

Lecture 7.1

Software Licensing



CS 230: Ethical Issues in Computing
Fall 2020
Dr. Henderson
BSU

Announcements

- My Grades Walk-through
- LA-4 Video Post
- LA-4 Challenge B
- LA-5 Due Thursday
- New Extra Credit Available
- Oral Presentation Teams

Last Time

- Digital Rights Management
 - Rise and Fall
- File Sharing
 - Peer-to-peer
 - Cloud
- Plagiarism

Today

- Software as Intellectual Property
- Software IP protection
 - Copyright
 - Patent
 - Ethics of Software Protection

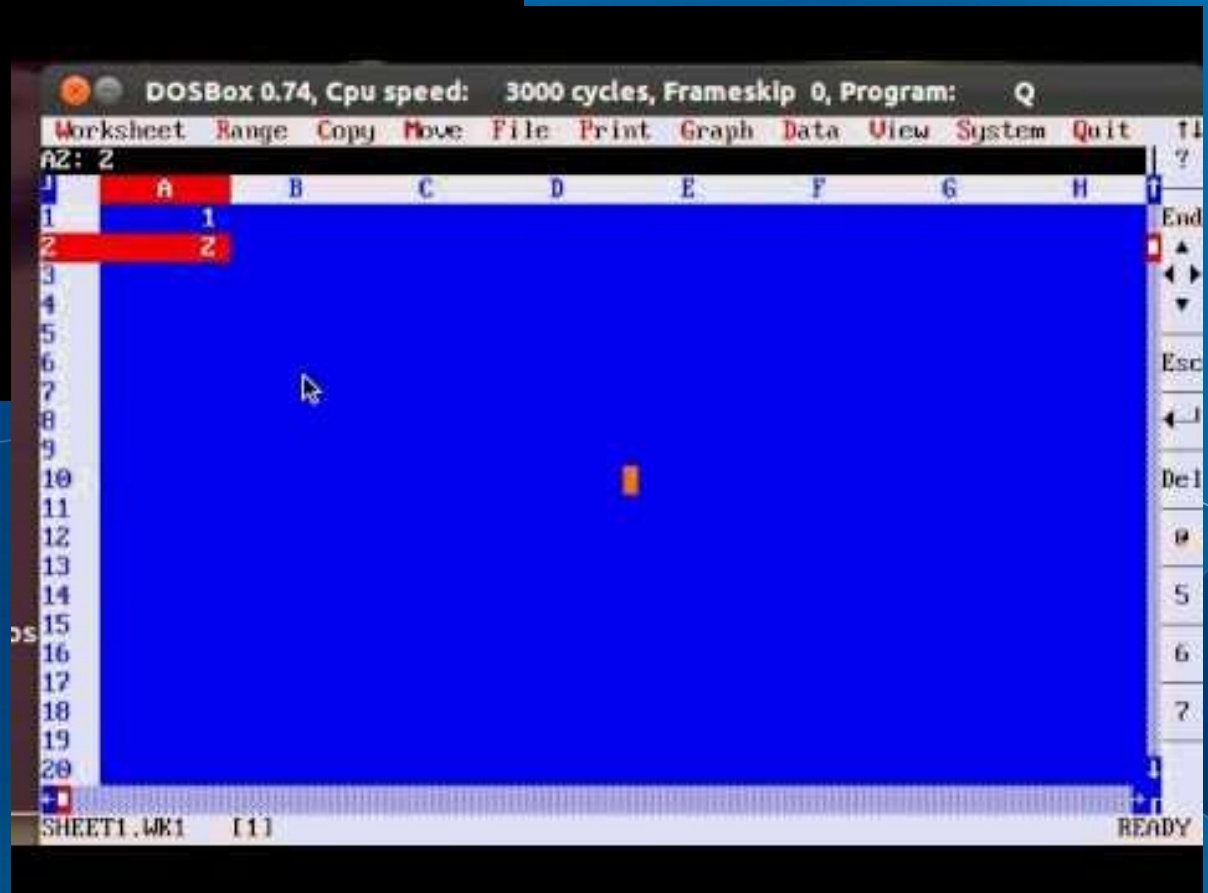
Software Intellectual Property

- Where is the Intellectual Property?
 - Code?
 - Executables?
 - UI?
 - 1996: Lotus v. Borland
 - “... to decide whether a computer menu command hierarchy is copyrightable subject matter”

