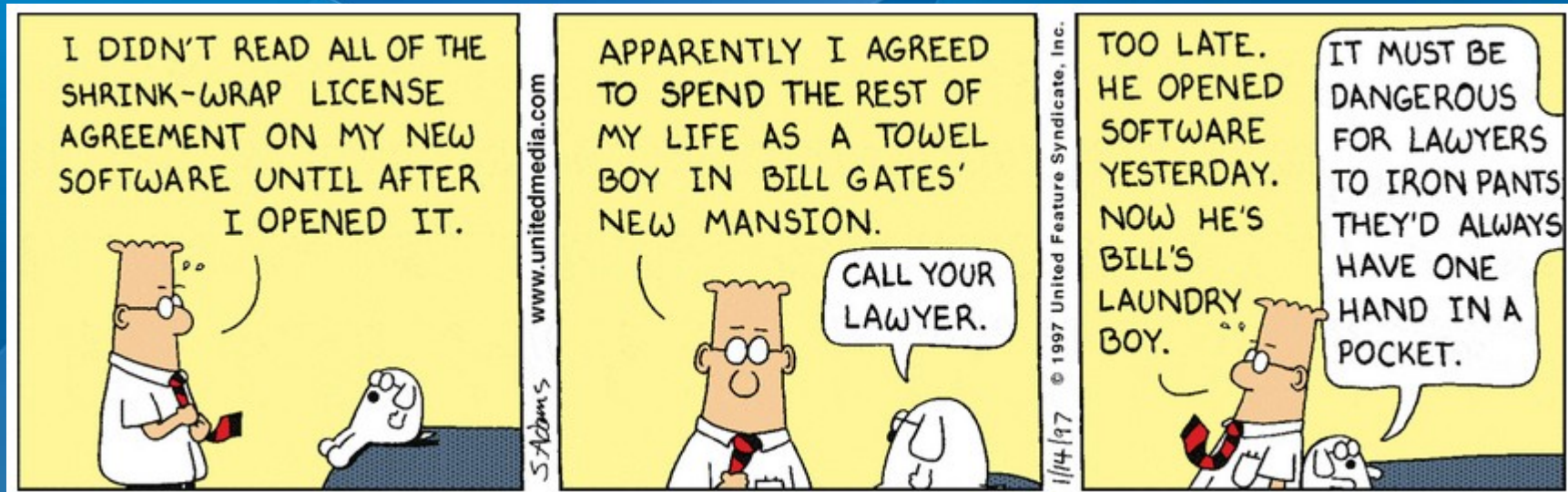


Lecture 7.2

Software Licensing



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

Announcements

- LA-5 due tonight
- LA-4, LA-5 retakes open tomorrow
- LA-6 due next Thursday at midnight
 - Quiz (20 questions, multiple-choice/true-false)
 - Short Answer
- LA-6 Challenges

Last Time

- Software as Intellectual Property
 - Source
 - Object Code, Applications, OS
 - UI, Game Screens, etc.
- Legal protections for software
 - Copyright
 - Patents
- Ethical Analysis of Software IP

Today

- Software Licenses and EULAs
- Open-Source Software
 - Criticism of Proprietary Software
 - Benefits of OSS
 - Examples
- Creative Commons

Software Licensing

- Allow copyright holders to release their work to the public
- Grants users ability to use or redistribute without violating copyrights
- Terms of Service
- EULA (End User Licensing Agreement)

Criticisms of Proprietary Software

- Increasingly harsh measures being taken to enforce copyrights
- Copyrights are not serving their purpose of promoting progress
- It is wrong to allow someone to “own” a piece of intellectual property



FREE SOFTWARE FOUNDATION

- GNU's Not Unix (GNU)
- Free's Not Free
- Four Essential Freedoms
 - Run
 - Change
 - Redistribute
 - Redistribute changes
- Copyleft
- Fundamentally Share - Alike



FSF General Public License

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

...

