

Intellectual Property

Abdel Salam Sayyad

Intellectual Property

- Term used to describe works of the mind
 - Distinct and “owned” or created by a person or group
- Copyright law
 - Protects authored works
- Patent laws
 - Protect inventions
- Trade secret laws
 - Help safeguard information critical to an organization’s success

Copyrights

- Grants creators of original works the right to
 - Distribute
 - Display
 - Perform
 - Reproduce work
 - Prepare derivative works based upon the work
 - Author may grant exclusive right to others

Copyrights (continued)

- Types of work that can be copyrighted
 - Architecture
 - Art
 - Audiovisual works
 - Choreography
 - Drama
 - Graphics
 - Literature
 - Motion pictures

Copyrights (continued)

- Types of work that can be copyrighted
 - Music
 - Pictures
 - Sculptures
 - Sound recordings
 - Other intellectual works...

Copyrights (continued)

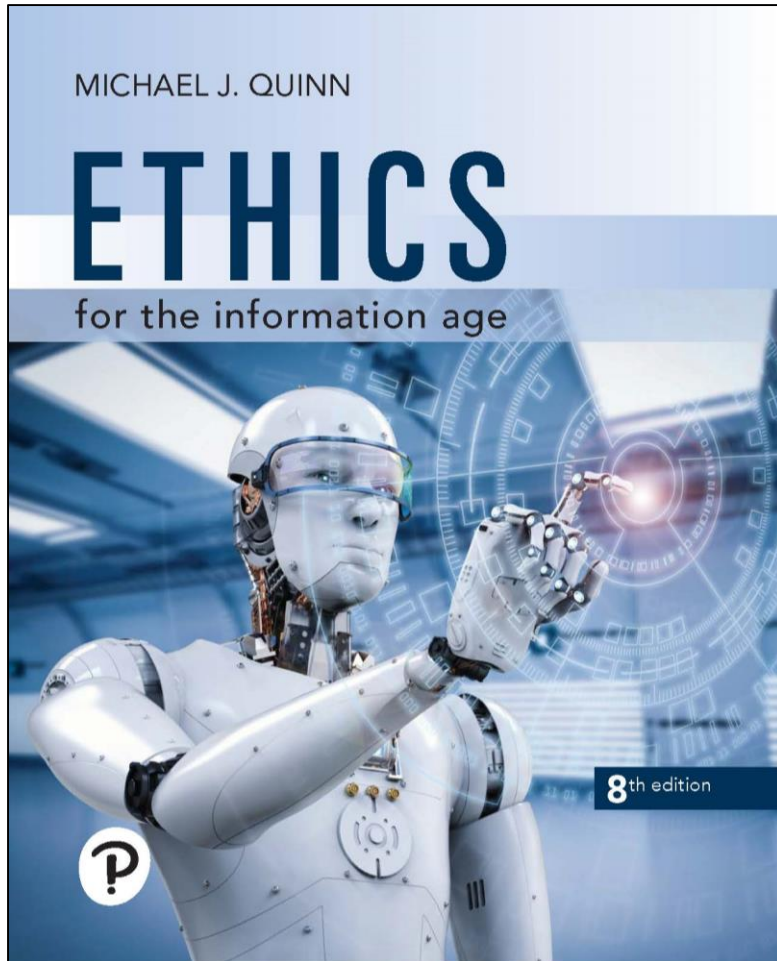
- Work must fall within one of the preceding categories
- Must be original
 - Evaluating originality can cause problems
- Fair use doctrine
 - Factors to consider when evaluating the use of copyrighted material

Copyrights (continued)

- Fair use doctrine factors include:
 - Purpose and character of the use
 - Portion of the copyrighted work used
 - Effect of the use upon the value of the copyrighted work
- Copyright infringement
 - Copy substantial and material part of another's copyrighted work
 - Without permission

