

The two cases that were used in our team's ethics bowl were: Software Protection and Intellectual Property, and Cadillac Chips; a copy of these cases can be found in appendix A. Our IPRO team was split up into two teams. The members of the first team were: Michael Fabian, James Lee, and Jerry Wisniewski. The members of the second team were: Preston Andrews, Michael Dvorscak, and Libby Frebes.

The first question asked was "Neither Public Key Partners (who owns the patent on RSA encryption), the school district, or Alyssa want to get involved in an expensive law suit over the infringement of patent rights. In order to avoid this, you have been asked by IIT to act as an advisor to Alyssa in a meeting that will include the superintendent of the high school, and a representative of Public Key Partners. IIT hopes that during this meeting the four of you will work to see what can be done to resolve this situation. How would you advise Alyssa? Using what you know of intellectual property and the facts of the case, justify your answer." Team one opened the discussion by saying that Alyssa should stop the use of her program as soon as possible and let the other users know that they should discontinue the use of the program. They also mentioned that Alyssa should inform the representative from PKP that she had distributed it further using the message board. And they raised the question of whether PKP knew the extent of the usage of her program. In team two's rebuttal, they had said that Alyssa has a responsibility to the school to find a viable replacement for the encryption system; whether that replacement is a free version of the software or whether she would have to write a new encryption system. They did say that she definitely had an obligation to replace it at no cost to the school since it was her idea initially and considering the fact that the school has no money. In team one's rebuttal they raised a couple of questions regarding the case. One of these questions was, was it the professor's fault, should he have warned the students? They felt that it was not the professor's fault and mentioned that RSA encryption is open source. And expanded on the ramifications of RSA encryption being open source; saying that since it was open source it was freely distributable and open for modification. Another question raised was, is the school responsible for paying for damages? Both teams felt that the school should not be held accountable since it was Alyssa's idea to put this software on the computers initially.

The second question asked was "What responsibilities did G.M. engineers have in regard to either causing or resolving the problems with the Cadillac Seville and Deville models?" Team two opened by saying that the G.M. engineers had a responsibility to their employers, their customers, and the world in general. These responsibilities have to be weighed, and team two argued that they had the greatest responsibility to the world to help maintain the environment. They had also mentioned that although it was legal for G.M. to test the way they did, it was unethical because it was really a loop hole. In team one's rebuttal, they had said that either way G.M. was going to have to pay for doing the job correctly, so they should have done it correctly the first time. The issue of whether it was the G.M. engineer's faults or their manager's faults was raised. Both teams felt that the case was too ambiguous to be sure, but both teams assumed there was pressure from management to get the job done as quickly as possible. The discussion then explored the idea of whistleblower engineers and what their course of action should be ethically, and to what extent should they take it. Team one felt that the engineers should keep reporting the problem up the chain of management, and then if that fails to release the problem to the press. Team two felt the same way but they also questioned the probable loss of the engineer's job. They brought up a point about the duties that the engineer may have, not only to the world but also to their family; a loss of job could result in being unable to support one's family.

I felt that our entire IPRO team did an excellent job addressing the core ethical issues from each case. As the discussion progressed the issues seemed to become clearer and the ambiguities were clarified, through the use of hypothetical situations. At some points during the discussion we veered off track but at the end of each round we wrapped up the main issues nicely. Some ethical guidelines from professional sources were used when helping to make decisions about the cases, Association for Computing Machinery is one such organization. I think some of these issues are likely to come up in a professional atmosphere outside of IIT. Especially the Cadillac case, it is likely that I, or one of my co-workers, will be put into an ethically questionable situation to save the company money. This ethics bowl was a great way to explore my ethical options safely.