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

FSF Copyleft

- AGPL – Affero GPL
- LGPL – Lesser GPL
- FDL – Free Documentation License

Open Source Initiative

- Alternative to FSF/GPL
- Encourage more open source software
- Large community
- Powers much of the web
- FOSS/FLOSS



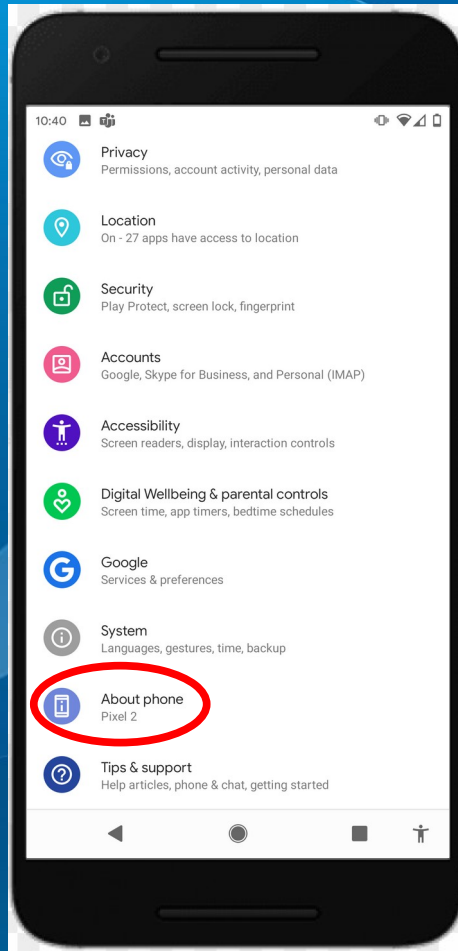
Open Source Definition

- Less restrictive than GPL:
 - Do what you want with it
 - Don't claim it as your own
 - Give proper credit
 - No implied warranties

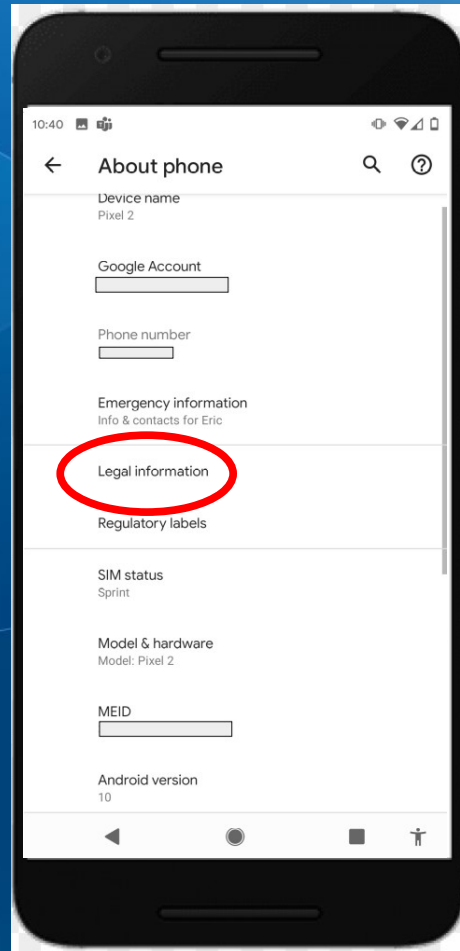
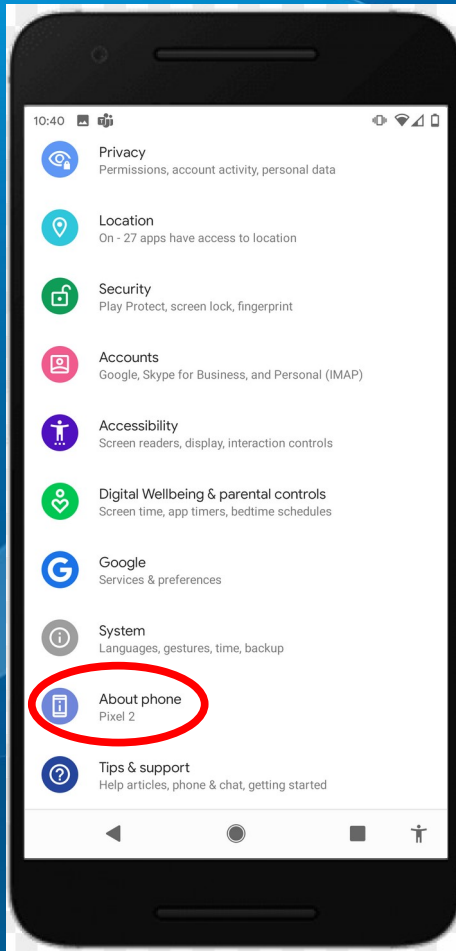
OSI Approved Licenses