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Chapter 4

Intellectual Property

4.4 Fair Use

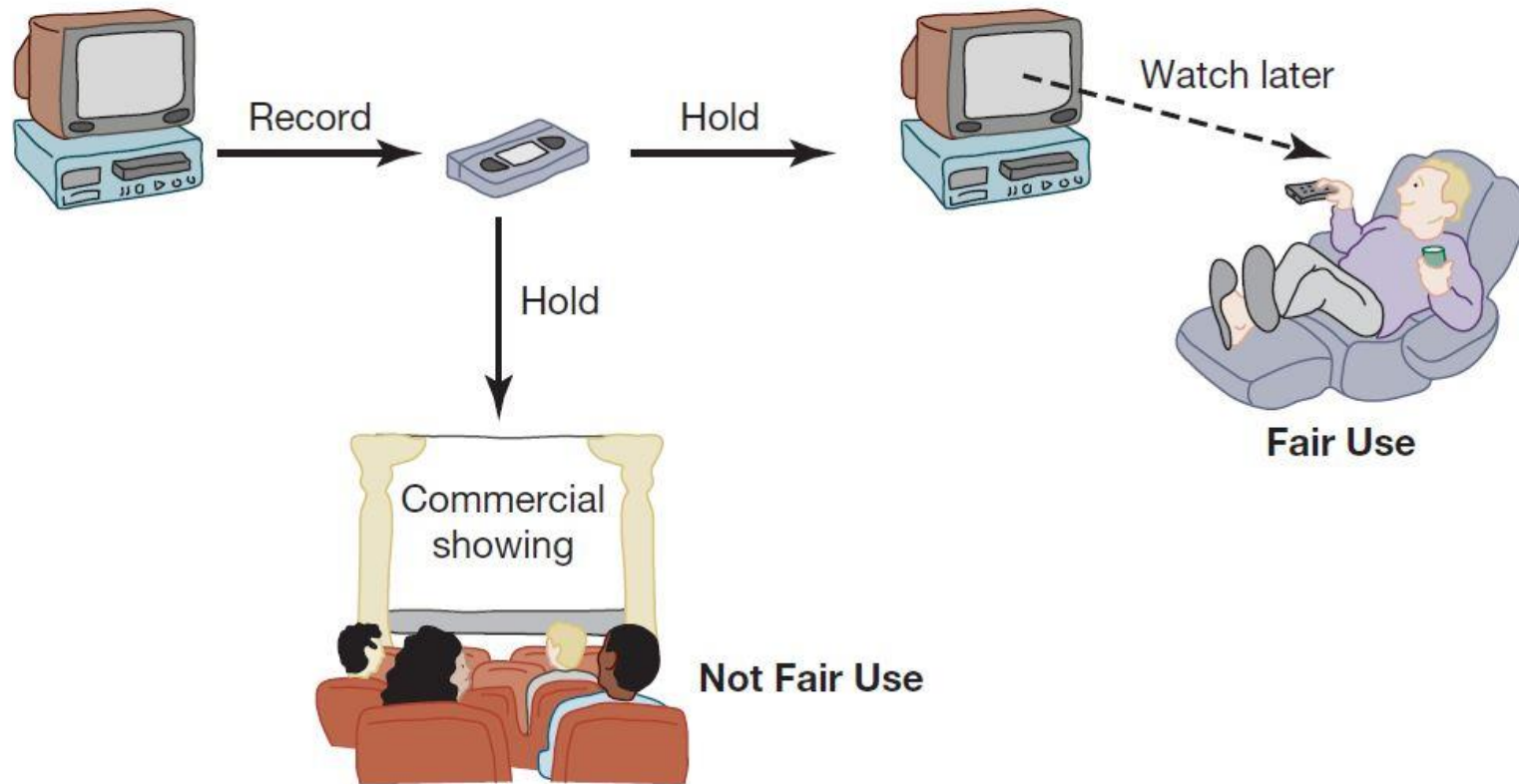
الاستخدام العادل - Fair Use Concept

- Sometimes legal to **reproduce** a copyrighted work **without permission**
- Those circumstances called **fair use**
- To judge fair use, courts consider four factors
 1. Purpose and character of use
 2. Nature of work
 3. Amount of work being copied
 4. Effect on market for work

Sony v. Universal City Studios

- Sony introduced Betamax VCR (1975)
- People started **time shifting** TV shows (watch TV shows at own time not broadcast time by recoding: Time Shift)
- Movie studios sued Sony for copyright infringements (include ad revenue loss)
- U.S. Supreme Court ruled (**5-4**) that time shifting is fair use

Time Shifting



The Supreme Court ruled that videotaping television broadcasts for private viewing at a later time is fair use of the copyrighted material. This practice is called time shifting. Using videotaped material for a commercial purpose is not considered fair use.

