

Digital Distribution

CSE 120 Winter 2020

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Quiz 2

- You will have 20 minute to complete the quiz.
- No outside materials are allowed – just your mind.
- If you have a question, raise your hand.
- **Relax.** You are here to learn 😊.

- Finish: 3:51

*should say:
Q2) x specifies the horiz.
center (not y)*

Administrivia

- ❖ Assignments:
 - Jumping Monster [submit] due tonight (1/31)
 - Creativity Planning (2/4)
 - Portfolio Update 1 due Wednesday (2/5)
 - Creativity Project (2/7)

Biggest Impact of Digitization?

- ❖ Digital information can be copied *instantaneously* and *without loss*
 - Analog copying: almost always with loss
 - Biological copying: mutations and recombination



Copying is Easy

- ❖ `myCopy = myData;`
- ❖ File: right-click → Copy

- ❖ Lossless, instantaneous copying leads to a wealth of societal issues:
 - Privacy issues
 - Theft of private data
 - Interception of transmitted data
 - Persistence of digital data
 - Usage of digital works
 - Copyright
 - Legal, cultural, and economic impacts

Prompts

- ❖ Do you think the following are “right”? Legal?
How have the rules changed in the digital vs. physical realm?
 - Theft: Taking something from someone else without permission
 - Giving a song that you purchased to your friends
 - Your friend sends you a photo; you share it without asking
 - Using an image you found on the Internet on your website (or as your profile picture)

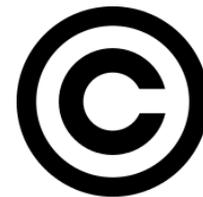
Outline

- ❖ **Copyright**
- ❖ Sharing and open-source
- ❖ Creative Commons

Intellectual Property (IP)

- ❖ **Intellectual property** is something produced by one's intellect
 - *e.g.* artwork, books, photos, music, poetry, performances, software
- ❖ Distribution, copying, and sale of a work is the *right of the creator*
 - It is illegal to copy someone else's creation for anything "other than personal use"
 - *You* are the creator of all that you create
 - Unless otherwise specified by a contract (*e.g.* at work)

Copyright: A Primer



- ❖ <http://www.youtube.com/watch?v=Uiq42O6rhW4>



Copyright Terminology Review

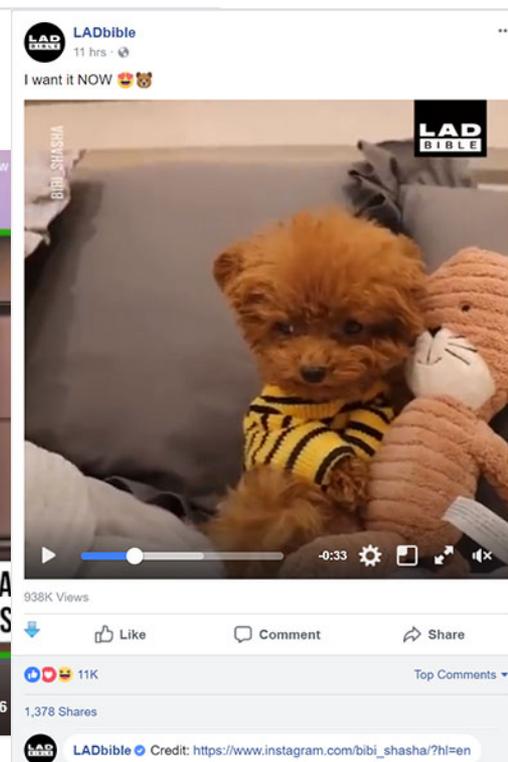
- ❖ **Copyright:** legal right granting creator of an original work *exclusive rights* over use and distribution
 - Set by laws of a *country* 
 - **Public domain:** exclusive IP rights expired, forfeited, or inapplicable
- ❖ **Fair Use:** *right* to use copyrighted material without permission in specific circumstances
 - *e.g.* commentary, search engines, criticism, parody, news, scholarship, education
 - Judged based on (1) purpose/character of use, (2) nature of the work, (3) amount used, and (4) effect on work's value

Copyright Notes

- ❖ Applies to wide variety of works: articles, artwork, books, choreography, photos, podcasts, screenplays, *software*, songs
 - Does *not* apply to ideas, facts/data, or logos
- ❖ **Copyright is automatically applied**, even without the copyright symbol ©!
 - Once it is “captured in a fixed format”
- ❖ Copyright has a **limited duration**
 - Usually tied to life of creator
- ❖ **Attribution** is not a substitution for permission

Copyright Violations

- ❖ Why would people violate copyright?
 - Inadvertent – copying is too easy!
 - Inadvertent – unknown copyright status of material or misunderstanding of fair use
 - Financial – don't want to pay
 - Financial – making money through clicks, views, and advertising



Copyright Violations

- ❖ Most people who have posted on the Internet have probably violated copyright laws at one point
- ❖ Illegal sharing of music and videos
 - Napster, Kazaa, DC++, BitTorrent
- ❖ Illegal sharing of games
 - ISO images of games (to be played on emulators)
 - “Cracked” versions of games
- ❖ Illegal usage of photos and works
 - Misrepresentation, plagiarism

Digital Rights Management (DRM)

- ❖ Technologies that are used to restrict usage of proprietary hardware and copyrighted works
 - Not universally accepted or used; can be inconvenient
- ❖ Software: Product (serial) keys
 - Internal algorithm checks validity of entered key
 - “Cracked” keys can fool the validity check
- ❖ Audio: non-standard CDs or restricted usage of downloaded music
 - Only playable with certain devices or applications
- ❖ Games: Persistent online authentication

Digital Millennium Copyright Act (DMCA)

- ❖ Anti-circumvention provisions
 - Illegal to attempt to circumvent DRM (even if copyright isn't breached)
 - Often viewed as anti-tinkering
 - Proven to be rather toothless – circumvention still happens
- ❖ Safe harbor provisions
 - Protect “providers of online services” (e.g. ISPs, YouTube, Facebook) from being sued for copyright infringements of its users
 - DMCA Takedown Notice: copyright holders can request sites to remove or block access to material that violates their copyright

Most Effective Piracy Solution?

