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THE INTEGRATION OF FAITH IN THE COMPUTER CLASSROOM:
SOME ETHICAL CONCERNS

by

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Introduction

It is commonly understood that today's society is moving away from the industrial age into what is often referred to as the information age. Alvin Toffler refers to this age as the "Third Wave" of modern society. The revolutionizing force of the information age is the computer. Computers are not only used in automobiles, home appliances, VCRs and video cameras but also in our schools, homes, financial institutions, health care facilities, research centers, politics, churches and every other avenue of our daily lives. The pervasiveness of computers in our lives has led society to demand high ethical standards of computer professionals and educators.

Machines that enhanced man's ability to do physical work were produced in the industrial age, but the computer is the first machine considered to be an extension of the mind. Computers not only change how professional and leisure activities are done but how we model and think about the world we live in. Emerson refers to the way we model and think about our world as the "computer mentality". He describes this "computer mentality" as:

> a world view inspired by computers and artificial intelligence. It sees intelligence and mind as dynamic streams of data, which it seeks to create or simulate. It assumes that humanity is the director of its own destiny and potentially the designer of minds more powerful than our own. The computer mentality... ignores or denigrates the belief that humanity is made in the image of God and insists that program is the measure of all things(Emerson 9).

Being involved with computers may hinder imaginative thinking by emphasizing right/wrong solutions to problems. Emerson states:

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> If this is what children come to understand about life - that there is always a solution to any problem, which can be reduced to either/or - how will they deal with the vagaries of being human? How will they understand the Bible, which is rich with metaphors, parables and paradoxes? How will they deal with Jesus - with the Incarnation, miracles, the Resurrection, none of which can be reduced to computer code?(Emerson 11)

This "computer mentality" downplays or ignores God as the source of all knowledge including man's understanding of the technological building blocks of the computer.

I see two options that can be taken in regards to computers. The first option is to refuse to become knowledgeable about and/or use computers. Choosing this option would be equivalent to choosing to withdraw from society to some remote location in a geographic wilderness(if there is such a place). The second option is to decide to expend the necessary time and effort to understand the computer and how to use it so one can survive in, communicate with and cope effectively with society in which we live.

Computer technology can be used to enhance life in many ways. It can be used to understand God's Universe, to help society become more productive and service oriented. Individual creativity can be enhanced with the use of the computer. We are also reminded of the negative side of computer technology by the headlines on newspapers and journals reporting the growing number of computer crimes. It is clear that the computer is a very powerful tool with the potential for enhancing or destroying the society in which we live.

Integration of Faith

Underlying principles

The computer science educator has a golden opportunity to respond to the demand that computer science professionals come to the work place with high ethical standards. This demand is an open door to the integration of faith in the computer classroom.

The root of integrating Christianity into every subject is through the Christian world view of the teacher. The world view of the teacher will be expressed in the classroom in one way or another(Gabelein). "No man teaches out of a philosophical vacuum"(Gabelein 37). Christian teachers can be catalysts in helping their students formulate a world view that:

> provides a model of the world which guides its adherents in the world. It stipulates how the world ought to be, and it thus advises how its adherents ought to conduct themselves in the world(Walsh 32).

The basis of such a world view is a faith commitment which answers the four basic questions.

> (1) **Who am I?** Or, What is the nature, task and purpose of human beings? (2) **Where am I?** Or, What is the nature of the world and universe I live in? (3) **What's wrong?** Or, What is the basic obstacle that keeps me from attaining fulfillment - how do I understand evil? And (4) **What is the remedy?** Or, how is it possible to overcome this hinderance to my fulfillment - how do I find salvation?

Ethical Problems

There is a growing public concern over the role of computers in both our public and private lives due to the fact that we are dependent on, and therefore hostage to, the computer(Bickel). Educators say that "many institutions have concentrated on technical training at the expense of instruction in computer ethics"(DeLoughry). Instruction in computer ethics

should not only be concerned with illegality of duplicating copyrighted software and of breaking into protected computer files. It should discuss the students' moral and social obligations to insure that their programs are thoroughly tested and as fail-safe as technically possible. Computer ethics instruction has even gained the attention of a congressional committee that is seeking to minimize potentially dangerous computer malfunctions.

According to Deborah G. Johnson, author of *Computer Ethics*, there is an overall problem with the way colleges and universities teach computer science. She says:

> As an indictment of our undergraduate education, students don't know much about the ethical questions, and they don't know much about their profession at all(DeLoughry A15).

