Lecture 12
Intellectual Property

Intellectual property

- protection mechanisms
    - trade secrets
    - trademarks
    - patents
    - copyrights
    - licenses

- standards and standardization

- open source / free software

- Warning: IANAL

Trade secrets

- information is a secret held by its owner

- disclosed only under some kind of agreement
    - e.g., "non-disclosure agreement" or NDA

- no recourse if secrecy is lost

- often used to argue that information should not be made public
    - voting machine technology
    - breathalyzer technology
    - ...

Patents & copyrights

- US Constitution, Article 1, Section 8:

- "The Congress shall have Power ...
  To promote the Progress of Science and useful Arts, by
  securing for limited Times to Authors and Inventors the
  exclusive Right to their respective Writings and Discoveries;

- "Writings": copyright protects expression but not idea
  - you can't copy my program
  - but you can implement the same idea in some different form
- "Discoveries": patent protects an idea
  - you can't use my patented idea
  - but you can achieve the same effect in a different way

- the meaning of "different" is NOT usually clear

Patents

- exclusive right to make, use or sell an invention in US
- valid for 20 years after filing

- requirements:
  - statutory subject matter:
    process, machine, article of manufacture, composition of matter
  - novel
  - useful
  - unobvious to person having ordinary skill in the art
    at the time of filing

- contents:
  - abstract
  - drawings/diagrams
  - specifications (narrative description, preferred embodiment)
  - claims

US005960411A

United States Patent [19]

Hartman et al.

[11] **Patent Number:** 5,960,411

[45] **Date of Patent:** Sep. 28, 1999

[54] **METHOD AND SYSTEM FOR PLACING A PURCHASE ORDER VIA A COMMUNICATIONS NETWORK**

[75] Inventors: **Peri Hartman; Jeffrey P. Bezos; Shel Kaphan; Joel Spiegel,** all of Seattle, Wash.

[73] Assignee: **Amazon.com, Inc.,** Seattle, Wash.

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[51] Int. Cl.⁶ **G06F 17/60**

[52] U.S. Cl. **705/26**; 705/27; 345/962

[58] Field of Search 705/26, 27; 380/24, 380/25; 235/2, 375, 378, 381; 395/188.01; 345/962

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[57] **ABSTRACT**

A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.

26 Claims, 11 Drawing Sheets

Copyright

- protects expression, not idea
- duration used to be 17 years + one renewal
- now life + 70 years, or 95 years for commercial works
  - (the "Mickey Mouse Protection Act", 1998)
- "fair use" permits limited copying under some circumstances
  - criticism, comment, scholarship, research, news reporting, teaching
- uncertain what fair use really is -- case by case decisions
- considerations:
  - purpose and character of the use
  - nature of the copyrighted work
  - amount and substantiality of the portion used
  - effect of the use on potential market or value of the copyrighted work
- recent copyright laws may prevent some fair uses
  - can't decrypt to make excerpt for teaching or criticism
  - can't reverse engineer to make copies in different media

DMCA: Digital Millennium Copyright Act (1998)

- US copyright law: www.copyright.gov/title17, Chapter 12

- anticircumvention: illegal to circumvent a technological measure protecting access to or copying of a copyrighted work
  - limited exceptions for reverse engineering for interoperability, encryption research, security testing

- illegal to remove or alter copyright notices and management information

- "safe harbor": protects ISPs from copyright infringement claims if they follow notice and takedown procedures

Copyright issues in software

- code
  - theft in commercial setting
  - plagiarism in academic setting

- visual appearance, "look and feel", etc., of a program

- interfaces vs implementations

- reverse engineering?
  - clean room implementation

- copyright or patent?
  - which is appropriate to protect specific piece of software?

Licenses

- an agreement (e.g., contract) that allows a particular use of some software
  - that might otherwise be a violation of copyright, patent, etc.

- are shrinkwrap and clickwrap licenses valid and enforceable?

- is licensing replacing purchase?

- are warranty and liability disclaimers for software valid?

Open source / free software

- source code: instructions in a readable programming language
  - usually has significant commercial value
      e.g., Windows, Office, TurboTax, Photoshop, …
  - usually proprietary, secret, not revealed
      even if compiled version is given away (e.g., iTunes, Internet Explorer)

- "open source": source code is available, can be use, copied and modified
  - a reaction to restrictions on proprietary code
  - promoted by Free Software Foundation, other open source projects & groups
- various kinds of licenses determine what can be done with it
  - mainly concerned with keeping source code open enough that others can continue to build on it and improve it
  - prevents anyone from taking it private / proprietary
- a viable threat to proprietary software in important areas

Fundamental Software Ideas

- **algorithm: sequence of precise, unambiguous steps**
  - performs some task and terminates
  - based on defined basic / primitive operations
  - describes a computation independent of implementation details
- **programming language:**
  - grammar, syntax, and semantics for expressing computation
    - notation is important
- **program: algorithms implemented in a programming language**
- **compilers, interpreters: programs that convert from the high level language used by people to a lower level**
  - a compiler is a program that writes a program
  - an interpreter also acts as a computer so the program can be run
- **libraries and components: programs written by others**
  - packaged in a form that can be used in a new program
- **abstraction, layers, interfaces, virtualization**
  - hiding details, pretending to be something else
- **bugs: the need for absolute precision**
  - cover all cases, cope with failures and misuse