- BSD: Berkeley Software Distribution
 - Simple, permissive license
 - Only requires retaining BSD notice
- MIT
 - Similar to BSD, but allows re-licensing
- Apache 2.0
 - Similar to MIT and BSD
 - Protects user from patent infringement

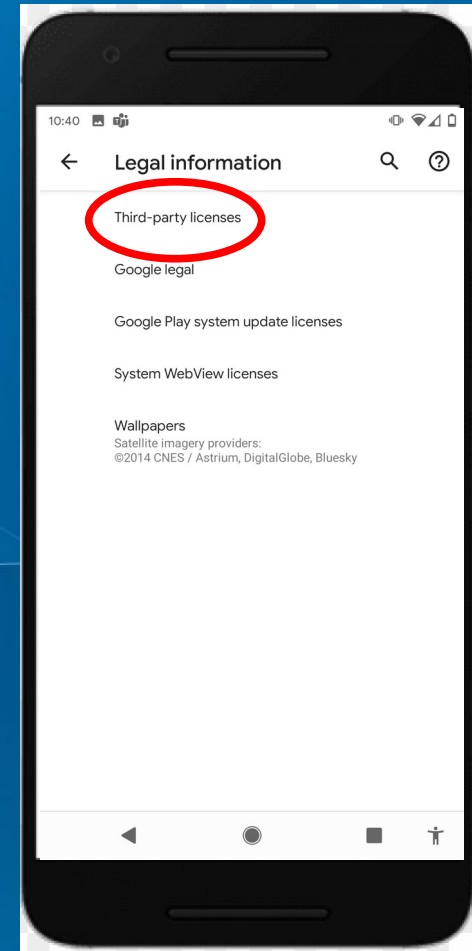
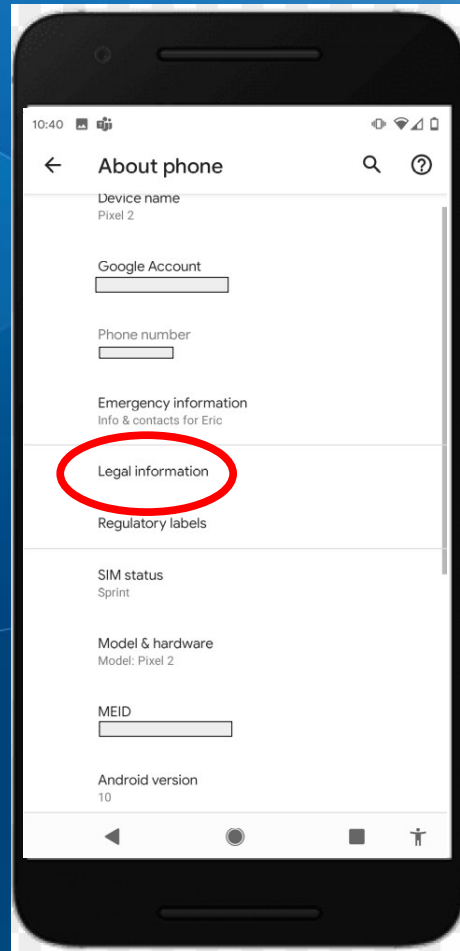
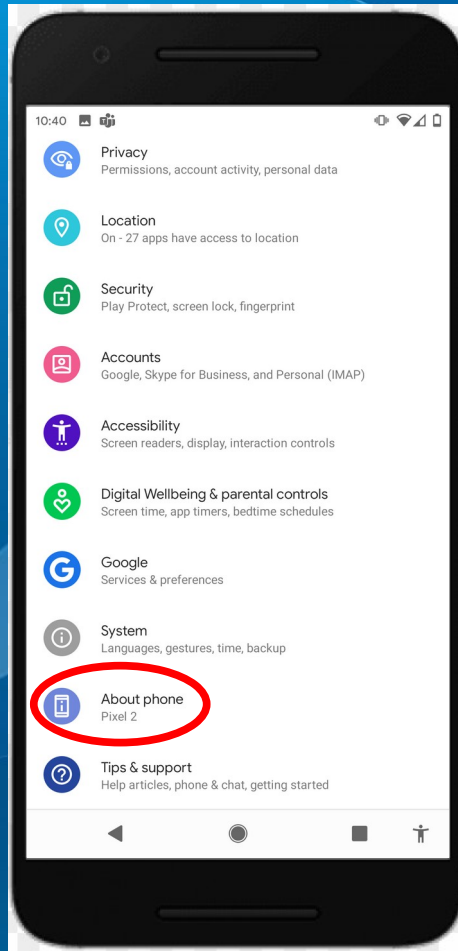
Example Usage: Android