Software Intellectual Property

The screenshot shows a DOSBox window with a spreadsheet application. The menu bar includes: **Worksheet**, **Range**, **Copy**, **Move**, **File**, **Print**, **Graph**, **Data**, **Quit**. The status bar at the bottom displays **WinworldPC** and a large number **99,999,999,999**. The spreadsheet data is as follows:

	A	B	C	D	E
1	Name	Code	Sales		
2	Barber	Ba	150,000		
3	Sallici	Sa	432,000		
4	Benedict	Be	179,500		
5	Axelhouse	Ax	199,000		
6	Gottfried	Go	295,000		
7	Poppitt	Po	273,000		
8	Thompson	Th	130,000		
9	Wilson	Wi	288,700		
10	Davis	Da	354,500		
11	Kapinsky	Ka	277,900		
12	Miller	Mi	278,500		
14	WinworldPC	??	\$9,999,999,999		



US Copyright Law

- Copyright protection began 1964, updated 1976
- A “computer program” is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.
- “Literary works” are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied

Software Copyright

- What gets copyrighted?
 - Expression of idea, not idea itself
 - Object program, ~~not source program~~
 - Source code (sometimes trade secret)
- Violations
 - Copying a program to give/sell to others
 - Preloading onto hard disk of computer being sold
 - Distributing a program over the Internet

Software Copyright

- Any original code you write is automatically copyrighted, just like poems, music, etc.
- All non-government software is copyright protected in both source and object form.

imap4.py x

```
# -*- test-case-name: twisted.mail.test.test_imap.IMAP4HelperTests -*-  
# Copyright (c) Twisted Matrix Laboratories.  
# See LICENSE for details.
```

```
"""
```

```
An IMAP4 protocol implementation
```

```
@author: Jp Calderone
```

```
To do::
```

```
    Suspend idle timeout while server is processing  
    Use an async message parser instead of  
    Figure out a way to not queue multi-me  
    Clarify some API docs (Query, etc)  
    Make APPEND recognize (again) non-exis  
"""
```

```
import binascii  
import codecs  
import copy
```

admin.py x

```
*****  
# admin.py - viaMail admin implementation  
# Copyright (C) 2020 Eric K. Henderson. All Rights Reserved  
#  
# Eric K. Henderson  
# 2/24/20  
#-----  
import os.path  
import os  
from import config
```

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

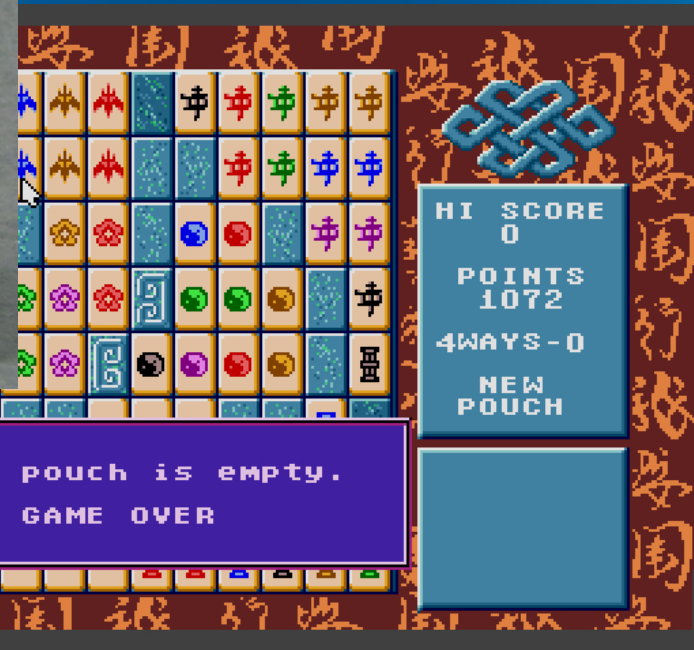
Apple vs. Franklin, 1983

- Apple sues Franklin for copyright
- Court rules in favor of Franklin
- Appellate court overturns



Sega vs. Accolade, 1992

- Is disassembly fair use if it is the only way to access uncopyrighted elements and there is a legitimate reason for seeking to do so?