- ❖ Online Streaming!
 - Make it so convenient to stream content (video, music, games) that pirating seems unnecessary



Copyright and Laws

- ❖ Owners must “defend” their copyrights
 - RIAA and MPAA are at war with users
- ❖ Stop Online Piracy Act (SOPA) – 2011, never voted on
 - Would have allowed court orders to bar access to websites with copyright infringement to advertising networks, payment facilities, and Internet service providers
 - Service blackout in 2012 by Wikipedia, Google, and others in protest
- ❖ As of 2016, only 4 members of Congress (all in the House) have CS degrees

The following slides are considered “extra” material – since we didn’t get to them in lecture, we won’t test you on them.

However, they’re left here in case you find them interesting.

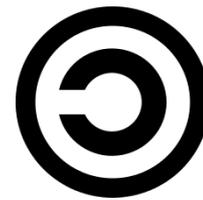
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- ❖ Creative Commons

Copyright and Software

- ❖ Copyright applies to software *source code*
 - Software is often distributed in *executable* form so that the source code is not viewable
 - **Proprietary software** has IP rights restrictions – copyright of source code or patent rights
- ❖ Rapid growth – developers wanted to share ideas and build more complex software
 - Option 1: grant permission on a case-by-case basis
 - Option 2: put software in the public domain

↑ works derived from public domain
can be copyrighted, though



Copyleft

- ❖ Form of *licensing* that offers people the right to freely distribute copies and modified versions of a work with the stipulation that the same rights be preserved in derivative works down the line
 - <http://www.youtube.com/watch?v=u2k07BbPkDk>



Open-Source Licenses

- ❖ GNU General Public License (v2, v3)
 - ❖ Apache License
 - ❖ MIT License
 - ❖ BSD License
 - ❖ Public Domain
- These licenses differ in:
 - Attribution requirements
 - Commercial use restrictions
 - Derivative work restrictions

Why Use Open Source?

❖ Pros:

- Cheaper – free to install on all machines
- Crowd-sourced fixes and improvements
- Can persist beyond company that created it
- You can personally contribute and become part of the community
- Can reduce possibility of security flaws

❖ Cons:

- Can be more difficult to use and support

Open-Source Software

	Proprietary	Open-Source
Operating Systems	Windows, Mac OS	Linux, Android *
Web Browsers	IE/Edge, Safari	Chrome *, Firefox
Email Client	Outlook	Thunderbird
Music Player	Windows Media Player, iTunes	VLC
Audio Editing	Cubase, Logic Pro	Audacity
Image Editing	Photoshop	GIMP
Text Editor	Word, Notepad, Sublime Text	Notepad++, VS Code

* includes some proprietary software for accessing Google services

Outline

- ❖ Copyright and protection
- ❖ Sharing and open-source
- ❖ **Creative Commons**

Open Source for Non-Software?

- ❖ Copyright \approx *all* rights reserved
 - What if you don't want/need *all* rights?
- ❖ You can use a **Creative Commons license**
 - Maintained by Creative Commons non-profit organization, founded in 2001
 - Specify what uses you want to allow *without needing permission*

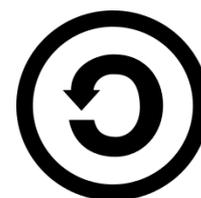
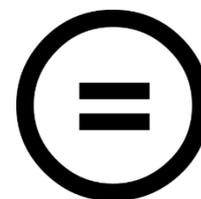
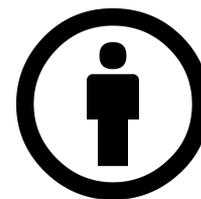
Layers of Creative Commons Licenses



- ❖ Legal layer
 - Sustain lawsuits
- ❖ Human-readable
 - Understandable for 'everybody'
- ❖ Machine-readable
 - Understandable for search engines

Creative Commons Symbols

- ❖ Attribution (BY)
 - Must give creator credit in derived/distributed works
- ❖ Noncommercial (NC)
 - Derived/distributed work can't be sold
- ❖ No Derivative Work (ND)
 - Must use AS IS
- ❖ Share Alike (SA)
 - Derivative works may be distributed *under the same license as this one*



Types of Creative Commons Licenses



↪ CSE120 material freely distributed online under this license

CC vs. Open Source

- ❖ Creative Commons Licenses are **not** recommended for program code
 - Use open-source licenses instead

- ❖ CC does *not* account for:
 - Patents
 - License compatibility
 - Binary vs. source code case distinction

Summary

- ❖ **Copyright** is intended to protect the rights to **intellectual property** by the owner
 - Often protected by Digital Rights Management software
 - Legal protections and implementations are still a “work in progress”
- ❖ **Open-source** licenses for software allow you to freely distribute your source code for use by others who agree to follow the same licensing rules
- ❖ For works that you would like to share, you can waive *some* of your rights using **Creative Commons** licenses