

Code of Ethics, Professionalism and Responsibilities

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ABSTRACT:

Computers are special technology present fast and effective tools in helping human being. But the power of computers and technologies can be used for bad as well as good. They raise some special ethical issues. Technologies either software or hardware introduce an efficient and effective way to support all activities to produce products in different types of enterprises. These technologies can create and bring new risks and problems, which may bring financial or safety harm to people. Thus, making decisions about what technologies and products to develop and how to use them is the issue.

People make decisions about when a product is safe and free of errors and thus ready to be released. People make decisions about access to and use of private information. People make decision either to buy an original copy or just a copied version of a book or a CD. These decisions have to be fair and honest.

The main aim of this research is to shed light on those decisions and activities from an ethical perspective and to examine ethical issues and guidelines related to actions and decisions of individuals by conducting a research survey in two of the Jordanian universities in Amman.

This empirical research conducts an investigation to research the scope and attitudes of students' commitment to ethical and legal issues raised in educational institutions within one of the developing countries (Jordan).

The scope of the study has been restricted to students of the two universities. Students were selected from a random sample. A 60 questionnaire were needed to be completed by students. All of responses were returned by hand to the researcher. Qualitative interview were also conducted with three students selected from the same sample. The result of the study showed that most of the students are unaware of a lot of ethical and legal issues concerning copyright and intellectual property right. Female students are more conform to ethics, laws and regulations than male students. Additionally, the majority of students believed that the mean reasons for all computer ethical issues are both technologies and human.

This research project ends with conclusion and recommendations.

Key words:IT+ Code of Ethics + Professionalism and Responsibilities+ IT Ethics + Copyright.

1. Introduction

According to a new report by the Josephson Institute[1] of Ethics, cheating, stealing and lying by high school students have continued their alarming, decade-long upward spiral. A survey of 12,000 high school students showed that students admitting they cheated on an exam at least once in the past year jumped from 61% in 1992 to 74% in 2002; the number who stole

something from a store within the past 12 months rose from 31% to 38%, while the percentage who say they lied to their teachers and parents also increased substantially.

Ethics is a system or code of principles that directs our actions towards others [2]. James H. Moore defines computer ethics as: "Computer ethics is the analysis of the nature and social impact of compute technology and the corresponding formulation and justification of

policies for the ethical use of such technology [3]. From the definition Moore concentrated in the policies and decisions for formulation and justification of using compute technologies.

Before trying to apply the principle of any ethical system to the complex and important job of the developing software or doing any services practitioner, it seems rational to look somewhat deeper into the system and understand the principles on which it is based. Foundational ethical standards that apply to any part of industry services practitioner in the interaction with customers or represented companies are the same that serve as the building blocks of the earth's great religions: the Golden Rule. "The Golden Rule maintains that each of us should treat others as he or she would wish to be treated". [3]

Representing our actions towards others on what we want for ourselves is not only extremely fair, it is also essential for a civilized society.

Computers provide us with new capabilities and these in turn give us new choices for activities of works and actions. Often, either no policies for conduct in these situations exist or existing policies seem inadequate. A central assignment of computer ethics is to determine what we should do in such cases, i.e., to invent policies to guide our activities. Additionally, some ethical situations confront us as individuals and some as a society. Computer ethics includes reflection of both personal and social policies for the ethical use of computer technology [3].

The sign of the core difficulty in computer ethics is one in which computer technology is basically involved and there is an uncertainty about what to do and even about how to understand the circumstances. Thus, not all ethical situations concerning computers are central to computer ethics. If a thief steals some office equipment including

computer or computer peripherals, then the thief has done something illegally and unethically and of course this is wrong. But this is really the core of issue for general law and ethics. Computers are only by chance involved in this situation, and there is no policy or theoretical gap to be filled.

Computer ethics includes ethical issues faced by a computer professional as part of the job. It contains relationships with and responsibilities toward customers, clients, employees, employers and all other stakeholders who use the products that produced, and others whom they could be affected. Include also the people who are not computer professionals, but who manage, select or use computer in a professional setting. We are looking at situations where critical decisions must be made situations where significant consequences for all people of the world could result from this decision. For example a manager can decide to deliver a software product to a customer and he believes that it still has serious bugs and errors. What if a manager or a supervisor asks one of his subordinates to make unauthorized copies of copyrighted software?