Oracle vs. Google, 2010 - today

- First phase: APIs can be copyrighted
- Second phase: commercial re-implementation of APIs *not* fair use
- Supreme Court will hear in 2020, *this week*



Safe Development

- Reverse engineering okay
- 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

- 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 Copyright vs. Patent

	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

Software Patents

- Thousands of software patents now exist
 - Microsoft files ~3000 patents 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
 - Bet companies would rather settle than spend time and money going to trial
 - RIM didn't settle quickly; ended up paying \$612 million

Software Patents

- 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 Patent Wars

- 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

Software Patent Wars

- 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
- Samsung countersues Apple

Smartphone Patent Wars



Smartphone Patent Wars

- Escalates until more than 100 lawsuits filed by various manufacturers globally; billions of dollars in legal fees



Software Patent Wars

- 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”

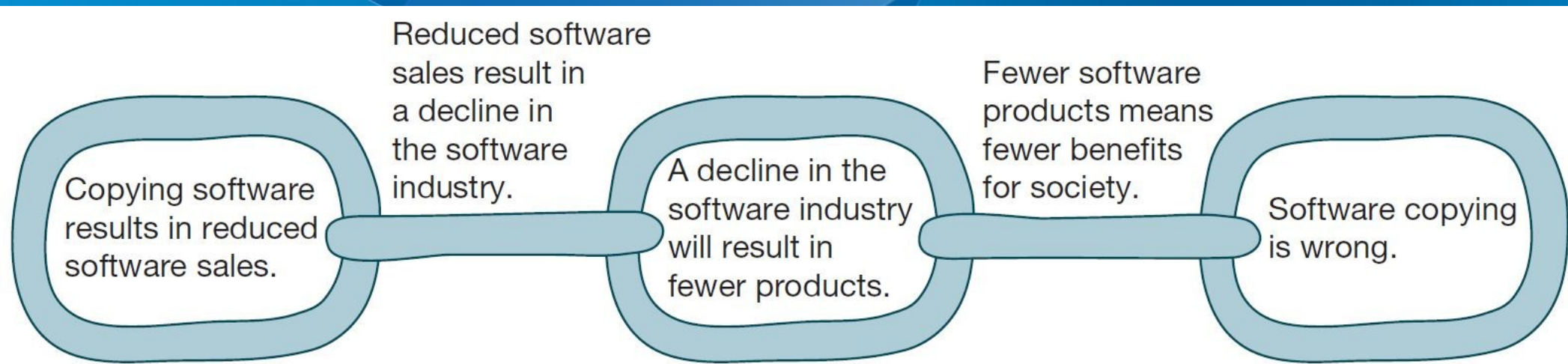
Do We Have the Right System in Place?

- Software licenses typically prevent you from making copies of software to sell or give away
- Software licenses are legal agreements
- Not discussing morality of breaking the law
- Discussing whether society should give intellectual property protection to software

Rights-based Analysis

- “Just deserts” argument
 - Programming is hard work that only a few can do
 - Programmers should be rewarded for their labor
 - They ought to be able to own their programs
- Criticism of “just deserts” argument
 - Why does labor imply ownership?
 - Can imagine a just society in which all labor went to common good
 - Intellectual property not like physical property

Argument Why Software Copying Is Bad



The chain of reasoning of a consequentialist argument for why copying software is bad. (Beth Anderson)

Utilitarian Analysis

- Argument against copying
 - 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
- Each of these claims can be debated
 - Not all who get free copies can afford to buy software
 - Open-source movement demonstrates many people are willing to donate their software-writing skills
 - Hardware industry wants to stimulate software industry
 - Difficult to quantify how much society would be harmed if certain software packages not released

Conclusion

- Natural rights argument weak
- Utilitarian argument not strong, either
- Nevertheless, society has granted copyright protection to owners of computer programs
- Breaking the law is wrong unless there is a strong overriding moral obligation or consequence

Summary

- Intellectual property rights for software
- Copyright protection less controversial
- Patent protection highly controversial
 - Alice v. CLS Bank may be a turning point

Next Time

- Open-Source Software
- Read 4.9-4.10 if you haven't already