Digital Recording Technology

- Copying from vinyl records to cassette tapes introduced hiss and distortions
- Introduction of compact disc a boon for music industry
- Cheaper to produce than vinyl records
- Higher quality
- Higher price \Rightarrow higher profits
- **But** it's possible to make a **perfect** copy of a CD (cheaply)

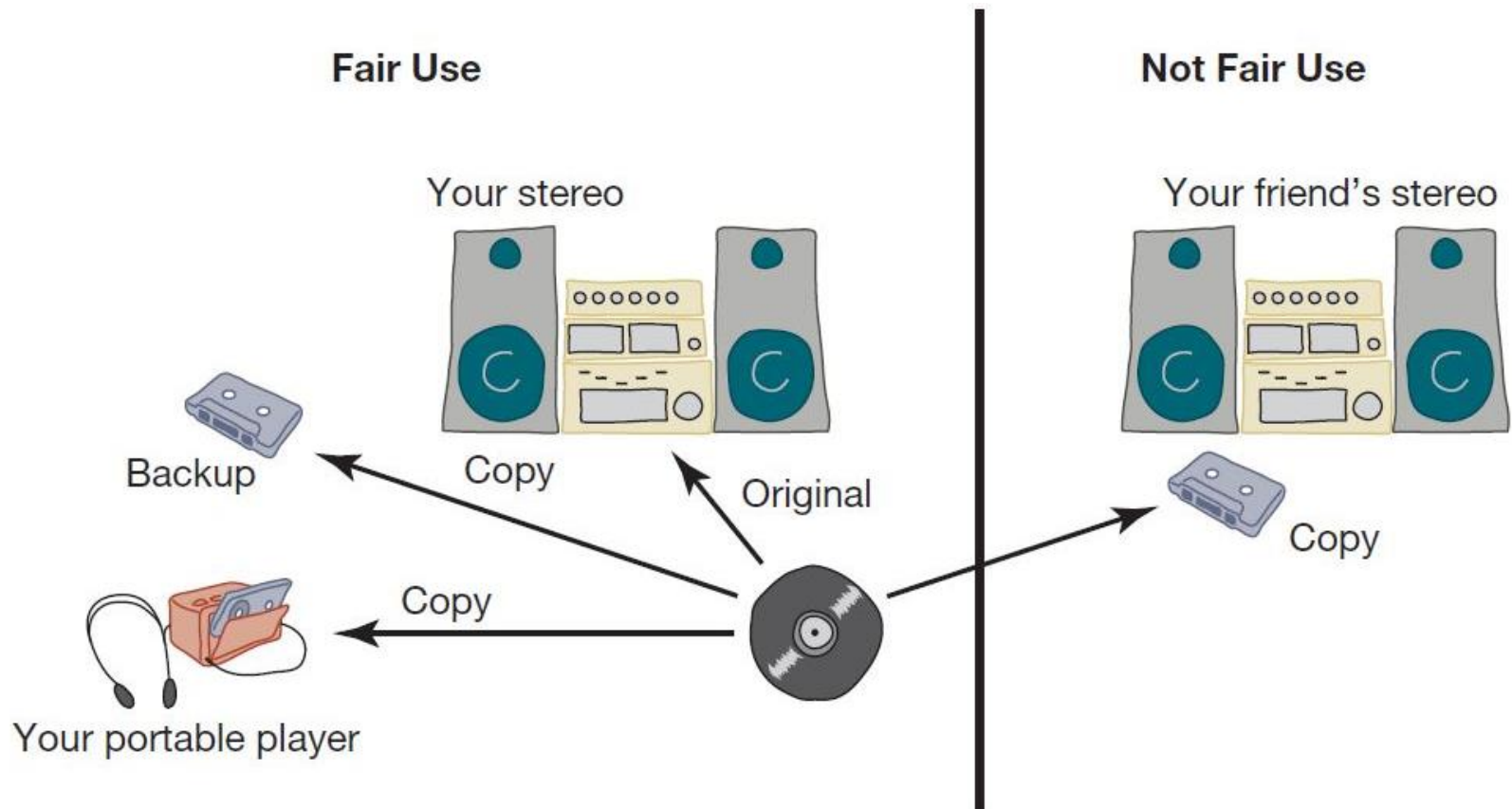
Audio Home Recording Act of 1992

- Protects rights of consumers to make copies of analog or digital recordings for **personal**, noncommercial use
 - Backup copy
 - Give to family member
- **Digital audio recorders must incorporate Serial Copyright Management System (SCMS), so consumers can't make a copy of a copy**

RIAA v. Diamond Multimedia

- MP3 compression allowed songs to be stored in 10% of the space, with little degradation
- Diamond introduced Rio MP3 player (1998)
- People started **space shifting** their music
- RIAA started legal action against Diamond for violation of the Audio Home Recording Act
- U.S. Court of Appeals, 9th Circuit, affirmed that **space shifting is consistent** with copyright law

Space Shifting



Space shifting is the creation of a copy for backup purposes or for use in a portable device, and it is considered fair use. Making a copy for a friend is not considered fair use.

