Software and Copyrights

- control unauthorized copying of software (source, object, or machine code)
- also defines what is authorized copying (consumer protections)

Exercise 1

Copyright protection is for “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.”

- in general, copyright law protects the author’s expression
- but not the idea behind the expression (patents)

Basic history of Copyright Law and Software ...

- Software not originally considered protected (not considered “fixed, tangible objects”)
- In 1976, computer programs became proper subject matter for copyright (Copyright Act)
- In 1980, Congress allowed programs to be copied and adapted by the owner
- Courts clarified the Copyright Act gives computer programs the status of “literary works”
- In 1998, Congress passed the Digital Millennium Copyright Act (DMCA) which criminalizes attempts to or software that circumvents digital rights management (DRM) that controls access to copyrighted work
Rights of copyright owner

- as a copyright owner, you have exclusive rights to distribution
- can seek redress (e.g., sue for damages) from any member in the chain of distribution
  - regardless if they knowingly or unknowingly violated the copyright
  - some limits to this, e.g., DMCA doesn’t include ISPs

What can be copyrighted with software? – Abstraction-Filtration-Comparison (AFC) test

- Proving copyright infringement requires proving:
  - ownership of the copyright
  - that copying took place
- to prove copying took place, can either show directly or more frequently that:
  1. the violator had access to the copyright material
  2. there is substantial similarity between the copyrighted work and the violator’s work
- courts have had to develop ways to determine violations
  - originally, court suggested identifying the main function of a program as the idea (which cannot be copyrighted)
  - and everything that is not strictly necessary for the purposes of the idea can be considered expression (copyrightable)
- Evolved into the AFC test (for substantial similarity of two programs)

1. Identify the increasing levels of abstraction of the program (Abstraction)
   - lowest level is the concrete code, which is clearly copyrightable
   - highest level constitutes the general function (idea), which is not copyrightable
   - basic levels: individual instructions, groups of instructions organized into a hierarchy of “modules”, functions of lowest-level modules, functions of higher-level modules, the “ultimate function” of the code
2. Remove aspects that are not legally protectable by copyright (Filtration)
   - analysis done at each level of abstraction
   - three factors for discluding from copyright:
     * elements dictated by efficiency (elements incidental to idea are not protected)
     * elements dictated by external factors (e.g., standard techniques and designs)
     * elements taken from the public domain
3. Compare each element protected under copyright with violators (Comparison)
Rights of end users

- Copyright Act allows copies, even without the authorization of the copyright holder
- "Owners" of copies can make additional copies for:
  - archival purposes
  - as an essential step in the utilization of the computer program
  - for maintenance purposes
- An "owner" of a copy also has the right to resell the copy under the "first sale" doctrine
  - however, the rights are then exhausted
- These are considered "fair uses"
  - another "fair use" is modification for personal use
  - making copies for (legitimate) reverse engineering is also fair use
    * as long as you "own" the software
    * unless it violates the EULA (which preempt fair use rights)
    * DMCA further restricts reverse engineering to "interoperability"
- Most software though is "licensed not sold"
  - Meaning that as a purchaser (i.e., licensee), you do not become the owner
  - Courts have ruled differently on sold vs licensed
Issues with the First-Sale Doctrine

- digital copies are problematic because an actual transfer doesn’t happen
- instead, the recipient receives a new copy of the work, while sender has original
- digital works can be copied without any flaws and easily disseminated worldwide
- US Copyright Office: the “tangible nature of a copy is a defining element of the first-sale doctrine and critical to its rationale”
- Doesn’t apply if the copy is “by rental, lease, loan, or otherwise without acquiring ownership of it”

In 2012, European Court of Justice ruled:

- permissable to resell software licenses
- first-sale doctrine applies whenever software was originally sold to a customer for an unlimited amount of time
- thus, prohibiting any software maker from preventing the resale of their software by any legitimate owner
- original owner can no longer use the software after resale

Exercise 2

Exercise 3–4