All people activities come from a decision framework. This framework consists of sequence of tasks and actions. If the results of these decisions and tasks are good then the decision is good and therefore it is moral. [8] We have to know that ethical issues are something that we should not do it because it is wrong and may hurt other people physically or emotionally. Illegal issues also things and actions that we should not do; otherwise we will be punished by the laws. On the other hand, moral are things that it is good to do for example if we help people doing there works or guide a blind man to cross the road is moral thing to do. All religion especially the Islamic religion had given these issues a very big deal especially the moral ethics which Al-mighty Allah will reward you if you do moral things after you return to him in the other life. The profit Mohammad peace be upon him said: "you shall not be a believer of Allah until you love for your brother (other) what you love for your self".

2. What is Exactly Ethics?

Ethics is the study of what it means to “do the right thing.” It is a complex subject that has occupied philosophers for thousand of years [3].

Ethical theory is based on the philosophy that people are rational and make free selection, decisions and choices. Neither of these situations is always and completely right. People most of the time act emotionally, and this may leads them to make mistakes and may also lead them to commit a crime. Free choice and use of rational decision are capacities and characteristics of human beings, and they are reasonably assumed as the basis of ethical theory. Thus, most of the time people are responsible for their actions [4].

Ethical issues are rules that have to be followed in our communications with other people and in actions that affect other people in some way. Most ethical theories try to achieve the same purpose: to enhance human nobility, peace, happiness, and well-being. A set of rules that does this, well respects the fact that are unique and have values and principles to achieve the setting goals. Rule of ethics could be viewed as fundamental and universal, like laws of science or they could be viewed as rules that people make up such as rule of football, to provide a framework in which to communicate and interact with other people in a peaceful and creative way.

Acting ethically, in a personal or professional area, is usually not a problem. Most of the time, we are honest, acting honest and keep our promises. This should not be surprising. If ethical rules are good ones they work for people or they make products which are useful and good.

.3. Professional Codes, Codes of Ethics and Responsibilities

Professional ethics have several characteristics different form general ethics. Many professional organizations have code of professional conduct. They provide a general statement of ethical values reminding people in the profession that ethical behavior is expected of them. The provide reminders about specific professional responsibilities. They provide valuable guidance for new or young members of profession who want to behave ethically but do not know what is expected of them, people whose limited experience has not prepared them to be alert at difficult ethical situations and handle them appropriately.

There are several organizations for the range of professions included in the general term “computer professional”. The main ones are the ACM and the IEEE computer society (IEEECS). They developed the software engineering Code of Ethics and professional proactive “adopted jointly by the ACM and IEEE CS and the ACM Code of Ethics and professional Conduct, [5]. The code [6] states: “Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:”

- **PUBLIC** - Software engineers shall act consistently with the public interest.
- **CLIENT AND EMPLOYER** - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.
- **PRODUCT** - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
- **JUDGMENT** - Software engineers shall maintain integrity and independence in their professional judgment.

- **MANAGEMENT** - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
- **PROFESSION** - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
- **COLLEAGUES** - Software engineers shall be fair to and supportive of their colleagues.
- **SELF** - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession [9]

The steering committee decided to accomplish these tasks through the establishment of a series of task forces. Initially the task forces established were: Software Engineering body of knowledge and recommended practices; Software Engineering ethics and professional practices, and Software Engineering curriculum. The purpose of the ethics task force is to document the ethical and professional responsibilities and obligations of software engineers.

3.1 Ethical codes

A lot of organizations and researchers have written a lot of ethical principles for technology use. One of the mostly widely used and easily understood sets of computer use principals comes from the computer Institute [7], the Ten Commandments of Computer Ethics by the Computer Ethics Institute [7].

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's computer files.
4. Thou shalt not use a computer to steal.

5. Thou shalt not use a computer to bear false witness.
6. Thou shalt not copy or use proprietary software for which you have not paid.
7. Thou shalt not use other people's computer resources without authorization or proper compensation.
8. Thou shalt not appropriate other people's intellectual output.
9. Thou shalt think about the social consequences of the program or the system you are designing.
10. Thou shalt always use a computer in ways that insure consideration and respect for your fellow humans.

The Codes emphasize the basic ethical values of honesty and fairness. They cover many aspects of professional behavior, including the responsibility to respect confidentiality, maintain professional competence. In addition, the codes part special emphasis on areas that are particularly vulnerable form computer systems. They stress the responsibility to respect and protect privacy, avoid harm to others, and respect property rights. The software engineering code covers many specific points about software development. It was translated into several languages and adopted by various organizations as their internal professional standard [3].