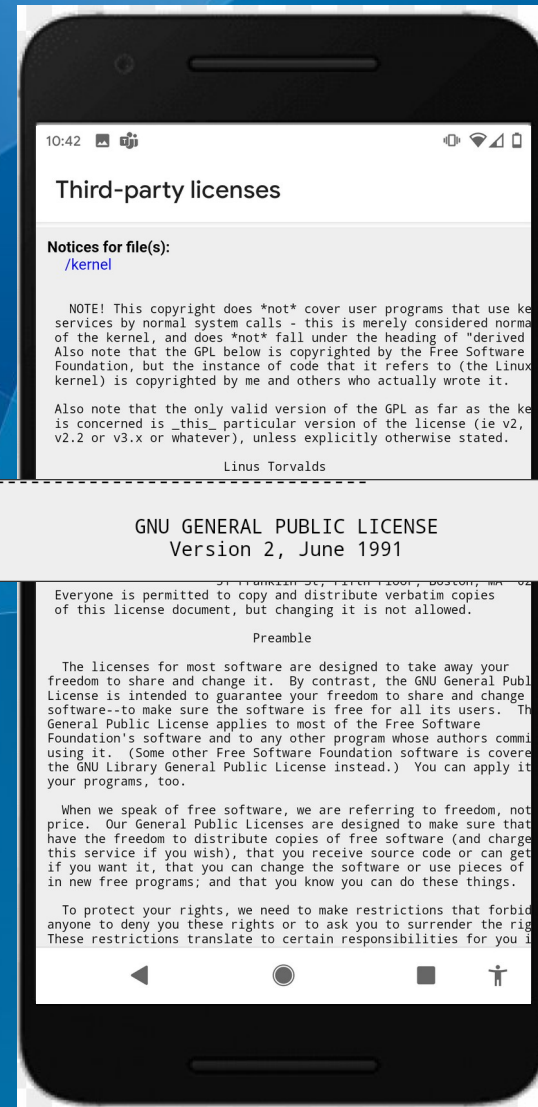
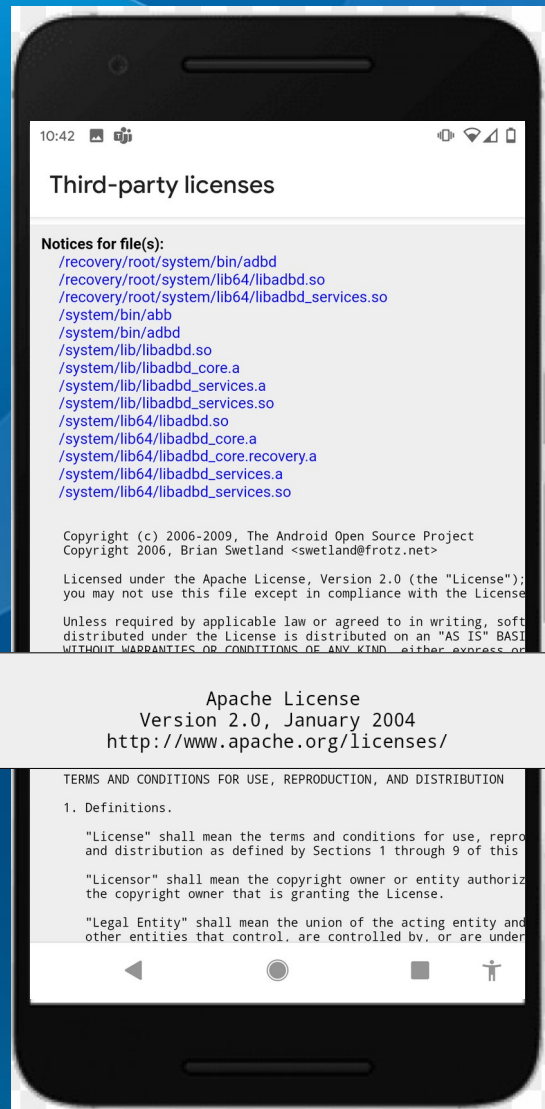
Example Usage: Android



