

Students studying for the AP Computer Science exam, starting in the Fall of 2014, should append this text after the “Legal and Ethical Computing” section in Chapter One, Lesson One.

Software Security Measures

Now that you understand the basic ethics involved in software programs, what happens when someone disregards these ethical rules? How can a programmer or a user protect themselves and their data? Computer owners need to guard both their computer and the data on the computer from harm. This data may come in the form of email, documents, personal data, or even large databases filled with information.

There are several tools available to secure both software and data on modern computers. The most popular tool is something called *anti-virus* software. These software programs can be installed on just about any computer and are used to prevent, detect and remove any security breaches on a computer system. This includes the removal of computer *viruses*, which are malicious programs that are designed to damage your computer or allow a remote user to control your system. These programs are called “viruses” because one infected computer is able to infect another computer when the virus software makes a copy of itself.

Computer operating systems and individual programs like databases may identify users with a *login*. A login is a combination of a *username* and *password*. The username uniquely identifies the user, and the password is used to confirm the person typing in the name is actually who they claim to be. When a login is created, the username and password are given only to the authorized user, who should keep the password secret. When the user needs to access a computer or program they can type in their username and password to gain entry.

Another useful security tool is something called a *firewall*. A firewall can either be software-based or hardware-based and is used to help keep a network secure. The primary purpose of this tool is to control the incoming and outgoing network traffic by analyzing the data as it moves through the network. Software firewalls can be part of your operating system and will work to keep one computer safe from unwanted connection attempts from the outside world. A hardware firewall will protect an entire network from unwanted or suspect network traffic.

One final tool we'll discuss for securing your data is the practice of *encryption*. Encryption is the process of encoding data in such a way that only programs with an access key can recover the original data. An encryption program will translate plain text data into unreadable cipher text using an encryption algorithm and an *encryption key*. The key is carefully kept as a secret, shared only with the programs or users that are authorized to access the data. When an authorized user wants to view the data, they are able to decode the cipher text using that secret key.

Software License Agreements

Software license agreements or End-User-License-Agreements (EULAs) are documents containing the terms and conditions you agree to with the publishing company before you begin using software. The terms and conditions in a EULA document can be very complicated and hard to read, and each EULA may be a little bit different. In the simplest of terms, most EULAs will set common conditions:

Concept	Short Explanation
Don't copy or sell	You may not sell, copy, or distribute any part of the software to others.
Licensed, not sold	The software is licensed to you only for installation on one computer.
Agree to use	By using the product, you agree to the terms of the EULA agreement.
Company still owns product	The company still owns the software intellectual property rights; you do not.
Company may sue you	The company may sue you if it finds that you have violated the EULA agreement.
Use at your own risk	You can't use the company for any damages to your computer for any reason.
Company can make changes	The company can make any changes to the product it likes at any time.
Company owns naming rights	The company still owns the product trademarks; you do not.

EULA Discussion

Do you understand each concept and the short explanation? Review the sample EULA below and try to read the language. Even experienced English students may have a hard time! Ask your classmates or teacher for clarification of words that are hard to understand. Be prepared to answer these questions in a class discussion:

- Which paragraphs in the sample EULA match to each concept in the table above? Label each paragraph with the corresponding concept that means the same thing.
- Which EULA condition is most surprising to you, and why?
- Do you notice or read the EULA agreements when installing software on your computer?

Sample EULA

ACME, Inc, Version 2013

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Please read ALL of this License Agreement prior to using SuperGizmo™ software.

License Agreement ("Agreement")

ACME, Inc. - SuperGizmo™

This license agreement governs the SuperGizmo™ product ("Software"). By pressing the "Yes" button you enter into the terms of this binding contract between you ("you" or "User") and ACME, Inc. ("COMPANY"). If you do not agree with the terms of this license, choose the "Decline" button below and exit the installation. Installation of the Software constitutes acceptance of the terms of this License Agreement.

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Ethics and Security Discussion

Discuss in class your experience with ethical computing questions. Ask your classmates for clarification of these terms if needed: *computer virus*, *intellectual property*, *EULA*, *password*, *firewall*, and *encryption*. Can you explain these terms to others using common English phrases or metaphors?

Have you always obtained your music and programs in accordance with good legal and ethical practices? Do you understand and adhere to software license agreements? Has your computer ever been subject to a virus or hacking attack by someone else? Do you carefully protect your passwords to prevent others from accessing your accounts?