All Students Universality must be a ware of these Codes of Ethics especially students who specialized in computer fields of related, because computer and technologies are the basis for a great number of ethical and legal issues. Students should be conforms to all code of ethics from the first day they come into the university or even from the first day they get into schools. Otherwise breaking the code of ethics and breaking the law will be treated as a habit.

4. Research Methodology:

In order to provide the reader with global research, both qualitative and quantitative studies will be considered within the research methodology of this research. Since, qualitative data could show how much in depth the topic

has been researched while quantitative data could be used to define the scope of the topic area. Therefore, based upon both studies qualitative and quantitative, recommendations and results of the research will not be based on subjection, but on the objective approach.

The researcher conducted an interview with three students who are going to be graduated this semester. The reason for chosen those students, is that they provide a good picture concerning ethical and legal issues, additionally, they have spend approximately four years in the university which made them have more knowledge and experience in different ethical and legal issues concerning educational and learning issues. The design of the interview guide was structured (see Appendix 3) and the questions were to serve as a base for discussion. In addition, to enhance the findings of the interviews, a standardized questionnaire for the respondents was developed, with similar to the specific questions. The sample questionnaire is shown in Appendix 1. The researcher was forced to translate the questionnaire into Arabic language to make sure that all questions are clear and understandable, (see Appendix 2).

4.1 The Research Sample

The research population includes all students in two Jordanian Universities. Students were chosen from different faculties such as Information Technology College, Law College, and Engineering College.

A random sample of 60 students was chosen. Questionnaires were handed to all of them.

The selection of students' population sample was from a list of all graduated students in the selected Colleges in Amman University. Further interviews with three students whose had been selected not randomly from the population within different colleges.

4.2 Problems with Data Collection

Having sent out 60 questionnaires 51 responses were received, all of them had been received by hand. Of these all received 3 responses were lost and 7 were invalid. This left us with 41 responses from which to conduct the qualitative and quantitative data analysis (see **figure 1**). The response rate was 68% of the survey population.

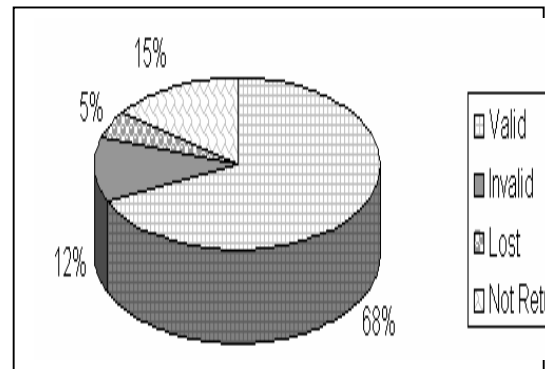


Figure 1: Response Rate

This survey is a chance to take advantage of the collective experience of the user basis, and to develop the awareness and knowledge of ethical and legal issues concerning education and learning. It is also presents a big chance to study the attitudes of students towards ethical and legal issues in two of the universities in one of a developing country (Jordan).

The results of the survey were evaluated to setup the percentage of response choices for each question of the questionnaire. The evaluation of these figures helped to achieve the purpose of the survey. The results of the survey and interviews and their evaluation are described briefly in the next section.

5. Data Analysis

This section presents the empirical data gathered from the questionnaire, researcher observations and the interviews that was conducted within the two universities. A lot and various quantitative statistics were performed on the returned questionnaires. Microsoft Excel was used to evaluate and perform all the analysis.

Several questions were asked to the students to identify the current use and level of technology. These questions were about how they used computers and Internet, the current use of these computers in practices work and the level of technologies knowledge for them. 62% of the students were male and 38% of them were female.

When students were asked if they have had adequate support of education in making good decisions regarding ethical and legal issues, (see **figure 2**), 43% of responses said that they never have had adequate support of education in making good decisions regarding ethical and legal issues, 35% said that they always have had adequate support of education in making good decisions regarding ethical and legal issues.

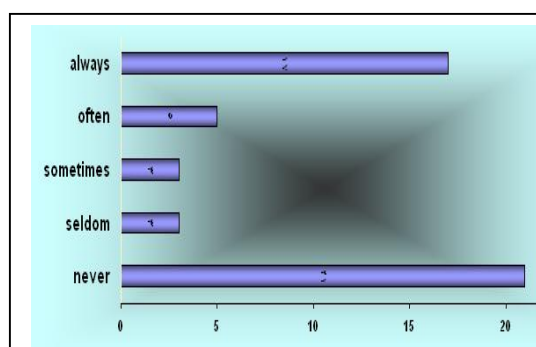


Figure 2: responses of making good decisions regarding ethical and legal issues.

