Syllabus

Course Title:	Network Programming
Course Code:	IT4062
Product Code:	

First Creation （Date-Version No.）：

    * Sample: 070606-01

Revision History (Date - Version No.)			
1	Draft: 2009.06.30 by Prof at Keio and Ritsumeikan universities		
2	Final 1.0: 2009.08.10		
3	Ver 1.1: 2010.08.15. Switch to Java		
4	Ver 1.1: 2011.09.15 update textbook & references		
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Final Version （Date-Version No.）： Ver 1.1

Official Approval	Date of Report to PIU

Course Title	Semester	Day of the week, Period	Credit	Instructor
Network Programming	7	1	2	

Course Description

This course focuses to build the network programming experiences. It starts from the review of computer network technology and Java programming. And it will cover the TCP application and UDP application. All students must finish the mini project that is a small programming project. The function and goal of the projects will be suggested during the course but the students need to think what they want to create.

Focus and Goal

To understand how to create TCP and UDP program and finish one small project on network programming.

Courses which students are recommended to enroll in, but not required to

Computer Network

Schedule   <Japan-side>

1st	Theme: Introduction & Review Internet Protocol and services
	Keywords: Internet, Protocol, Packet, Addressing (IP address, Port number), DNS, Client-Server Model, Socket
2nd	Theme: Review C/Java Programming
	Keywords: Data type, structure, command line argument, pointer, I/O function, file descriptor, make file, system call, library
3rd	Theme: Socket API Introduction
	Keywords: Byte order, htons(), htonl(), ntohs(), ntohl(), sockaddr, sockaddr_in, inet_aton(), inet_pton(), inet_addr(), inet_ntoa(), Padding,
4th	Theme: TCP Client
	Keywords: socket(), connect(), write(), read(), close()
5th	Theme: TCP Server (1)
	Keywords: socket(), bind(), listen(), accept(), read(), write(), close()
6th	Theme: TCP Server (2)
	Keywords: ,Signaling, signal(), wait(), waitpid(),
7th	Theme: TCP Server (3)
	Keywords: I/O multiplexing, Blocking I/O, non-Blocking I/O, signal driven I/O, Asynchronous I/O, select(), poll(),
8th	Theme: UDP Client and Server

	Keywords: socket(), sendto(), recvfrom(), close()
9th	Theme: concurrent processing
	Keywords: fork(), process, getpid(), getppid(), signal
10th	Theme: Address Resolution
	Keywords: DNS, gethostname(), gethostbyname(), gethostbyaddr(), getservbyname(), getaddrinfo()
11th	Theme: Mini Project (1)
	Keywords: Group work
12th	Theme: Mini Project (2)
	Keywords:
13th	Theme: Mini Project (3)
	Keywords:
14th	Theme: Mini Project (4)
	Keywords:
15th	Theme: Mini Project Presentation
	Keywords:
Note	

Out of class assignment

Basically, small programming assignment will be assigned. And at the end of course, you will have to finalize the mini project.

Grading Criteria and Method of Evaluation

Kind	Percentage	Evaluation Criteria
Examination	0%	
Mini project defense & report	70%	
Continuous assessment	30%	
Others	%	
Note		

Educational advice for enrolled students

Students are required to write a code a lot. Not only reading book, but also write code. You may fail, but try to fix it, try to understand what is happening. Then, you will understand the network programming.

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Textbooks

Title	Author	Publisher	ISBN code	Comment
Java: An Introduction to Computer Science & Programming (3rd edition)	Walter Savitch	Pearson, 2004		

Note

Reference books

Title	Author	Publisher	ISBN code	Comment
Big Java	Cay Horstmann,	Wiley, 2002		
Absolute Java	Walter Savitch	Pearson, 2004		
Introduction to Java Programming (Fourth Edition)	Daniel Liang	Prentice Hall, 2002		
Unix Network Programming Vol.1, 3rd Ed.	W.Richard Stevens	Prentice-Hall	0131411551	
Internetworking with TCP/IP vol.3, Client-Server Programming and Applications (BSD version)	Douglas E. Comer, David L. Stevens	Prentice Hall	0130320714	
TCP/IP Sockets in C: Practical Guide for Programmers	Michael Donahoo, Kenneth Calvert	Elsevier Science	1558608265	

Note:

Internet Websites related to the Course

- Oracle JDK: http://www.oracle.com/us/products/tools/overview/index.html
- General Java tutorial: http://docs.oracle.com/javase/tutorial/tutorialLearningPaths.html
- Java networking: https://docs.oracle.com/javase/tutorial/networking/index.html
- Multi-thread Java programming (Concurrency control): https://docs.oracle.com/javase/tutorial/essential/concurrency/index.html
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Contact

Others