

CPSC155b: First Exam  
February 27, 2003

Instructions: Answer exactly six of the following seven questions. Do not answer all seven. If you do answer all seven, the first six answers in your blue book(s) will be graded, and the seventh will be ignored.

Note that 6 questions worth 16 points each add up to 96 points. Everyone gets 4 points for free.

Please remember to put your name and e-mail address on the cover of your blue book(s).

Question 1: (16 points) Internet Basics

- (a) (8 points) For two points each, give four Internet design goals.  
(b) (2 points) One line in the following chart is wrong; that is, the item in the left column should be in the right column and *vice versa*. Which line is wrong?

Telephone Network

- Connection-based
- Best Effort
- Intelligence is “in the network”
- Traffic is carried by relatively few, “well-known” communications companies

Internet

- Packet-based
- Admission control
- Intelligence is “at the endpoints”
- Traffic is carried by many routers, operated by a changing set of unknown parties.

- (c) (6 points) True or False
- (i) (2 points) Hosts and routers are both types of machines in the Internet, but only hosts have IP addresses.
  - (ii) (2 points) All Internet traffic sent from servers to end-users’ machines uses TCP.
  - (iii) (2 points) DNS is the Internet service responsible for the translation of domain names into IP addresses.

Question 2: (16 points) Copyright Law

- (a) (8 points) For two points each, what are the four factors that are used to determine whether something is “fair use” of copyright material?  
(b) (2 points) The Digital Millennium Copyright Act regulates:  
(i) Reverse engineering  
(ii) Circumvention of effective TPSs  
(iii) Encryption research  
(iv) All of the above  
(c) (4 points) The technical community has objected strongly to several aspects of the DMCA. Give one example of the objections this community has raised.

- (d) (2 points) True or False: The proposed Consumer Broadband and Digital Television Protection Act is designed primarily to protect consumers' ability to make fair use of copyright material in an era of expanding technological control and intellectual-property rights.

Question 3: (16 points) B2C E-Commerce

- (a) (6 points) For two points each, give three revenue models for B2C e-commerce.
- (b) (2 points) True or False: B2C e-commerce is currently a small but growing part of the US Retail sector.
- (c) (2 points) True or False: The companies that spend the most money on online advertising are the same companies that spend the most money on offline advertising.
- (d) (4 points) What does it mean for an information product or service to be *technically commoditizable*?
- (e) (2 points) The reason that Amazon, whose business is technically commoditizable, continues to be a successful Internet retailer by many measures is:
- (i) Successful branding
  - (ii) Good service
  - (iii) Effective balance between specialization and experimentation with new partnerships, products, and business models.
  - (iv) All of the above.

Question 4: (16 points) Online Content Distribution

- (a) (3 points) For one point each, what are the three major “enforcers” of an online content-distribution business?
- (b) (3 points) Which of the following business models for online content distribution is fundamentally different from many traditional business models for information products in that it does *not* rely on distributors' being able to control copying and distribution?
- (i) subscriptions for premium-content delivery
  - (ii) superdistribution via P2P networks
  - (iii) the “Street-Performer” model
  - (iv) all of the above
- (c) (5 points) What is the essence of RealNetworks's business model?
- (d) (5 points) State one major advantage that RealNetworks has over Microsoft, its major competitor in the streaming-media application market.

Question 5: (16 points) Security and privacy

- (a) (2 points) Which of the following properties of electronic data records are digital signatures designed to provide?
- (i) confidentiality
  - (ii) verifiability of authorship or origin
  - (iii) accuracy
  - (iv) timelines
- (b) In Chapter 5 of **Trust and Risk in Internet Commerce**, Camp writes that “digital signatures depend upon the trust hierarchy that validates that a particular digital key belongs to a particular signer.”
- (2 points) The digital object that encodes the binding of a particular key to a particular signer is called a
- (i) digital certificate.
  - (ii) public key.
  - (iii) private key.
  - (iv) hash function.
- (2 points) Which company discussed in class has as one of its main lines of business the sale of these objects?
- (c) (4 points) For two points each, give two reasons that massive databases of sensitive information collected from heterogeneous sources (such as those envisioned by the Total Information Awareness initiative) inherently pose security risks.
- (d) (6 points) For two points each, give three of the Fair Information Principles proposed by the OECD (Organization for Economic Cooperation and Development).

Question 6: (16 points) Miscellaneous

- (a) (3 points) eBay’s business is technically commoditizable. What is the most widely accepted reason that it is nonetheless wildly successful?
- (b) (3 points) Basically, the system architecture of eBay features a centralized service that *facilitates* consumer-to-consumer exchange of goods and payments but does not itself store or deliver the goods. What other service covered in class had the same basic system architecture?
- (c) (5 points) What is “lock in,” and why is it not guaranteed in a product or service that exhibits network effects?
- (d) (5 points) In “The Heavenly Jukebox,” security expert Bruce Schneier is quoted as saying that in the world of Internet music piracy, “Joe Average is just as good as Jane Hacker.” Briefly explain what he means.

Question 7: (16 points) B2B E-Commerce

- (a) (5 points) For one point each, identify whether each of the following is characteristic of HTML, XML, or both.
  - (i) Document content is marked with element tags.
  - (ii) The language defines a fixed set of format-oriented tags.
  - (iii) Documents alone contain enough information to parse and display their content.
  - (iv) Documents can be used to exchange information between companies over the Internet.
  - (v) Content-based encoding allows computers to automatically process and integrate information from different sources.
- (b) (6 points) Define “horizontal” and “vertical” in the context of B2B marketplaces.
- (c) (2 points) True or False: XML allows two companies to automatically integrate their e-commerce systems without agreeing on the specifics of how the information being exchanged is formatted.
- (d) (3 points) Recall that Covisint is a participant-owned, vertical B2B for the automotive industry. For one point each, give three unresolved issues or potential problems that Covisint faces.