Students were asked to verify if they conform to laws and regulations of the university concerning all academic affairs, 84% of them said that they conform to laws and regulations of the university concerning all academic affairs, (see **figure 3**), of those 84%, 65% were female, see **figure 4**, 12% of them said they don't conform to laws and regulations 100% of those students who didn't conform to the laws and

regulations of the university were all male students.

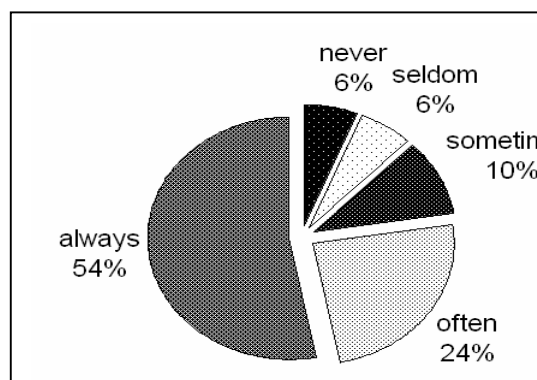


Figure 3: Percentages of students who conform to laws and regulations of the university concerning all academic affairs.

Figure 4: Percentages of students (Male and Female) who conform to laws and regulations of the university concerning all academic affairs.

When students were asked if they ever send an SMS (short message service) using their mobile phone to someone they didn't know before, (see **figure 5**), 79% of responses said that they never send an SMS messages to someone they didn't know before, 2% said that they often did send an SMS to someone they didn't know before.

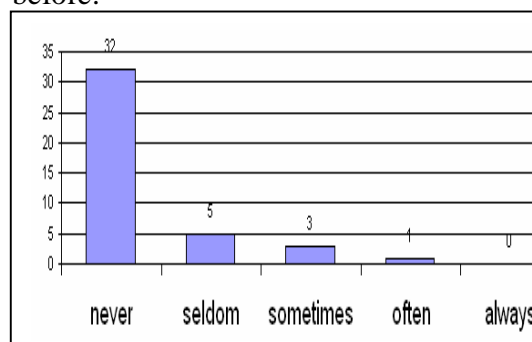


Figure 5: Percentages of students who send SMS via mobile phone to someone they didn't know before.

Students were asked to verify if they have ever bought an original copy of a book or a software compact disk (CD), 78% of them said that they never bought an original copy of either book or software CD, 15% of them said sometimes, 2% of them said they always bought an original copy of software CD or books, (see **figure 6**).

Additionally, When students were asked to determine the main reason that deter them from buying original copy of a CD or a book, most of them stated that the main reason was the cost.

Additionally, in one of the interviews with one of the students, the students stated that: if he want any software he always bought a copied CD, because he couldn't a ford for the original one, he added software companies should sell their software products with rational prices especially in the developing countries were most of the people considered to be very poor.

He added: we are not living in USA or European countries, we are living in developing countries were poverty and unemployment is very common issue here. The researcher comments that prices here are very much less than in developed countries. The student replied that prices are still very high taken into consideration the low salaries and wages.

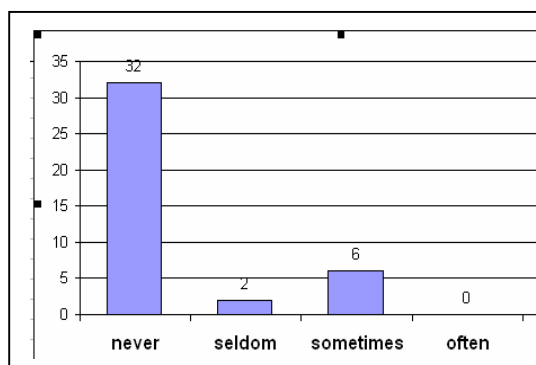


Figure 6: Percentages of students who bought an original copy of a CD or A book.

When students were asked to verify if they avoid cheating and deception during examinations periods, 35% of them said that they avoid cheating and deception during examinations periods, (see **figure 7**), 68% of those students who avoid cheating and deception during examinations periods are female, (see

figure 8), 46% of students said they always cheating during examinations periods 95% of them were from male students.

