2110472 Computer Networks: Net-Centric Computing

Instructors

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Text Books

- K. Ross and J. Kurose, *Computer networking: a top-down approach featuring the Internet*, Addison Wesley, 2001.

Course Outline

Week	Topics
1 NNP	**Overview** o Net-Centric Architecture o Internet Paradigms o Content-Related Issues **Infrastructures & Protocols** o IP Network o Basic Protocols - TCP/IP
2 KPR	**Infrastructures & Protocols (2)** o Equipments (Router, Switch, Hub, Proxy, etc.) o Techniques (IP Masquerade, NAT, Caching, etc.)
3 KPR	**Infrastructures & Protocols (3)** o Application Protocols (HTTP, HTML, CSS, SMTP, FTP, etc.) o System Services (Web Server, Directory Services, Printing Services, etc.)
4 NNP	**Infrastructures & Protocols (4)** o Data Formats (MIME, XML, EDI, etc.) **Development Platforms** o J2SE/J2EE/J2ME o Dot Net o Web Services
5 KPR	**Application Development & Tools** o Generic Issues (cookies, sessions, database connection, persistence connection, HTTP header, HTTP authentication, File uploading) o JSP / Servlet
6 KPR	**Application Development & Tools (2)** o XML / XSTL o C# / ASP.NET o PhP
7 NNP	**Advance Infrastructures** o Transaction Monitor (EJB, MTS) o Messaging System (JMS, MQ/Series) o Peer-to-Peer (Gnutella, Napster, JXTA?)
8 KPR	**Security** o Protocols (SSL, PKI, PGP, CA, etc.) o Infrastructure (Firewalls, IDS, etc.) o Authentication and Single-Sign-On (Microsoft Passport, Liberty Alliances)
9 NNP	**Network Management** o Network Management Protocols (SNMP, CIMP, WMP) o Network Management System / SLA o Network Management Products
10 NNP	**Case Studies** o Online Payment (Secure Electronic Transactions) o Multi-Platform Presentation / Unified Messaging o Search Engine (& Meta search) / Service Locator (UDDI) o Workflow / Collaboration (Lotus Notes, Ultimus, etc.) o Personalization / Portal (Netscape, WireFire, etc.) o Net Devices (Sony Netmo, Apple iPod, etc.)
11 NNP	**Other Networks** o Delivery Mediums (Dial-up, Broadband, Leased Line, Satellite, Wireless) o Personal Area Networks: Mobile devices, PDA, and others

	o	WAP & WML
	o	Bluetooth
	o	USB-2 (FireWire)
	o	Wireless Ethernet (IEEE 803.11)
	o	Broadband : ISDN, ADSL, DSL, Cable Modem, One-way Satellite
	o	Mobile Technology: 2G, 2.5G, 3G, GPRS, SMS, MMS, etc.
12 KPR	**Advance Technologies**	
	o	Load-Balancing / Fault-Tolerant
	o	Connection Pools / Persistence Objects
	o	Web Caching
	o	Content Delivery: Akamai, CDN, MBONE, etc.
	o	Grid
	o	Performance: SpecWeb, TPC, etc.
13 KPR & NNP	**In Trends (Optional)**	
	o	SMS applications
	o	E-Government
	o	E-Learning
	o	Group Communication
	o	Digital Signatures Law
	o	Broadband
	o	Application Service Provider
	o	Content / Document Management

Grading Policy

- o Midterm 30 %
- o Final 40 %
- o Project 30 %

Class Homepage : http://www.cp.eng.chula.ac.th/course/2110472

References

- W. Stevens, *TCP/IP Illustrated, Volume 1: The Protocols*, Addison Wesley, 1994.
- G. Wright and W. Stevens , *TCP/IP Illustrated, Volume 2: The Implementation*, Addison Wesley, 1995
- W. Stevens, *TCP/IP Illustrated, Volume 3*, Addison-Wesley, 1996.
- C. Goldfarb and P. Prescod, *XML Hand book 4th Edition*, PH. PTR.
- J. Harney, *Application Service Providers*, Addison Wesley.
- *Programming Spiders, Bots & Aggregators in Java*, Sybex.
- "PHP manual," http://www.php.net/docs.php.
- "SPECweb99 Benchmark," Standard Performance Evaluation Corporation, http://www.spec.org/osg/web99/.
- http://www.tpc.org/.
- Network Working Group, "Hypertext Transfer Protocol -- HTTP/1.1," RFC 2616, June 1999.
- Network Working Group, "HTTP Authentication: Basic and Digest Access Authentication1," RFC 2617, June 1999.
- W. Iverson, "XML and Java Technology in E-Commerce," JavaOne 2000.
- A. Iyengar *et al.*, "High Performance Web Site Design Techniques," *IEEE Internet Computing*, Mar-Apr 2000, pp. 17-26.
- J. Roy and A. Ramanujan, "Understanding Web Services," IEEE IT Pro., Nov-Dec 2001, pp. 69-73.
- G. Huizen, "JMS: An infrastructure for XML-based business-to-business communication," *JavaWorld*, Feb 2000, http://www.javaworld.com/javaworld/jw-02-2000/jw-02-jmsxml.html.
- C. Berg, "The state of Java application middleware (Part 1 and 2)," *JavaWorld*, Mar 1999, http://www.javaworld.com/jw-03-1999/jw-03-middleware.html.
- B. Day, "J2ME for Mobile Devices," JavaOne2000, http://jsp.java.sun.com/javaone/javaone2000/event.jsp?eventId=575.
- P. Bhagwat, "Bluetooth: Technology for Short-Range Wireless Apps," *IEEE Internet Computing*, May 2001, pp. 96-103.
- D. Mauro and K. Schmidt, *Essential SNMP*, O'Reilly, July 2001.

And there are much more. Find the latest updates at the class homepage.