Kelly v. Arriba Soft

(thumbnail of images)

- Kelly: photographer who maintained Web site with copyrighted photos
- Arriba Soft: created search engine that returned **thumbnail images**
- Kelly **sued** Arriba Soft for copyright infringement
- U.S. Court of Appeals, 9th Circuit, affirmed that Arriba Soft's use of Kelly's images was "**significantly transformative**" and **fair use**

Authors Guild v. Google (1 of 3)

- Google announced plan to **scan millions of books** held by several huge libraries, creating searchable database of all words
- If public domain book, system returns PDF
- If under copyright, user can see a few sentences; system provides links to libraries and online booksellers
- Authors Guild and publishers sued Google for copyright infringement (copying books for commercial reasons)
- Judge ruled **in favor of Google** and dismissed lawsuit

Authors Guild v. Google (2 of 3)

- Judge: Google Books is a fair use of copyrighted works
- Purpose and character:
 - Purpose is to create a massive index
 - Character is highly transformative
 - Precedent: **Kelly v. Arriba Soft Corporation**
 - Weighs in favor of fair use
- Nature of work being scanned: mostly nonfiction
 - Weighs in favor of fair use

Authors Guild v. Google (3 of 3)

- How much being scanned: entire work
 - Weighs against fair use
- Effect on the market: stimulating book sales
 - Weighs in favor of fair use

Patents

- Grant of property rights to inventors
- Permits an owner to exclude the public from making, using, or selling the protected invention
- Allows legal action against violators
- Prevents independent creation
- Extends only to the issuing country

Patents (continued)

- Applicant must file with the Patent Office
 - Patent Office searches prior art
 - Takes an average of 25 months (in the U.S.)
- Prior art
 - Existing body of knowledge
 - Available to a person of ordinary skill in the art

Patents (continued)

- An invention must pass four tests
 - Must be in one of five classes of items (processes, machines, manufactures, compositions of matter, new uses in any of the four)
 - Must be useful
 - Must be novel
 - Must not be obvious to a person having ordinary skill in the same field
- Items cannot be patented if they are
 - Abstract ideas
 - Laws of nature
 - Natural phenomena

Patents (continued)

- Patent infringement
 - Someone makes unauthorized use of a patent
 - No specified limit to the monetary penalty
- Software patent
 - Feature, function, or process embodied in instructions executed on a computer
- 20,000 software-related patents per year have been issued in the U.S. since the early 1980s
- Example: Amazon.com “one-click shopping”
- Example: Cygnus “document-preview icons”

Patents (continued)

- Before obtaining a software patent, do a patent search
- Software Patent Institute is building a database of information
- Cross-licensing agreements
 - Large software companies agree not to sue others over patent infringements
 - Small businesses have no choice but to license patents to large companies
- IBM donated 3000 patents in 2009

Patents (continued)

- Defensive publishing
 - Alternative to filing for patents
 - Company publishes a description of the innovation
 - Establishes the idea's legal existence as prior art
 - Thus prevents others from filing for that patent
 - Costs mere hundreds of dollars
 - No lawyers
 - Fast
- Patent Trolls: companies that acquire patents to license them to others

Trade Secret Laws

- Trade secret
 - Business information
 - Represents something of economic value
 - Requires an effort or cost to develop
 - Some degree of uniqueness or novelty
 - Generally unknown to the public
 - Kept confidential
- Computer hardware and software can qualify for trade secret protection

Trade Secret Laws (continued)

- Information is only considered a trade secret if the company takes steps to protect it
- Greatest threat to loss of company trade secrets is employees
- Nondisclosure clauses in employee's contract
 - Enforcement can be difficult
 - Confidentiality issues are reviewed at the exit interview

Trade Secret Laws (continued)

- Noncompete agreements
 - Protect intellectual property from being used by competitors when key employees leave
 - Require employees not to work for competitors for a period of time
 - Example: Mark Papermaster moving from IBM to Apple
- Safeguards
 - Limit outside access to corporate computers
 - Guard use of remote computers by employees