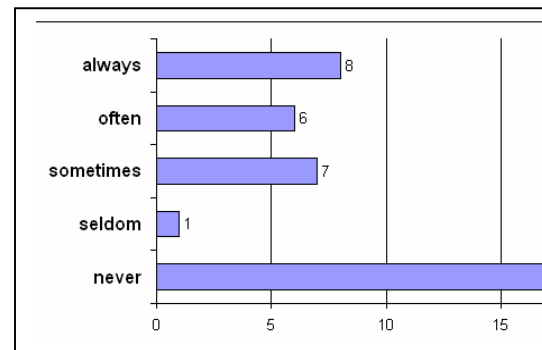


Figure 7: Percentages of students who avoid cheating and deception during examinations periods.

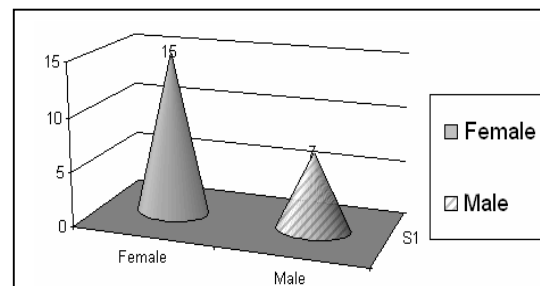


Figure 8: Percentages of students (Male and Female) who avoid cheating and deception during examinations periods.

When students were asked if one of their colleagues were cheating, would your report him/her, all of them said that they will never report on him/her even if they are not in the same class.

Students were asked to determine if it is unethical and illegal to installed a software program to his PC from a CD (Compact Disk), which he borrowed from his/her friends or colleagues, (see **figure 9**), 88% of students believed that this is ethical and legal. Only 12% of them believed that this is unethical and illegal.

During one of the interviews with two of the students in CIS department, one of them stated that:

Only one time I had bought an original copy of a book, and that because there was no different in the price between the original copy and the copied version of the same book. Yet another

commented: we can't afford for an original copy of a CD or a book, without books and software we can't complete our studying. He added, it is a matter of to be or not to be.

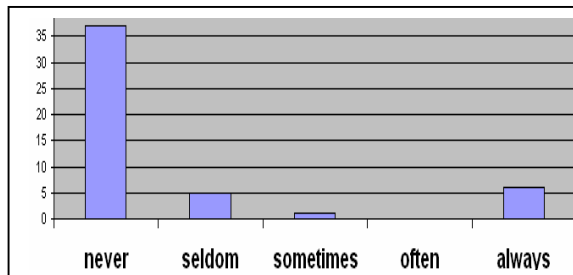


Figure 9: responses if it is unethical and illegal to install a SW program to his computer from a CD belonged to his friends or colleagues.

When students were asked if they considered code of ethics during their working in a software project or any kind of works, 96% of them said that they considered code of ethics during their working in a project, only 4% said that they do not consider code of ethics during their work, (see figure 10).

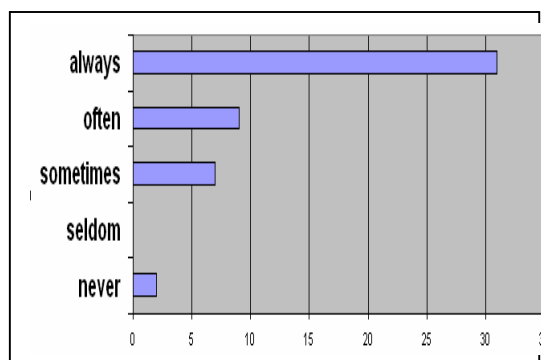


Figure 10: responses to code of ethics during work.

When students were asked if they considered that the main reasons for the most ethical and legal issues such as privacy invasion, virus attack, spamming and hacking are computer and technologies, 88% of responses said that the main reason is always computer and technology, only 12% of them said that

the main reason is not the computer and technologies, (see figure 11).

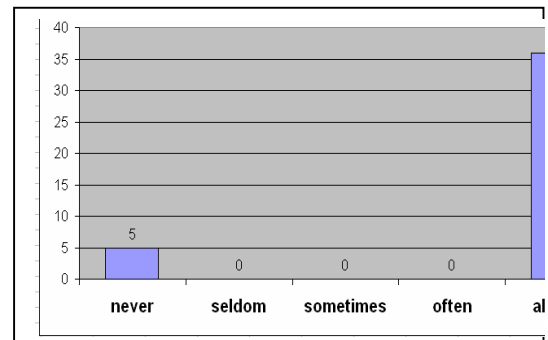


Figure 11: responses to: Main reasons for ethical and legal issues are computer and technologies.

