Intellectual Property Protection for Software

- Rights-based analysis
- Utilitarian analysis
Rights-based Analysis

• “Just deserts” argument — ownership of product
• Programming is hard work that only a few can do
• Programmers should be rewarded for their labor
• Criticism of “just deserts” argument
• Why does labor imply ownership?
• Could have a just society in which all labor went to common good
• Intellectual property not like physical property
Utilitarian Analysis

• Argument for protection
  • Copying software reduces software purchases…
    • Leading to less income for software makers…
    • Leading to lower production of new software…
    • Leading to fewer benefits to society
  • Arguments against protection
Protections for Software

- Software patents (methodology, function)
- Software copyrights (object code)
- Trade secrets (source code)
Patents / Copyrights

- Patents cover the underlying methodologies embodied in a given piece of software or the function that the software is intended to serve, independent of the particular language or code that the software is written in.

- Copyright prevents the direct copying of some or all of a particular version of a given piece of software, but do not prevent other authors from writing their own embodiments of the underlying methodologies.
Decades of Software Patent

• 1960-70’s
• 1980’s
• 1990-early 2000’s
• 2010’s
Open-Source Software

- Open source definition
- Examples of open-source software
- Benefits of open-source software
- Critique of the open-source software movement
Open Source Definition

- No restrictions preventing others from selling or giving away software
- Source code included in distribution
- No restrictions preventing others from modifying source code
- No restrictions regarding how people can use software
- Same rights apply to everyone receiving redistributions of the software (copyleft)
Examples of Useful Open-Source Software

- Sendmail
- Apache web server (Open Office)
- Interpreters for Perl, Python, Ruby, Haskell
- GNU compilers for C, C++, Objective-C, Fortran, Java, and Ada
- Linux
GNU Project and Linux

- GNU Project
  - Begun by Richard Stallman in 1984
  - Goal: Develop open-source, Unix-like operating system, and services
  - Most components developed in late 1980s
- Linux
  - Linus Torvalds wrote Unix-like kernel in 1991
- Benefits of Open-Source Movement
Beneficial Consequences of Open-Source Software

- Gives everyone opportunity to improve program
- New versions of programs appear more frequently
- Eliminates tension between obeying law and helping others
- Programs belong to entire community, education
- Shifts focus from manufacturing to service
Early Critique of the Open-Source Software

- Without critical mass of developers, quality can be poor
- Without an “owner,” incompatible versions may arise
- Relatively weak graphical user interfaces
- Poor mechanism for stimulating innovation (no companies will spend billions on new programs)
Ethical Software

- How could we ethically create a competing software product?
Intellectual Property

• What is intellectual property?

• Why has the control of intellectual property been a problem and an issue in the information age?
RW vs RO Culture

• What changed RW into RO in the last century?
• What can change that now?
• What stands in the way?
• How can a balance be set?
Creative Commons

- Under current copyright law, eligible works are copyrighted the moment they are created
- No copyright notice does not mean okay to copy
- Must contact people before using work
- That slows down creative re-use of others’ work
- Free Creative Commons license indicates
  - Which kinds of copying are okay
  - Which rights are being retained
IP Responsibilities

- Copying and Distributing
  - Sony, Napster, Grokster
- iPods, iTunes and Spotify, Pandora
  - market and norms
Anonymity in Use

• What are the advantages of anonymous use?
• Disadvantages?
• DMCA and DRM
• Trusted Systems
Projects
Privacy
Topics

- Perspectives on privacy
- Disclosing information
- U.S. legislation regarding privacy
- Public records
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Topics

• Government surveillance
• U.S. legislation on wiretapping
• Big Data….Data mining
• Identity theft
• Communication security ... Encryption
Perspectives on Privacy

• Defining privacy
• Harms and benefits of privacy
• Is there (should there be) a right to privacy?
• Privacy and trust

• Definition?
Defining Privacy

- Privacy -- control of access to a person and their personal information
- Access to a person
  - Physical proximity to a person
  - Information about a person
- Edmund Byrne: Privacy is a “zone of inaccessibility”
Privacy vs Intellectual Property Rights

- How same? -- How different?
- type of information
- stakeholders
Personal Information

- Examples/types of personal information
Personal -vs- IP

• IP... commercially valuable thought product
  • media companies, authors, consumers

• Personal... low commercial value
  • by-product of living life

• self, family, friends, companies, government
Privacy

• What are the benefits of privacy?
• What are the costs of privacy?
• Should we recognize a right to privacy?
  • How would we state this right?
Benefits of Privacy

• Individual responsibility and achievement
• Freedom to be yourself
  intellectual and spiritual growth
• Development of trusting, intimate relationships
Costs of Privacy

- Cover for illegal or immoral activities
- Fewer sources of help when needed
- Ignores people on society’s fringes
Is There a Right to Privacy?