Joyce Currie Little, professor of computer science at Towson State University, states that colleges and universities have not kept up with the rapid changes in the professional environment. One example she refers to is professors assigning individual projects rather than team effort projects. Team effort projects are popular in the field as a means of protecting against problems that "can fall between the cracks"(DeLoughry A18)

Beth Kevies, a user-services consultant at the Massachusetts Institute of Technology indicates that computer users do things on computers they wouldn't dream of doing on any other medium. Obscenities, racial slurs, and vicious personal attacks stream from computers of people who would never say such things to another person(Wilson A31).

Sarah P. Webster, assistant professor of computer applications at the State University of New York College of Environmental Science and Forestry, is working on a project called *Ethics Case Studies* which is sponsored by Educational Uses of Information Technology, a program of

EDUCOM, a consortium that includes 629 colleges and universities interested in computing. She expects to publish examples from the project, with guidelines and recommendations for corrective action. Contributions should be sent to Sarah P. Webster, State University of New York College of Environmental Science and Forestry, 13A Moon Library and Learning Resources, One Forestry Drive, Syracuse, N. Y. 13210-2778; ACDSPW@SUVM or ACDSPW@SUVM.ACS.SYR.EDU(Wilson A31).

Ms. Webster said that "Educators aren't sitting down and explaining to students the consequences of being known as someone who breaks their word"(Wilson A31). The higher echelons of academe seem to be most involved with illegal copying of software. "Almost everyone I speak with tells me that faculty are the worst problem in terms of software copying and violating copyright"(Wilson A31), said Ms. Webster. She indicates that it costs money to be ethical and that educators need to make the case that it costs more to be unethical. Students observe and copy ethical violations as they go out in the work place. They will not hesitate to repeat some of the things done in business and banking today. Ms. Webster said, "You're going to have to pay one way or the other, and I think you probably pay less to be ethical,"(Wilson A31).

Possible solution to ethical problems

Codes of ethics are being published by the **Data Processing Management Association, Association for Computing Machinery, The Institute of Electrical and Electronics Engineers**, and the 6-month-old **Computer Ethics Institute**(See Appendix for contents of the four codes of ethics). These codes of ethics can be the basis for discussions on the expected ethical behavior of computer professionals in relationship to each student's Christian world view.

They can be asked to respond to unethical behavior in relation to their spiritual world view based on their understanding of the answers to the four questions on faith commitment(*Who am I? Where Am I? What's Wrong?* and *What is the remedy?*).

Considering the codes of ethics published by the various computer professional organizations, it is clear that the Christ centered life is the basis for most, if not all, of the ethical codes. The ethical codes for computer professionals include being accountable, responsible, honest, trustworthy, non discriminatory, service oriented, objective and respecting the confidentiality of others. In addition, the computer professional is encouraged to take action against unethical behavior and practices which come to his/her attention. Basically the computer professional is to be an enhancer of the quality of life through the proper use of computer technology.

Examples of ethical dilemmas involving the use of computers can be obtained from many sources including textbooks, newspapers, magazines, examples from the *Ethics Case Studies* project mentioned above plus many other sources.

Bikel, Larrondo-Petrie and Bush have developed an instrument called **EDICT** (Ethical Dilemmas In Computing Test) to determine the subject's stage of moral development through analysis of responses to computer-related scenarios involving ethical decisions(Bikal et al 83). Kohlberg's six stages of moral development were used as a basis for moral development, summarized and described as follows(Bikal et al. 82):

Level I: Preconventional Moral Reasoning

> Stage 1: Obedience and punishment orientation. Someone in this stage acts in response to a superior power (be it physical or social). The goal is to stay out of trouble.

Stage 2: Naively egotistic orientation. The primary interest of someone in this stage is to satisfy his or her own needs, while understanding, however, that others also have needs; the individual is willing to work on a quid pro quo basis.

Level II: Conventional Moral Reasoning

Stage 3: Good boy/girl orientation. Someone in this stage is concerned with mutual relations with others and wishes to please and help friends and relatives and gain their approval.

Stage 4: Social system and legal authority orientation. Someone in this stage is interested in maintaining the stability of the system. Agreements are generally to be discharged and laws upheld.

Level III: Post-conventional Moral Reasoning

Stage 5: Contractual legalistic orientation. Someone in this stage understands that rules arise from group consensus but that individual rights should not be violated. The concern is with "the greatest good for the greatest number."