Example Usage: Android



Example Usage: Android



Beneficial Consequences

- 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
- Shifts focus from manufacturing to service

OSS Examples in the Wild

- BIND
- Apache
- Sendmail
- Android OS for smartphones
- Chrome and Firefox
- OpenOffice.org
- Perl, Python, Ruby, TCL/TK, PHP, Zope
- GNU compilers: C, C++, Objective-C, Fortran, Java, Ada

Case Study: GNU and Linux

- GNU Project
 - Begun by Richard Stallman in 1984
 - Goal: Develop open-source, Unix-like operating system
 - Most components developed in late 1980s
- Linux
 - Linus Torvalds wrote Unix-like kernel in 1991
 - Combined with GNU components to make an OS
 - Commonly called Linux

Impact

- Linux an alternative to proprietary versions of Unix
- 2014
 - 97% world's 500 fastest supercomputers
- 2017
 - 100% world's 500 fastest supercomputers
- 2018
 - Microsoft announced Azure Sphere, a Linux-based OS for IoT
 - pre-orders began for Atari VCS, a gaming console that is powered by the Linux kernel
- 2019
 - Microsoft announced Windows Subsystem for Linux 2, which will rely on a pre-installed Linux kernel built by Microsoft. This marks the first time that the Linux kernel has shipped with a Microsoft OS.
 - South Korea announced that it was looking to migrate its major government systems to Linux, due to the pending end of support for Windows 7

Streamlining Creative Re-use

- Under current copyright law, eligible works are copyrighted the moment they are created
- No copyright notice does not mean it's okay to copy
- Must contact people before using work
- That slows down creative re-use
- Free Creative Commons license indicates
 - Which kinds of copying are okay
 - Which rights are being retained
- Flickr has more than 250 million photos available under Creative Commons licenses

Creative Commons



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Licensing in Practice

- User
- Creator
- Employee

User Licensing

- Reasonable Use
- Restrictions on copying and distribution
- No reverse engineering
- Right-to-fix
- Read the EULA

Read the EULA

By placing an order via this Web site on the first day of the fourth month of the year 2010 Anno Domini, you agree to grant Us a non-transferable option to claim, for now and for ever more, your immortal soul. Should We wish to exercise this option, you agree to surrender your immortal soul, and any claim you may have on it, within 5 (five) working days of receiving written notification from gamesation.co.uk or one of its duly authorized minions.

We reserve the right to serve such notice in 6 (six) foot high letters of fire, however we can accept no liability for any loss or damage caused by such an act. If you a) do not believe you have an immortal soul, b) have already given it to another party, or c) do not wish to grant Us such a license, please click the link below to nullify this sub-clause and proceed with your transaction.