Trade Secret Laws (continued)

- Trade secret law has a few key advantages over patents and copyrights
 - No time limitations
 - No need to file an application
 - Patents can be ruled invalid by courts
 - No filing or application fees
- Law doesn't prevent someone from using the same idea if it is developed independently
- World Trade Organization (WTO)
 - TRIPs Agreement provides for a minimum level of protection for intellectual property

Key Intellectual Property Issues

- Issues that apply to intellectual property and information technology
 - Plagiarism
 - Reverse engineering
 - Open source code
 - Competitive intelligence
 - Cybersquatting

Plagiarism

- Theft and passing off of someone's ideas or words as one's own
- Many students
 - Do not understand what constitutes plagiarism
 - Believe that all electronic content is in the public domain
- Plagiarism detection systems
 - Check submitted material against databases of electronic content

Reverse Engineering

- Process of taking something apart in order to
 - Understand it
 - Build a copy of it
 - Improve it
- Applied to computer
 - Hardware
 - Software
- Convert a program code to a higher level design
- Convert an application that ran on one vendor's database to run on another's

Reverse Engineering (continued)

- Compiler
 - Language translator
 - Converts computer program statements expressed in a source language to machine language
- Software manufacturer
 - Provides software in machine language form
- Decompiler
 - Reads machine language
 - Produces source code

Reverse Engineering (continued)

- Courts have ruled in favor of using reverse engineering
 - To enable interoperability
- Software license agreements forbid reverse engineering
- Semiconductor Chip Protection Act (SCPA)
 - Established a new type of intellectual property protection for mask works

Open Source Code

- Program source code made available for use or modification
 - As users or other developers see fit
- Basic premise
 - Software improves
 - Can be adapted to meet new needs
 - Bugs rapidly identified and fixed
- High reliability
- GNU General Public License (GPL) was a precursor to the Open Source Initiative (OSI)

Competitive Intelligence

- Gathering of legally obtainable information
 - To help a company gain an advantage over rivals
- Often integrated into a company's strategic plans and decision making
- Not industrial espionage
- Nearly 25 colleges and universities offer courses or programs
- Without proper management safeguards it can cross over to industrial espionage
 - Example: Proctor & Gamble spying on Unilever

Cybersquatting

- Trademark is anything that enables a consumer to differentiate one company's products from another's
 - May be
 - Logo
 - Package design
 - Phrase
 - Sound
 - Word

Cybersquatting (continued)

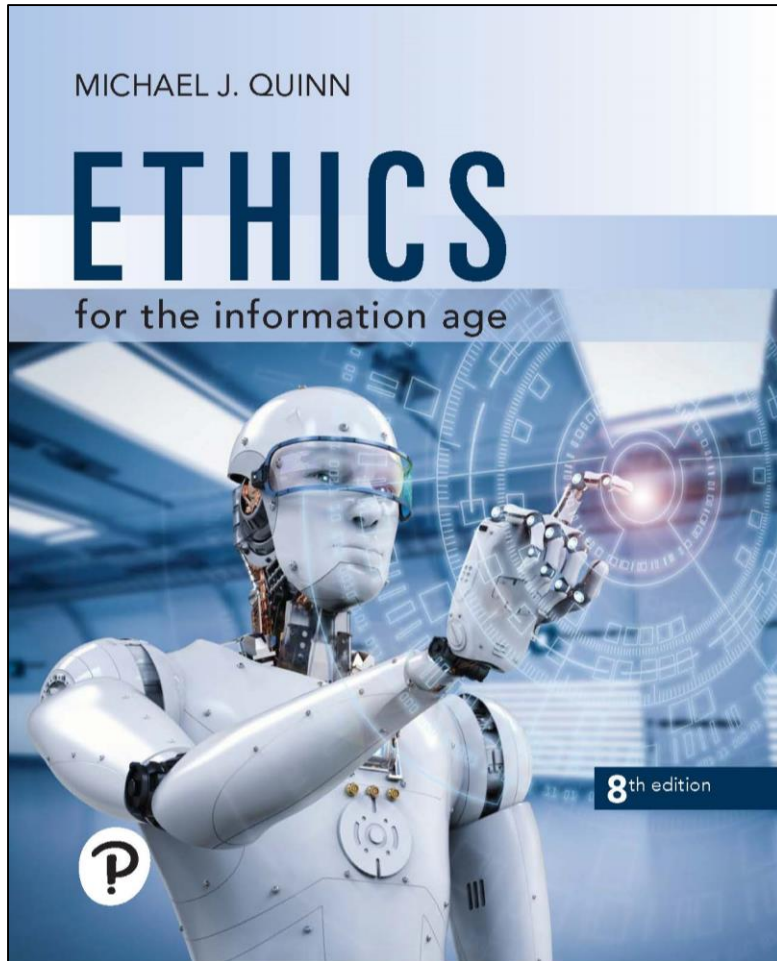
- Trademark law
 - Trademark's owner has the right to prevent others from using the same mark
 - Or confusingly similar mark
- Cybersquatters
 - Registered domain names for famous trademarks or company names
 - Hope the trademark's owner would buy the domain name
 - For a large sum of money