Stage 6: Universal ethical principles orientation. Someone in this stage recognizes certain universal principles such as justice and the equality of human rights and is personally committed to upholding these principles.

Eight scenarios intended to present true dilemmas were developed. They are intended to present true dilemmas in that the situations are not clear cut; there are strong reasons for choosing alternative courses of action. A summary of the eight scenarios developed are(Bikel et al. 83):

1. *Proprietary Software.* A company is facing a hostile takeover and jobs will probably disappear. Should an employee help secure a new position elsewhere using proprietary software he helped to develop?

2. *Hacking.* Her ex-husband's nonpayment of their children's medical bills may affect the credit of someone who badly needs to purchase a car to obtain a job and support her family. Should a friend help out by looking in the credit company's computer files?

3. *Privacy.* A pharmaceutical company wants to purchase data base information from a company whose business is to assist patients in filling out their medical insurance forms. They say they want to better direct helpful information on new drugs. Should the proprietor sell?

4. *Educational Equity.* A teacher in an inner-city school is offered free computers and software if she will promote and use only their software. It is below standard and violent, but the school can't afford computers otherwise. Should she accept?

5. *Displacing Workers.* A systems analyst is asked to gain the confidence of department members and plan for efficient computerization. Should he reveal a highly original plan which will make the department even more efficient but cost even more jobs than anticipated?

6. *Unused Patents.* A company is halting research based on some patents which would be very beneficial to the public; it wants to use its resources more profitably. Should an employee, who was working on the original project, tell his relative who works for an expose'-type news program?

7. *Computer Account Violation.* Student programmers are given a fixed amount of computer time for their projects; If they use more they are penalized. A student who has used up his own time has found a way to transfer excess time from other accounts to his own. Some students appear to have dropped the class. Should he transfer some of their excess time to his own account?

8. *Piracy.* A community college instructor doesn't have the software for a course she must teach. Should she accept a friend's offer to make copies of popular programs so she can show her class how to use them?

One way of integrating faith is to discuss the above scenarios or similar ones relating to class assignments, in relation to a Christian world view. There is a tendency, when using scenarios, to consider binary solutions to problems. This should be discouraged. Students should be encouraged to explore alternative solutions which may provide superior results(Bikel et al.)

The EDICT instrument was designed to provided educators with feedback to gauge the effectiveness of methodologies for teaching computer ethics at each instruction level. The

students can respond in free form essay format or they can respond via questionnaire that can

be quickly graded; a necessary requirement for large scale testing. See Figure 1 for the

Displacing Workers scenario and the corresponding questionnaire.

BRIAN GRAY AND THE SHIPPING DEPARTMENT

Brian Gray works as a systems analyst for Xiggle Company. Xiggle Company is in the process of reorganizing its shipping department; it wants to computerize many of the tracking functions. Brian is told by his boss that he should go to the shipping department, gain the confidence of the employees there, and have them assist him in analyzing the work so that they can computerize efficiently. When he does so, Brian realizes that there are two possible ways of creating a new system. Using plan A there will be a 50% increase in efficiency, but 60% of the shipping department personnel will no longer be needed once the computer system is implemented. Plan B will increase efficiency by only 25% and only cost 10% of the jobs. Brian could just tell his boss about Plan B, since Plan A is rather unusual and few people would think of it. Or he could tell his boss exactly what he has figured out and let the boss decide what to do next. Should Brian tell his boss about both plans? (Check One)

        Should tell him about both   _____
        Can't decide   _____
        Should tell him Plan B only   _____

On the left side of the page check on the spaces by each question to indicate its importance (#1 MOST IMPORTANT)

1 2 3 4 5

_ _ _ _ _   1.   Whether Xiggle Co. does business with South Africa

_ _ _ _ _   2.   Would reorganizing the shipping department to bring about maximum efficiency actually bring about more good than not?

_ _ _ _ _   3.   Isn't Brian required be contract to fully inform his boss of all his findings?

_ _ _ _ _   4.   Don't companies like Xiggle Co. typically ignore the needs of its employees if money can be made without their cooperation?

_ _ _ _ _   5.   Do the shipping department employees have the right to participate with full knowledge of the situation?

_ _ _ _ _   6.   Whether Brian's boss is just doing his job or has a grudge against the head of the shipping department.

_ _ _ _ _   7.   Is it likely that Brian will be found out if he leaks the news to the shipping department?

_ _ _ _ _   8.   What are the values that govern the relationship between employees?

_ _ _ _ _   9.   Will Brian himself get into trouble if the boss realizes he is withholding information from the company?