Creator

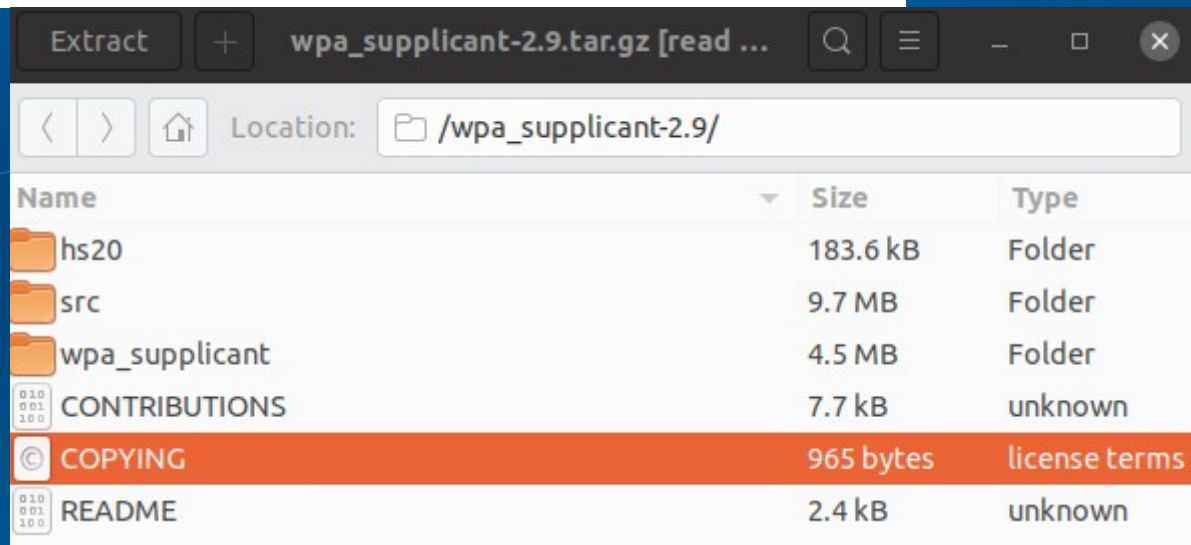
- Automatic copyright of any legitimate original work
- Free to choose any license:
 - OSI license to encourage use
 - GPL license to donate to public
 - Productize and sell
 - License to private company

Licensing Example: wpa_supplicant

```
/*
 * Common hostapd/wpa_supplicant ctrl iface code.
 * Copyright (c) 2002-2013, Jouni Malinen <j@w1.fi>
 * Copyright (c) 2015, Qualcomm Atheros, Inc.
 *
 * This software may be distributed under the terms of the BSD license.
 * See README for more details.
 */
#ifndef CONTROL_IFACE_COMMON_H
#define CONTROL_IFACE_COMMON_H

#include "utils/list.h"

/* Events enable bits (wpa_ctrl_dst::events) */
#define WPA_EVENT_RX_PROBE_REQUEST BIT(0)
```



The screenshot shows a file manager window titled "wpa_supplicant-2.9.tar.gz [read ...]". The address bar indicates the current location is "/wpa_supplicant-2.9/". The main area displays a list of files and folders with columns for Name, Size, and Type.

Name	Size	Type
hs20	183.6 kB	Folder
src	9.7 MB	Folder
wpa_supplicant	4.5 MB	Folder
CONTRIBUTIONS	7.7 kB	unknown
COPYING	965 bytes	license terms
README	2.4 kB	unknown

Employee

- IP created is owned by company
- Employee Agreements
- Non-compete Agreements
- Non-disclosure Agreements

Summary

- Open-source movement
 - Alternative to proprietary model of software development
 - Success stories include Linux, Android, Firefox, and OpenOffice
- Creative Commons
 - An effort to create a greater sharing culture in the arts
 - Allows copyright holders to indicate up front the conditions under which others can use their work

Next Time

- LA-7 – Privacy
 - Read Chapter 5
- Participation Point due tomorrow midnight