For the case 1, I was originally thinking that professor who introduced RSA encryption to the students was also responsible for the case and also he should have said something to the student about the patent. However, during the discussion in the class I learned the responsibility is more on the student and the high school, who spread the program to other schools. The discussion also reminded me how complex the intellectual property ownership is. For example, if someone made a new program and released it on the market. Then he found out the program was already on the market and he was sued by breaking the copyright. He didn't know about the existence of the other program. If it is proved that he really didn't know, is he still guilty or innocent? We as engineers should better know about intellectual property and always write references on the information you are using and be aware that it is someone's property.

As we discussed the issues in each case study my understanding of the problem as well as the ethical dilemmas became clearer. In the first case about General Motor's engineers essentially lying about the car passing an emissions test, it became clear that the engineers have a responsibility to higher level managers to tell them about these issues. Then the dilemma of them telling people outside the company came up, and if they have the additional responsibility to tell the media. These connections were not something I originally thought of when reading the problem statement. The second case was very interesting because the issue was really about who should take responsibility of the patent violation. It seemed more open for discussion because it is hard to determine who is really at fault, as well as viable solutions to the issue. The best solution seems to be the 3 parties coming together, the company, the school, and Alyssa, and figuring something reasonable out. I think I got a lot more out of the ethical dilemma discussion than what I originally thought I would.

The ethics discussion in IPRO 324 was executed just about how I would have expected it to be. The class received the topics and read over them then proceeded to discuss the ethical issues in each. Overall, the discussions went well. Both teams during the discussion pretty much had the same ideas about the articles on whether what was done was ethically correct or what more should have been done. From the articles it was made clear that ethics aren't always on the agenda in the professional world, and that the resolution to a problem is not always black or white either. From this, it is apparent that issues of this nature will appear throughout the course of our professional careers and that we must be ready to deal with these as they come up. I also believe that while ethics may be a problem for some, the members of our IPRO have good ethical standards and are willing to bring them into the workforce.

The class discussion of the cases offered a better understanding of each as well as generated more solutions to the problems at hand than originally discussed by each respective group. In regards to the first case about the patent infringement of software, initially it seemed obvious whom to hold accountable for the misuse of said software. However, through the discussion between both groups and the professors, various viewpoints of the parties involved in the case were brought up making it much harder to determine who in fact was at fault. Facts from a similar case at IIT were shared thus the groups had to determine if the outcome of that case was applicable to the one being discussed. The same can be said about the discussion of the second case, for it was discovered that the example case provided inaccurate information which would completely change the decision of each group on what actions should have been taken by the parties involved in the scenario. I believe that a greater understanding of the cases was gained especially in regards to each student as an engineer/programmer. Each student was challenged with putting him/herself in the role of the engineer/programmer and thus was required to determine what he/she would do in such a situation. This gave each group member greater insight in how to handle such dilemmas when faced with them in the future after IIT. There is no doubt that such ethical problems will arise in the future of each student, and with this exercise each is better prepared in handling them once/if they do. Not only are they prepared to handle the situation but are now more aware of the importance of ethical implications on their work. Each student will have to determine the importance of completing their work while retaining a sense of the ethical concerns associated with it.

First off, having never actually completed a formal debate before, the debate and discussion in class was new and helped to broaden my view on debating. That much aside, however, the debate did help to expand my view on the topics discussed. For example, when discussing the second topic (Cadillac Chips), the debate forced me to

expand my scope and look more toward the overall environmental effects. I believe both topics discussed (Software protection and Intellectual Property, Cadillac Chips) brought up very interesting and relative issues when it comes to IPRO 324. The first case brought up the idea of making sure we are not creating or using anything which is under copyright - very important since we are using outside hardware and code. The second case rose the issue of environmental effects which also applies to IPRO 324. The system we're making must be environmentally safe when it comes to its radio frequency usage. Overall, the debates seemed to be worthwhile and related well to IPRO 324.