_ _ _ _ _   10.   Whether the golden rule about treating others as you want to be treated applies in this instance.

_ _ _ _ _   11.   Whether Brian's girlfriend is one of the people who would lose her job under the first plan but not the second.

_ _ _ _ _   12.   Would the act of terminating employment for so many members of the shipping department be in conflict with Brian's own morality?

From the list of questions above, select the four most important:

        Most important   _____
        Second most important   _____
        Third most important   _____
        Fourth most important   _____

Figure 1. The "Displacing Workers" scenario

During the pilot testing, using the free form format, the students were asked what advice they would give a friend facing each dilemma and explain the factors that influenced them as well as questions they might ask, if answered, that would better help them arrive at a decision.

The essays were graded based on the thoroughness of their analysis not on the ethical correctness of their answers. On the day the essays were turned in the students participated in class discussions on the scenarios and they were polled to determine if they were for, against or undecided on the stated course of action. One student from each group, beginning with the undecided group, was asked how he or she arrived at their conclusion.

One week following the class discussion each student turned in a written reassessment of their earlier answers, stating whether or not they were still of the same opinion, which parts of the class discussion had influenced them if they had changed their opinions, and if they had not changed their opinion, what factors had given them food for thought. Factors influencing their final decision were ranked in order of importance. The responses were summarized and assigned a moral development stage. Detailed analysis of the study using the free form essay and the complete form as indicated in **Figure 1** appear elsewhere(Bikel et al. 85).

Another approach to ethical issues can be through specific programming assignments. In response to how Donald W. Gotterbarn of Allegheny College gets students to think about their responsibilities as programmers, he says, "If you give them an assignment to program a pacemaker, they are immediately aware that it is very important that it works"(DeLoughry A18). Another assignment he recalls is to write a program for a tracking device that would attach to

a person's leg. Students viewed it positively as a method for finding missing children but considered it an unethical invasion of privacy if applied to adults(DeLoughry A18).

Whether computer ethics is taught in a separate class or integrated within a computer programming or literacy class, Christian ethics can be integrated in the classroom through the use of ethical dilemmas.

Another method I have used in my classroom is to begin class by presenting a quotation, from the Bible or other sources, which reflects my Christian world view, forms a basis for ethical behavior, or shows how I understand God is involved in all of life.

Listed below are some examples of quotations, relating to ethical behavior, that I have collected and used in my classes:

Ethical bases

There are six things the Lord hates - no seven:

> *Haughtiness*
> *Murdering*
> *Eagerness to do wrong*
> *Sowing discord*
> *Lying*
> *Plotting evil*
> *False witness*
>   *- Proverbs 6:16-19 LB -*

From the conscience that shrinks from new truth, from the laziness that is content with half truths, from the arrogance that thinks it knows all truth, O God of Truth deliver us.
>   *- Ancient Hebrew Prayer -*

Our primary purpose on this earth is not to see through people, but to see them through.
>   *- Apples of Gold -*

Fame is vapor, popularity an accident; riches take wing; those who cheer today will curse tomorrow; only one thing endures - <u>CHARACTER</u>.
- Horace Greeley -

A friend is one who knows you as you are, understands where you've been, accepts who you've become - and still gently invites you to grow.
- Anonymous-

Man is an able creature, but he has made 32,600,000 laws and hasn't yet improved on the Ten Commandments.
- Anonymous -

We make a living by what we get, but we make a life by what we give.
- Anonymous -

Self respect cannot be found, sold, purchased, or fabricated out of public relations. It comes to us when we are alone, in quiet moments, when we suddenly realize that, knowing the good, we have done it, knowing the truth, we have spoken it.
- Griswold -

Caeser hoped to reform men by changing institutions and laws; Christ wished to remake institutions and lessen laws by changing men.
- Durant -

What pity He felt for the crowds that came because their problems were so great and they didn't know what to do or where to go for help.
- Matthew 9:36 LB -

Do not pray for easy lives, pray to be stronger. Do not pray for tasks equal to your powers, pray for powers equal to your tasks.
- Phillips Brooks -

The man who knows right from wrong and has good judgment and common sense is happier than the man who is immensely rich!
- Proverbs 3:13,14 LB -

Your own soul is nourished when you are kind; it is destroyed when you are cruel.
- Proverbs 11:17 -

The people who know their God shall be strong and do great things.
- Daniel 11:32 -

Every person, in order to be a leader, must be willing to lose himself - to others, to causes, to God.
                    - Paul Richardson -

The Lord is good and glad to teach the proper path to all who go astray; He will teach the ways that are right and best to those who humbly turn to Him.
                    - Psalms 25:8 LB -

Quotations can be obtained from a multitude of sources. I have found that the most meaningful quotations are ones that are encountered through my personal reading material. This method helps understand the context of the quotation and helps to apply the concepts to the current situations, often times directly related to classroom material. I have had very positive student feedback on taking two to five minutes, at the beginning of class, to present a quotation and relating the content of the quotation to current life situations. The quotation is generally presented via a projection transparency.

