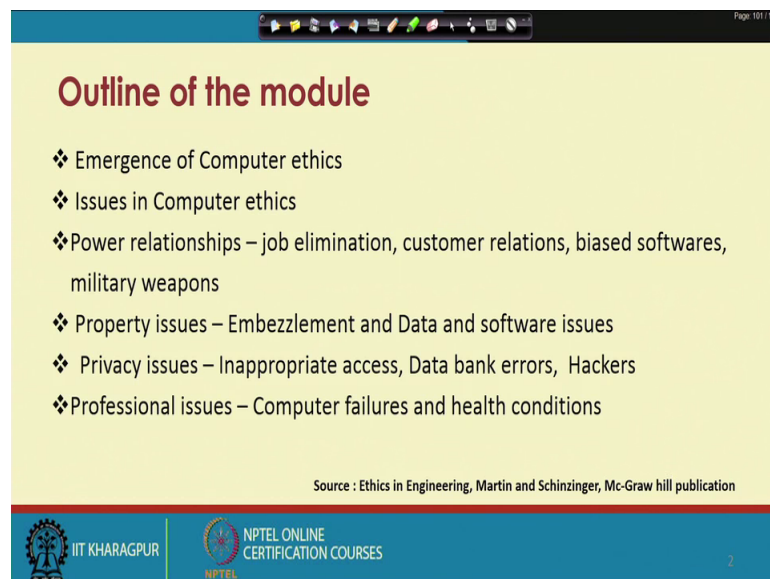


Ethics in Engineering Practice
Prof. Susmita Mukhopadhyay
Vinod Gupta School of Management
Indian Institute of Technology, Kharagpur

Lecture – 17
Computer Software and Digital Information

Welcome, today we are going to discuss about the ethical issues related to a very very important and relevant topic for today, which is for Computers Software's and Digital Information. As we know like with the advent of time computers are getting used more and more so and technology has like become a part and parcel of a life and in every aspect we find use of technology digital information, we use software's. But what are the ethical issues relevant to it and how engineers should be aware of it and how they will use it is the like framework of today's discussion.

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The slide is titled "Outline of the module" and lists six key topics under a red diamond icon. The source is cited as "Ethics in Engineering, Martin and Schinzinger, Mc-Graw hill publication". The slide footer includes the IIT Kharagpur logo and the NPTEL Online Certification Courses logo.

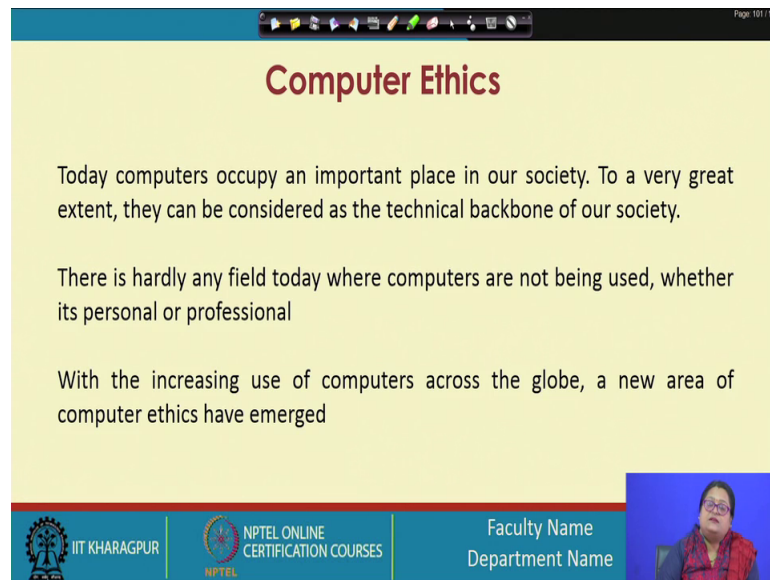
- ❖ Emergence of Computer ethics
- ❖ Issues in Computer ethics
- ❖ Power relationships – job elimination, customer relations, biased softwares, military weapons
- ❖ Property issues – Embezzlement and Data and software issues
- ❖ Privacy issues – Inappropriate access, Data bank errors, Hackers
- ❖ Professional issues – Computer failures and health conditions

Source : Ethics in Engineering, Martin and Schinzinger, Mc-Graw hill publication

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So, let us see what is there in the module of today's discussion. So, the module will cover, emergence of computer ethics, issues in computer ethics, power relationships, job elimination customer relations, biased software's, military weapons property issues like embezzlement and data and software issues, privacy issues like inappropriate access databank errors and hackers and professional issues like computer failures and health conditions.