When students were asked if they considered that the main reasons for the most ethical and legal issues such as privacy invasion, virus attack, spamming and hacking are human, all of them believed that the main reason for ethical and legal issues is human being.

6. Conclusion

The researcher has presented an analysis of data from a survey of 41 Students University, each of whom was asked about ethical and legal topics typically found in a computer science or software engineering curriculum. The survey asked the students about their knowledge and attitudes of the topics, and how important they perceived each to be.

The research was carried out in the area of ethical and legal issues concerning students in two of the universities in Amman the capital of Jordan.

The methodology of this research was based on both the qualitative and quantitative studies. In the quantitative method a questionnaire was used, however in the qualitative method observations and interviews were applied.

Software is enormously complex and the process of developing it involves communications between many people with diverse roles and skills. Because of the complexity, risks and impact of computer systems, a professional has an ethical

responsibility not simply to avoid intentional evil, but to exercise a high degree of care and follow good professional practices, to reduce the likelihood problems. That includes a responsibility to maintain an expected level of competence and be up-to-date on current knowledge, technology, and standards and standards of the profession. Professional responsibility includes knowing or learning enough about the application field to act and to do a good job, responsibility for a non computer professional using a sophisticated computer system includes knowing or learning enough about the system to understand potential problems.

The software engineer as a practicing professional must acts from a higher level of care for the customer and they should conforms to the development standards of the profession right, obligations and code of ethics. Software engineers should dedicate them selves to work honestly to all stakeholders. Morality and law are integral parts of human life; they are not covering the same domains. Additionally, Contradictions could be occurred between law and ethics.

The result of the study showed that most of the students are unaware of a lot of ethical and legal issues concerning copyright and intellectual property right. Female students are more conform to ethics, laws and regulations than male students. Additionally, the majority of students believed that the mean reasons for all computer ethical issues are both technologies and human.

6.1 Recommendations

Ethical and legal issues are not that simple and understandable by most of people including sophisticated one. There are a number of issues and actions that must be taken into consideration by government, educational institutional, companies, and individuals in order to widespread the awareness of ethical and

legal issues concerning educational institutional and all of other activities in our daily life. Therefore, the following recommendation should be considered seriously:

- promote awareness among all students and staffs of:
 - ethical issues
 - the organisation's Code of ethics
 - how the organisation's Code of ethics of may be applied to guide ethical decision-making;
- seriously consider adopting a Code of ethics for all students and staffs;
- Educational Institution must not permit to violate copyright and intellectual property within its campus.
- Goverment policies must contain both projects and investments aiming to increase awareness about legal and ethical issues concerning educational institutions and all of other activities in our daily life.
- Each educational institution must establish a written policy on the criteria for ethical and legal issues concerning all parties found in it.
- Each student and each staff should be provided with written material on applicable government and institutional guidelines for the various ethical and legal issues concerning copyright and intellectual property right.
- Supervisors should be obliged to provide guidance in all matters of ethical and legal issues practices concerning different activities within the university. The supervisor must ensure, as far as possible, that all students and staff are fully committed and conform to various ethical and legal issues.
- There must be emphasis on ethical issues such as: Plagiarism, including the direct copying of textual material, the use of other people's data without acknowledgement, and the use of ideas from other people without adequate attribution;

- Establish procedures and actions to encourage students and staff who become aware of unethical practices within the organisation to come forward;
- Introduce a clear policy concerning the use of computing resources by students for their own activities.
- Establish clear guidelines for the introduction and operation of any electronic surveillance process, including email and internet usage monitoring, ensuring that all students and staff are fully consulted and that their rights to privacy in the workplace are respected;
- Promote an approach to systems development that encourages genuine stakeholder involvement in decision-making;
- Promote a high level of data protection awareness among students and staff and review the means by which compliance with data privacy and data protection requirements are assured;
- Analyze the factors that influence membership and data sharing including:
 - cost
 - direct benefits
 - specific programs and services
 - competing associations
 - social or networking opportunities
 - recruitment initiatives
 - retention initiatives
- Software companies should take into consideration the poverty in the developing countries and sell their products in reasonable and affordable prices.
- Laws must be created and applied to avoid cyber crime, such as violation of intellectual property rights, and ensure consumer protection.
- Enact legislation in the fields of data protection and information privacy, electronic signature, electronic

contracts, IT security and computer crimes.

- Buying and selling online involves barriers concerning privacy and security issues that require permanent investments in data security solutions.
- Software engineer as a practicing professional must act from a higher level of care for the customer and they should conform to the development standards of the profession right, obligations and code of ethics.

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