Summary

At a time when computers are being used for tasks that include medical diagnosis, air-traffic control, the monitoring of nuclear power plants, deciding to sell stock on the stock market, controlling life support system and educational tutoring, it understandable why it is so vitally important the computer professional have high moral and ethical values. This is an exceptional opportunity for the Christian educator to integrate his faith the computer science curriculum. This can best be done, in my opinion, by discussing ethical dilemmas/concerns in relation to his/her Christian world view and integrating these Christian values in the context of of various class assignments as apposed to teaching a separate computer ethics class.

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ACM Releases Draft Revision of Ethics Code. ACM's present CODE of Professional Conduct was developed in 1972, predating technological developments such as widespread data networks and "computer viruses." With funding from the SIG Discretionary Fund, ACM's Special Interest Group on Computers and Society (SIGCAS) sponsored an Ethics Task Force to revise the ACM Code. The proposed draft ACM Code of Ethics published in this issue was developed by the Task Force and has been reviewed by ACM Council.

All ACM members are invited to comment on this draft. Suggestions to express the code in less USA-centric terms are especially welcome, since the issues are equally important for all ACM members. Based on feedback from the membership, a final draft of the code will be developed and presented to ACM Council for approval.

ACM

Code of Ethics and Professional Conduct

PREAMBLE

Commitment to professional conduct is expected of every member (voting members, associate members, and student members) of the Association for Computing Machinery (ACM). This Code identifies several issues professionals are likely to face, and provides guidelines for dealing with them. Section 1 presents fundamental ethical considerations, while Section 2 addresses additional considerations of professional conduct. Statements in Section 3 pertain more specifically to individuals who have a leadership role, whether in the workplace or in a professional organization such as ACM. Guidelines for encouraging compliance with this Code are given in Section 4.

1. General Moral Imperatives

As an ACM member I will . . .

1.1 Contribute to society and human well-being,

1.2 Avoid harm to others,

1.3 Be honest and trustworthy,

1.4 Be fair and take action not to discriminate,

1.5 Honor property rights including copyrights and patents,

1.6 Give proper credit for intellectual property,

1.7 Access computing and communication resources only when authorized to do so,

1.8 Respect the privacy of others,

1.9 Honor confidentiality.

2. More Specific Professional Responsibilities

As an ACM computing professional I will . . .

2.1 Strive to achieve the highest quality in both the process and products of professional work,

2.2 Acquire and maintain professional competence,

2.3 Know and respect existing laws pertaining to professional work,

2.4 Accept and provide appropriate professional review,

2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, with special emphasis on possible risks,

2.6 Honor contracts, agreements, and assigned responsibilities,

2.7 Improve public understanding of computing and its consequences.

3. Organizational and Leadership Imperatives

As an ACM member and an organizational leader, I will . . .

3.1 Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.

3.2 Manage personnel and resources to design and build information systems that enhance the quality of working life,

3.3 Acknowledge and support proper and authorized uses of an organization's computing and communication resources,

3.4 Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet requirements,

3.5 Articulate and support policies that protect the dignity of users and others affected by a computing system,

3.6 Create opportunities for members of the organization to learn the principles and limitations of computer systems.

4. Compliance with the Code

As an ACM member, I will . . .

4.1 Uphold and promote the principles of this Code,

4.2 Agree to take appropriate action leading to a remedy if the Code is violated,

4.3 Treat violations of this code as inconsistent with membership in the ACM.

Data Processing Management Association

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Code of Ethics

I acknowledge:

That I have an obligation to management, therefore, I shall promote the understanding of information processing methods and procedures to management using every resource at my command.

That I have an obligation to my fellow members, therefore I shall uphold the high ideals of DPMA as outlined in its Association Bylaws. Further, I shall cooperate with my fellow members and shall treat them with honesty and respect at all times.

