



CSIE33000 Network Programming in Java

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Textbook and References

- Recommended: Jan Graba, *An Introduction to Network Programming with Java, 2nd Edition*, Springer, 2007.
(<http://www.springer.com/computer/communications/book/978-1-84628-380-2>)
- References:
 - Esmond Pitt. *Fundamental Networking in Java*. Springer, 2005.
 - Kenneth L. Calvert and Michael J. Donahoo. *TCP/IP Sockets in Java: Practical Guide for Programmers, 2nd Edition*. Morgan Kaufmann, 2008.
 - Elliotte Rusty Harold. *Java Network Programming, 3rd Edition*. O'Reilly & Associates, 2004.
 - Andrea Steelman and Joel Murach. *Murach's Java Servlets and JSP, 2nd Edition*. Mike Murach & Associates, 2008.



Java References

- Joshua Bloch. *Effective Java, 2nd Edition*. Prentice Hall, 2008.
- John Lewis and William Loftus. *Java Software Solutions, 6th Edition*. Addison-Wesley. 2008.
- Bruce Ecke. *Thinking in Java, 4th edition*. Prentice-Hall, 2007 (<http://www.mindview.net/Books/TIJ4>)
- Cay S. Horstmann and Gary Cornell. *Core Java, Volume I - Fundamentals, 8th Ed.* Sunsoft Press/Prentice Hall. 2008.
- Cay S. Horstmann and Gary Cornell. *Core Java, Volume II - Advanced Features, 8th Ed.* Sunsoft Press/Prentice Hall. 2008.
- Harvey M. Deitel, Paul J. Deitel, Sean Santry. *Advanced Java 2 Platform How-to Program, 2nd Edition*. Prentice Hall, 2007.
- Patrick Niemeyer and Jonathan Knudsen. *Learning Java, 3rd Edition*. O'Reilly & Associates, Inc. 2005.

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Why Java ?

- **TIOBE Programming Community Index**
- Gives among the most authoritative report of the popularity of programming languages
- "The index can be used to check whether your **programming skills** are still **up to date** or to make a **strategic decision** about what programming language **should be adopted** when starting to build a new software system."
- The **September 2009** report says ...

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Position Sep 2009	Position Sep 2008	Delta in Position	Programming Language	Ratings Sep 2009	Delta Sep 2008	Status
1	1	=	Java	19.383%	-1.33%	A
2	2	=	C	16.861%	+1.48%	A
3	5	↑↑	PHP	10.156%	+0.91%	A
4	3	↓	C++	9.988%	-0.73%	A
5	4	↓	(Visual) Basic	9.196%	-1.29%	A
6	7	↑	Perl	4.528%	-0.31%	A
7	8	↑	C#	4.186%	-0.15%	A
8	6	↓↓	Python	3.930%	-1.08%	A
9	9	=	JavaScript	2.995%	-0.14%	A
10	11	↑	Ruby	2.377%	-0.38%	A
11	10	↓	Delphi	1.972%	-1.08%	A
12	18	↑↑↑↑↑	Pascal	0.961%	+0.56%	A
13	16	↑↑↑	Lisp/Scheme	0.842%	+0.42%	A--
14	13	↓	PL/SQL	0.819%	+0.12%	A
15	14	↓	SAS	0.781%	+0.14%	A
16	24	↑↑↑↑↑↑	ABAP	0.705%	+0.42%	A
17	12	↓↓↓↓	D	0.588%	-0.68%	B
18	42	↑↑↑↑↑↑↑↑	Objective-C	0.585%	+0.48%	B
19	17	↓↓	Lua	0.507%	+0.09%	B
20	25	↑↑↑↑	MATLAB	0.506%	+0.25%	B

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Why is Java so popular ?

- Relatively close to C/C++, learning is easy
- **Object-oriented** programming
- Integrated **GUI** with **AWT** and **Swing**
- **Multithreaded** programming
- Integrated **networking**, **Internet/Web** constructs
- **Distributed objects** and **remote invocation**
- **Database** programming with **JDBC**
- Information exchange with **XML**
- **Mobile device** programming with Java ME
- Applet, Servlet, JavaBeans, Multimedia, ...



Course Information

- Instructor's Office: Engineering Building C308
- Office Hours: Tue 17:00 ~ 18:00
- Phone Number: (03)8634020
- Email Address: showyang@mail.ndhu.edu.tw
- **Grading Policy:**
 - Assignments 25%
 - Midterm 25%
 - Final exam 25%
 - Term project 25%

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Web Pages

- Course Homepage:
<http://www.csie.ndhu.edu.tw/~showyang/NetProg2009f/index.html>
東華e學苑(<http://www.elearn.ndhu.edu.tw>)
- Instructor's Homepage:
<http://www.csie.ndhu.edu.tw/~showyang>

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Syllabus

- Introduction
- Network and Web basics
- Java crash course
- Overview of Java networking
- Addressing and naming
- Sockets and TCP programming
- UDP programming
- Network programming with GUI

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Syllabus (Cont.)

- Java threads and multithreaded programming
- Java I/O and data streams
- Distributed objects and remote method invocation (RMI)
- Network database programming with JDBC
- Server-side programming with Java Servlets
- Server-side programming with JSPs
- URL, HTML and HTTP processing

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Advanced Topics*

- Network multimedia information access
- Multicasting
- JavaBeans and Enterprise JavaBeans
- Java IDL and CORBA
- Java Messaging Service (JMS)
- Java Mail
- Java Web services
- XML and Ecommerce
- Programming mobile devices with Java ME

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Term Project

- We will discuss project topics in the class.
- You are welcomed to suggest creative topics before the midterm.
- We will make a decision on the topic the week after the midterm.
- The project is due one week after the final.
- You should prepare for a demo to show your project and to explain your design.
- **Must turn in the project to pass the class!!**

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Be Prepared !!

- In the Internet/WWW era, network programming is a **must-have skill** for a CSIE student.
- **Programming concept** is the key. Programming language is secondary.
- Network programming is **fun** and **challenging**.
- **Enjoy** programming and **keep up** with the class.