Cybersquatting (continued)

- To curb cybersquatting
 - Register all possible domain names
 - .org
 - .com
 - .info
- Internet Corporation for Assigned Names and Numbers (ICANN)
 - Current trademark holders are given time to assert their rights in the new top-level domains before registrations are opened to the general public

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Chapter 4

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4.7 Protections for Software

Software Copyrights

- Copyright protection began **1964**
- What gets copyrighted?
 - Expression of idea, not idea itself
 - Object program, not source program
- Companies treat **source code** as a **trade secret**

Violations of Software Copyrights

- Copying a program to give or sell to someone else
- Preloading a program onto the hard disk of a computer being sold
- Distributing a program over the Internet

Important Court Cases

- **Apple Computer v. Franklin Computer**
 - Established that object programs are **copyrightable**
- **Sega v. Accolade**
 - Established that disassembling object code to determine technical specifications **is fair use**
- **Oracle v. Google**
 - Google's copying of 11,500 lines of declaring code from 37 Java API packages was **not fair use** and violated Oracle's copyright

Safe Software Development

- Reverse engineering **OK**
- Companies must protect against unconscious copying
- Solution: “**clean room**” software development strategy
 - Team 1 analyzes competitor’s program and writes specification
 - Team 2 uses specification to develop software

Software Patents (1 of 3)

- **Until 1981**, Patent Office **refused** to grant software patents
 - Saw programs as mathematical algorithms, not processes or machines
- U.S. Supreme Court decision led to **first software patent in 1981**
- Further court rulings led to patents being granted for **wider range of software**

Software Patents (2 of 3)

- Thousands of software patents now exist
 - Microsoft files ~ 3,000 applications annually
 - Licensing patents a source of revenue
- Secondary market for software patents
 - Patent-holding companies (a.k.a. patent trolls):
Companies that specialize in buying patents and enforcing patent rights
 - Based on assumption that companies would rather settle out of court than spend time and money going to trial
 - RIM didn't settle quickly; ended up paying \$612 million

Software Patents (3 of 3)

- Critics say too many patents have been issued
 - Patent Office doesn't know about prior art, so it issues bad software patents
 - Obvious inventions get patents
- Companies with new products fear getting sued for patent infringement
 - Build stockpiles of patents as defense mechanism
 - Software patents used as legal weapons

Software Copyrights vs Software Patents

	Software Copyright	Software Patent
What is protected?	Object Program, screen displays	Software process with practical utility
Is getting protection expensive?	No	Yes
Is getting protection time consuming?	No	Yes
Is reverse engineering allowed?	Yes	No

Smartphone Patent Wars (1 of 2)

- Nokia sues Apple, alleging Apple violated 10 of its patents (2009)
- Apple countersues Nokia for violating 13 of its patents
- Apple sues several Android smartphone makers
 - Accuses Samsung of copying “look and feel” of Apple iPhones and iPads, including rounded corners, tapered edges, use of a home button, and bounce-back affect when user over scrolls

Smartphone Patent Wars (2 of 2)

- Samsung countersues Apple
- Escalates until more than 100 lawsuits filed by various manufacturers globally; billions of dollars in legal fees
- Smartphone makers agree to cross-license each other's patents (2014)

Alice Corporation v. CLS Bank

- Decision: US Supreme Court ruled in 2014 that simply implementing an **abstract idea on a computer is not sufficient for patent protection** – there must be an “inventive concept”
- Many district courts and federal courts have cited **Alice Corporation v. CLS Bank** to invalidate hundreds of software patents
- Another decision, **Williamson v. Citrix Online**, sets a precedent for striking down patents that are “too broad and indefinite”