- Morton Levine: Property rights → Privacy rights
- Warren and Brandeis: yes, reaction to press intrusion...
  - “right to be let alone”
- Judith Jarvis Thomson: no, “privacy rights” are derived from other rights
- US Bill of Rights: not directly, but elements of
Recent inventions and business methods call attention to the next step which must be taken for the protection of the person, and for securing to the individual what Judge Cooley calls the right "to be let alone" [10]. Instantaneous photographs and newspaper enterprise have invaded the sacred precincts of private and domestic life; and numerous mechanical devices threaten to make good the prediction that "what is whispered in the closet shall be proclaimed from the house-tops."
US Bill of Rights

- 3rd Amendment
  protection from quartering of soldiers

- 4th Amendment
  protection from unreasonable search and seizure

- 5th Amendment
  right to due process
  protection from self-incrimination
Privacy Right

• How would we state it if we were writing a privacy right to be in the bill of rights?
UN Declaration of Human Rights

- No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence.
Giving Private Information

- Why do we freely give private information to governments, companies, and other individuals?
Privacy and Trust

- Modern real-life is relatively private/anonymous
- Challenge: living among strangers
- Remedy: establishing reputations
  - Ordeal - lie detector, drug test, body scan
  - Credential - driver’s license, keys, credit card, ID card
- Establishing reputation → reducing privacy
Information Policies

• Given that we do give private information to government and companies,

• What are some general principles for handling of personal information that respect privacy?

• Fair Information Practices
Fair Information Practices

- No secret databases, those entered should know it
- People have access to personal information in databases
- People should be able to correct or amend errors
- Database owners cannot change how information is used without consent
- Database owners and users responsible for reliability of data and preventing misuse
Privacy Act of 1974

- Encoded the above principles
- Applies only to government databases
- Only covers records indexed by a personal ID
- No federal employee responsible for enforcing Privacy Act provisions
- Allows agencies to share records
Examples of US Public Records

- Census records
- Internal Revenue Service records
- FBI National Crime Information Center 2000
Census Records

- Census required to ensure every state has fair representation and distribution of benefits
- Number of questions and uses of records had been steadily rising
- Sometimes Census Bureau has broken confidentiality
  - World War I: draft resistors
  - World War II: Japanese-Americans
Census Analysis

- re-identification
- 87% by zip code, gender, date of birth
- statistical imputation
- CDC data, ethnicity, race, income
- microdata sets
- adding data or noise
Internal Revenue Service Records

- Much personal financial information on tax forms
- Some IRS employees have misused access to IRS records
- IRS has also misplaced laptops, tapes and diskettes containing records
FBI National Crime Information Center

- NCIC
- Compilation of databases related to various crimes
- Successes
- Helps police solve hundreds of thousands of cases
- Timothy McVeigh
- Problems???
Criticisms of the NCIC

- Erroneous records have led to false arrests
- Police have arrested innocent people with same name as someone in NCIC database
- FBI has used NCIC to keep records of people not suspected of any crime
- Corrupt law-enforcement employees have sold information and altered records
Non-governmental Databases

- Fair Credit Reporting Act
- The Family Education Rights and Privacy Act
- Video Privacy Protection Act
- Financial Services Modernization Act
- Children’s Online Privacy Protection Act
- Health Insurance Portability and Accountability Act
Fair Credit Reporting Act

- Promotes accuracy and privacy of information used by credit bureaus
- Ability to request and correct credit report
- Negative information kept only 7 years
- Exceptions
  - Bankruptcies: 10 years
  - Criminal convictions: indefinitely
Family Education Rights and Privacy Act (FERPA)

- Rights given to
  - Students 18 years, parents of younger students

- Rights include
  - Reviewing educational records
  - Requesting changes to erroneous records
  - Preventing release of records without permission
Video Privacy Protection Act

- Videotape service providers cannot disclose rental records without consumer’s written consent
- Rental stores must destroy personal information related to rentals within a year
Financial Services Modernization Act

- Creates “financial supermarkets” offering banking, insurance, and brokerage services
- Privacy-related provisions
  - Privacy policies must be disclosed to customers
  - Notices must provide an opt-out clause
  - Companies must develop procedures to protect customers’ confidential information
Children’s Online Privacy Protection Act

- Reduces amount of personal information gathered from children
- Online services must gain parental consent before collecting information from children 12 and under
Health Insurance Portability and Accountability Act

- Limits how doctors, hospitals, pharmacies, and insurance companies can use medical information
- Health care providers need signed authorization to release information
- Health care providers must provide patients with notice describing how they use medical information
Identity

• One way of thinking about the sum of your trail of personal information.
Identity Theft

- Background
- History and role of the Social Security Number
- REAL ID Act
- Debate over a national ID Card
Background

- Identity theft: misuse of another person’s identity to take actions permitted for the owner
- Credit card fraud #1 type of identity theft
- Over 10 million victims per year
- Average loss: $5,000
  - How gain access to this information?
Identity: Social Security Number

- Social Security cards first issued 1936
- Use of SSN has gradually increased
- SSN is a poor identification number
  - Not unique
  - Rarely checked
- No error-detecting capability
The REAL ID Act

- Signed in May 2005
- Significantly changes driver’s licenses in the United States
- New licenses by end of 2008
  - Required to open bank account, fly on commercial airplane, or receive government service
  - Requires applicants to supply 4 different ids
  - May contain a biometric identifier
  - Must contain data in machine-readable form
National ID Card

• Should we have a national ID Card?

• If so, what should be on it.. how would it work?
Arguments for a National ID Card

- Current ID cards are second-rate
- Would reduce illegal entry to U.S.
- Would reduce crime, better tracking
- Better delivery of government services
- Other democratic countries have national ID cards
Arguments against a National ID Card

• No card positively guarantees identification
• No biometric-based system is 100% accurate
• No evidence it will reduce crime
• Makes government data mining simpler