Appendix A

Case 1: Software Protection and Intellectual Property

Alyssa P. Hacker is an IIT senior who took CS549 in the spring of her junior year, where she learned about RSA encryption. She was so impressed with the idea that she designed a "secure message system" that uses RSA. Given a message and a public encryption key, the program encrypts the message, which can then be transmitted over the network. The recipient uses the program, together with the associated private decryption key to decrypt the message. Alyssa's program can also generate public and private keys, so that people can generate and advertise their own public keys. (Notice that Alyssa's system doesn't include any kind of certification process. She wasn't interested in providing that high a level of security.) Over summer vacation after her junior year, Alyssa got a job helping her old high school set up its computer lab. Alyssa included her system as one of the programs for people in the school to use in sharing files and messages, both within the school and with other schools. Alyssa also uploaded her programs to a national bulletin board, together with a note saying that she and her high school were supplying it as a free program that can be freely redistributed. Over the past three years, these programs have come to be used widely over various networks, both educational networks and others. Her high school guesses that about 100,000 students, teachers, and others around the country are using the program in sending mail and files, but they have really no way to know, since the program is widely redistributed.

In September of this year, Alyssa got a call from the Superintendent of Schools for her high-school's district. The school system has just received a letter from Public Key Partners, claiming that the widespread use of Alyssa's software is interfering with RSA Data Security's product line, and pointing out that Alyssa's system is infringing PKP's patent. The superintendent is very worried. There is no way for the school to keep track of who is using Alyssa's program, and there is absolutely no money in the school budget to pay for licensing fees.

Alyssa is extremely upset. As far as she is concerned, she merely implemented a simple program that she learned about in an IIT course, and let people use it for free. She is furious at her CS549 instructor, who never mentioned anything in class about RSA being patented. When she goes to complain to him, she finds that he left IIT that past semester.

Case 2: Cadillac Chips

Charged with installing computer chips that resulted in emitting excessive amounts of carbon dioxide from their Cadillacs, General Motors agreed in December 1995 to recall nearly 500,000 late-model Cadillacs and pay nearly \$45 million in fines and recall costs. Lawyers for the Environmental Protection Agency and the Justice Department contended that G.M. knew that the design change would result in pollution problems. Rejecting this claim, G.M. released a statement saying that the case was "a matter of interpretation" of complex regulations, but that it had "worked extremely hard to resolve the matter and avoid litigation."

According to EPA and Justice Department officials, the \$11 million civil penalty was the third largest penalty in a pollution case, the second largest under such penalty under the Clean Air Act, and the largest involving motor vehicle pollution. This was also the first case of a court ordering an automobile recall to reduce pollution rather than to improve safety or dependability.

Government officials said that in 1990 a new computer chip was designed for the engine controls of Cadillac Seville and Deville models. This was in response to car owners complaints that these cars tended to stall when the climate control system was running. The chips injected additional fuel into the engine whenever this system was running. But this resulted in tailpipe emissions of carbon dioxide well in excess of the regulations.

Although the cars are usually driven with the climate control system running, tests used for certifying the meeting of emission standards were conducted when the system was not running. This was standard practice for emission tests throughout the automotive industry.

However, EPA officials argued that, under the Clean Air Act, G.M. should have informed them that the Cadillac's design was changed in a way that would result in violating pollution standards under normal driving conditions. In 1970, the officials said, automobile manufacturers were directed not to slip around testing rules by designing cars that technically pass the tests but that, nevertheless, cause avoidable pollution. G.M.'s competitors, the officials contended, complied with that directive.

A G.M. spokesperson said that testing emissions with the climate control running was not required because, "It was not in the rules, not in the regulations; it's not in the Clean Air Act." However, claiming that G.M. discovered the problem in 1991, Justice Department environmental lawyer Thomas P. Carroll objected to G.M.'s continued inclusion of the chip in the 1992-5 models: "They should have gone back and re-engineered it to improve the emissions."

In agreeing to recall the vehicles, G.M. said it now had a way of controlling the stalling problem without increasing pollution. This involves "new fueling calibrations," G.M. said, and it "should have no adverse effect on the driveability of the vehicles involved."

What responsibilities did G.M. engineers have in regard to either causing or resolving the problems with the Cadillac Seville and Deville models?