and saving XML documents.

6/5: Review

Program #4 due

Final Exam: 6/10 (11:45 – 2:00 pm)

Policies

Students are expected to attend all classes and participate in in-class exercises. Class will start promptly at 10:10. Students are individually responsible for material they may have missed due to absence or tardiness.

Quizzes and tests can only be made up with a serious documented excuse (e.g. illness, death in the family). A make-up quiz or test must be arranged as soon as possible and always before the student attends the next class meeting. Arrangements involving other excuses require prior permission from the instructor.

Assignments will be submitted online at the Course On-Line site³. Do not submit assignments by email. All assignments should be completed and submitted by class time on the due date.

Late assignments will be accepted for up to 3 calendar days after the assignment due date, **only if** the student has sought help from the instructor prior to the due date. The penalty for a late assignment is 10% for each calendar day that it is late. Assignments that are more than 3 days late will not be accepted.

Assignments must represent a student's individual effort. While students are permitted to discuss assignments at the conceptual level and help each other point out compiler errors, under no circumstances should students share code (electronically or otherwise). Using any code in an assignment that does not acknowledge its author is plagiarism.

School Policies

Online Instructor Evaluation

Course and instructor evaluations are critical for maintaining and improving course quality. To make evaluations as meaningful as possible, we need 100% student participation. Therefore, participation in the School's web-based academic administration initiative during the eighth and ninth week of this course is a requirement of this course. Failure to participate in this process will result in a grade of incomplete for the course. This incomplete will be automatically removed within seven weeks after the end of the course and replaced by the grade you would have received if you had fulfilled this requirement.

Email

Email is the primary means of communication between faculty and students enrolled in this course outside of class time. Students should be sure their email listed under "demographic information" at <http://campusconnect.depaul.edu/> is correct.

Plagiarism:

The university and school policy on plagiarism can be summarized as follows: Students in this course, as well as all other courses in which independent research or writing play a vital part in the course requirements, should be aware of the strong sanctions that can be imposed against someone guilty of plagiarism. If proven, a charge of plagiarism could result in an automatic F in the course and possible expulsion. The strongest of sanctions will be imposed on anyone who submits as his/her own work a report, examination paper, computer file, lab report, or other assignment which has been prepared by someone else. If you have any questions or doubts about what plagiarism entails or how to properly acknowledge source materials be sure to consult the instructor.

Incomplete:

An incomplete grade is given only for an exceptional reason such as a death in the family, a serious illness, etc. Any such reason must be documented. Any incomplete request must be made at least two weeks before the final, and approved by the Dean of the School of Computer Science, Telecommunications and Information Systems. Any consequences resulting from a poor grade for the course will not be considered as valid reasons for such a request.

³ <http://dlweb.cti.depaul.edu/>