That I have an obligation to society and will participate to the best of my ability in the dissemination of knowledge pertaining to the general development and understanding of information processing. Further, I shall not use knowledge of a confidential nature to further my personal interest, nor shall I violate the privacy and confidentiality of information entrusted to me or to which I may gain access.

That I have an obligation to my employer whose trust I hold, therefore, I shall endeavor to discharge this obligation to the best of my ability, to guard my employer's interests, and to advise him or her wisely and honestly.

That I have an obligation to my country, therefore, in my personal, business and social contacts, I shall uphold my nation and shall honor the chosen way of life of my fellow citizens.

I accept these obligations as a personal responsibility and as a member of this Association. I shall actively discharge these obligations and I dedicate myself to that end.

Standards of Conduct

These standards expand on the Code of Ethics by providing specific statements of behavior in support of each element of the Code. They are not objectives to be strived for, they are rules that no true professional will violate. It is first of all expected that information processing professionals will abide by the appropriate laws of their country and community. The following standards address tenets that apply to the profession.

In recognition of my obligation to management I shall:

- Keep my personal knowledge up-to-date and insure that proper expertise is available when needed.
- Share my knowledge with others and present factual and objective information to management to the best of my ability.
- Accept full responsibility for work that I perform.
- Not misuse the authority entrusted to me.
- Not misrepresent or withhold information concerning the capabilities of equipment, software or systems.
- Not take advantage of the lack of knowledge or inexperience on the part of others.

In recognition of my obligation to my fellow members and the profession I shall:

- Be honest in all my professional relationships.
- Take appropriate action in regard to any illegal or unethical practices that come to my attention. However, I will bring charges against any person only when I have reasonable basis for believing in the truth of the allegations and without regard to personal interest.
- Endeavor to share my special knowledge.
- Cooperate with others in achieving understanding and in identifying problems.
- Not use or take credit for the work of others without specific acknowledgement and authorization.
- Not take advantage of the lack of knowledge or inexperience on the part of others for personal gain.

In recognition of my obligation to society I shall:

- Protect the privacy and confidentiality of all information entrusted to me.
- Use my skill and knowledge to inform the public in all areas of my expertise.
- To the best of my ability, insure that the products of my work are used in a socially responsible way.
- Support, respect and abide by the appropriate local, state, provincial and Federal laws.
- Never misrepresent or withhold information that is germane to a problem or situation of public concern nor will I allow any such known information to remain unchallenged.
- Not use knowledge of a confidential or personal nature in any unauthorized manner or to achieve personal gain.

In recognition of my obligation to my employer I shall:

- Make every effort to ensure that I have the most current knowledge and that the proper expertise is available when needed.
- Avoid conflict of interest and insure that my employer is aware of any potential conflicts.
- Present a fair, honest and objective viewpoint.
- Protect the proper interests of my employer at all times.
- Protect the privacy and confidentiality of all information entrusted to me.
- Not misrepresent or withhold information that is germane to the situation.
- Not attempt to use the resources of my employer for personal gain or for any purpose without proper approval.
- Not exploit the weakness of a computer system for personal gain or personal satisfaction.

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THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

CODE OF ETHICS

We, the members of the IEEE,

in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1   to accept responsibility in making engineering decisions consistent with the safety, health and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;

2   to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;

3   to be honest and realistic in stating claims or estimates based on available data;

4   to reject bribery in all its forms;

5   to improve the understanding of technology, its appropriate application, and potential consequences;

6   to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;

7   to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;

8   to treat fairly all persons regardless of such factors as race, religion, gender, disability, age, or national origin;

9   to avoid injuring others, their property, reputation, or employment by false or malicious action;

10 to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

Approved by the IEEE Board of Directors   August 1990

Computer Ethics Institute
Proposed Ten Commandments of Computer Ethics
(Lincoln Journal Star, June 11, 1992)

I.   Thou shalt not use a computer to harm other people.

II.   Thou shalt not interfere with other people's computer work.

III. Thou shalt not snoop around in other people's computer files.

IV.   Thou shalt not use a computer to steal.

V.   Thou shalt not use a computer to bear false witness.

VI.   Thou shalt not copy or use proprietary software for which you have not paid.

VII. Thou shalt not use other people's computer resources without authorization or proper compensation.

VIII. Thou shalt not appropriate other people's intellectual output.

IX.   Thou shalt think about the social consequences of the program you are writing or the system you are designing.

X.   Thou shalt always use a computer in ways that ensure consideration and respect for your fellow humans.