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Intellectual Property

One of the more controversial areas of computer ethics concerns the intellectual property rights connected with software ownership. Some people, like Richard Stallman who started the Free Software Foundation, believe that software ownership should not be allowed at all. He claims that all information should be free, and all programs should be available for copying, studying and modifying by anyone who wishes to do so [Stallman, 1993]. Others argue that software companies or programmers would not invest weeks and months of work and significant funds in the development of software if they could not get the investment back in the form of license fees or sales [Johnson, 1992]. Today's software industry is a multibillion dollar part of the economy; and software companies claim to lose billions of dollars per year through illegal copying ("software piracy"). Many people think that software should be ownable, but "casual copying" of personally owned programs for one's friends should also be permitted (see [Nissenbaum, 1995]). The software industry claims that millions of dollars in sales are lost because of such copying. Ownership is a complex matter, since there are several different aspects of software that can be owned and three different types of ownership: copyrights, trade secrets, and patents. One can own the following aspects of a program:

- The "source code" which is written by the programmer(s) in a high-level computer language like Java or C++.

- The "object code", which is a machine-language translation of the source code.

- The "algorithm", which is the sequence of machine commands that the source code and object code represent.

- The "look and feel" of a program, which is the way the program appears on the screen and interfaces with users.

A very controversial issue today is owning a patent on a computer algorithm. A patent provides an exclusive monopoly on the use of the patented item, so the owner of an algorithm can deny others use of the mathematical formulas that are part of the algorithm. Mathematicians and scientists are outraged, claiming that algorithm patents effectively remove parts of mathematics from the public domain, and thereby threaten to cripple science. In addition, running a preliminary "patent search" to make sure that your "new" program does not violate anyone's software patent is a costly and time-consuming process. As a result, only very large companies with big budgets can afford to run such a search. This effectively eliminates many small software companies, stifling competition and decreasing the variety of programs available to the society [The League for Programming Freedom, 1992].