Final Exam Review
The final exam will cover all the material in the course with an emphasis on topics covered in the last half of the class. Please review all topics on the midterm review guide in addition to the topics below.

In the Mid Term Exam
1. Competitive Advantage
   - Competitive force model
   - Internet impacts on competitiveness
   - Business Process management
2. E-Commerce
   - E-Commerce differences
   - Type of E Commerce, Business Model of E-Commerce, E-commerce Revenue Model
3. Global Business and Collaborations
   - Basic Business Functions
   - Managing a Business and firm Hierarchy
   - The Role of Information Systems in a Business
   - Enterprise System, ERP
   - Business benefits of Collaboration and Teamwork

Messerschmitt Chapter 4
- Information, data, data representation
- bit, byte, word
- binary system, base
  - Data regeneration
  - Networked computing, building block
- Computer system architecture
- CPU, ALU, Data Bus
- Subsystem, component, hierarchy
- OS, Operating system,
- Midleware
- Network, peer to peer, client server system
- File system, data base, database management system
- Intranet, extranet, internet

Messerschmitt Chapter 5
-Client Server Architecture
- Two, three tier system, multi-Tier
-Primary functions of client and server
-Three tier client server architecture
-Reasons for separating application and data tier
  - Shared data, application logic and presentation
  - Thin , ultra thin clients
Sample Questions
- Which tier is responsible for presentation of applications?
- In which tier is the logic of an application housed?

Messerschmitt Ch. 6 – Modularity and Layering
-Modularity – What does it mean? Why do we design systems this way?
-Granularity
-Hierarchy
-Interfaces – action invocation: parameters, and returns
The layering principles
- Layers of computing infrastructure
- Applications, components, middleware, operating system, networks
- Data and information in layers
- Abstraction & Encapsulation
- Data Types

Sample Questions
- Why is it best for modules to communicate only through well-defined interfaces?
- Should data storage infrastructure be sensitive to the applications that create the data?

Messerschmitt Ch. 7 - Computer and Comm. Industries
- Infrastructure and applications
- Decomposition and Assembly
- Components and Custom development
- Interoperability
- Scalability
- Outsourcing, Off shore Outsourcing
- System Integration
- Products and Services
- Stovepipe (turn-key) and integrated infrastructure
- Vertical integration and diversification
- Standardization
- Why do we need standards?
-why do companies participate?
-reference models and interfaces
-de facto / de jure standards
-Standards Bodies
-Open Standards
Sample questions:
- If a company acquires its suppliers, is that a move toward diversification or vertical integration?
- What are the advantages of selling software as a service instead of as a product?
- What are some examples of infrastructure products?

Messerschmitt Ch. 9 – Applications and the Organization
- Buy vs. Make vs. Outsource
- Application Lifecycle Model of Development
Sample questions:
- What are the advantages of buying a enterprise application instead of developing it yourself?
- Importance of Lifecycle Model of Development?

Laudon and Laudon Chapter 5
-Database
-Entity
Attributes
-Fields
-Key Field
-Primary Key
-Relational Databases
-One-to-one, one-to-many, and many-to-many relationships
-Normalization
-DBMS
-SQL
-Select, join, project
Data dictionary
-OODBMS
-Data Warehouses and Marts
-Business intelligence
-Online Analytical Processing
-Data Mining
Sample Questions:
-T or F: Every record in a file should contain at least one key field.
-T or F: A data warehouse may include information from legacy systems.
-T or F: In normalization, complex groupings of data are streamlined to eliminate awkward many-to-many relationships.

Laudon & Laudon Chapter 6 + Networking
-Basic Concepts of:
- Hosts/Routers/Links
- What is a packet? Packet Switching?
- Difference between IP / MAC address?
- Main idea of what a routing table does
- Hierarchical addressing – How is it analogous to post office routing?
- Error Detection – what is a parity bit? Why might it not work?
- Congestion in network
- Flow Control
- The Domain Name System (DNS, WWW, HTTP)
- Layering of architecture
- Physical Layer
- Link Layer
- Ethernet, MAC addresses, Hubs/Switches
- Network Layer
- Routing Table, Packet Forwarding, IP Addresses
- Transport Protocols – TCP/The User Datagram Protocol (UDP)
- Statistical Multiplexing
- Typical Network Topologies (home, Internet service provider (ISP), small business, large e-biz)
- Web Caching

Sample Questions:
Describe how an IP packet is sent over an Ethernet to a gateway router.
What responsibilities does the link layer have?
Does the IP address of your laptop remain the same wherever you go?
Cloud Computing
-SaaS, Paas, Iaas
-Cloud Computing
-Utility Computing
-Public Cloud vs. Private Cloud
-Map Reduce and Hadoop
-EC2, App Engine, EC2
-Advantages for users
-“Pay as you go”
-Scalability
- better economies of scale
-challenges
-Lock-in
-
Confidentiality + auditability
-Availability
- Data transfer bottlenecks
-Reasons to become a cloud provider
Sample Questions:
-Why are software infrastructures for distributed systems important for cloud computing?
-Is there an economy of scale advantage for very large data centers versus medium sized data centers?
-Can application developed for one cloud be easily made to run on a different cloud provider’s cloud?
Zhejiang Telecom
- How was the telecom industry in China in 98 restructured?
- What businesses was Zhejiang telecom in after this restructuring.
- What trend was causing Zhejiang telecom to loose business?
- What major IT investment did they make to support their marketing efforts?
- How did it help?
- What is ARPU?
- How was the industry restructured in 2008? What changes in strategy did this necessitate for Zhejiang Telecom?