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Computer Ethics

Today computers occupy an important place in our society. To a very great extent, they can be considered as the technical backbone of our society.

There is hardly any field today where computers are not being used, whether its personal or professional

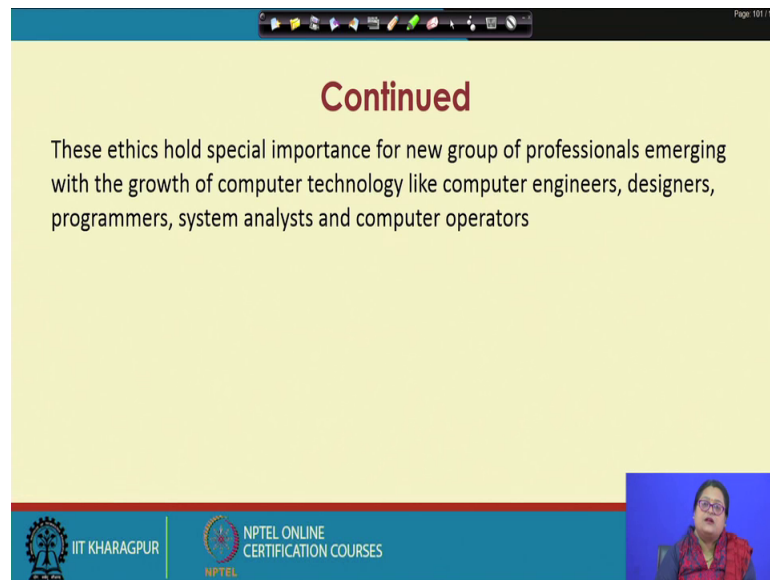
With the increasing use of computers across the globe, a new area of computer ethics have emerged

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So, like you will first start with the discussion of why ethics is relevant in the field of computers or how the both the fields of computers and ethics get connected. So like we understand like computers today occupy a very prominent place in important place in our society. So they are considered to be the technical backbone of our society. We just cannot think of any field today whether it is professional or personal, where there is no use of computers now.

So, just I was telling it has lively become life part and parcel of our life and it has like got intricately related to every aspect of a life. So, with this increasing use of computers, the new area of computer ethics have emerged like if there is a conflict of interest between 2 parties, then how to solve that what is right and what is wrong what should be done what should not be done in certain cases of dilemma. It is a area where computer ethics like focuses on.

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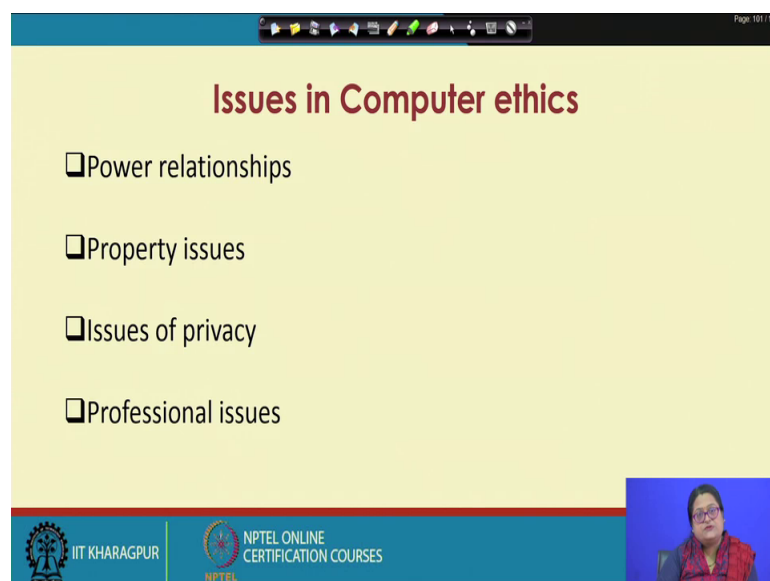
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These ethics hold special importance for new group of professionals emerging with the growth of computer technology like computer engineers, designers, programmers, system analysts and computer operators

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So, this ethics is mainly concerned with or it is holds special importance for a new groups of professionals like computer engineers, designers, programmers system analysts and computer operators. Because, everybody has their own field of expertise stated responsibilities what they can do and if they are working within an organization also that gives a professional responsibility and responsibility as an employee towards that an organization. So, different like inter web of relationship starts and ethical issues crops in. So, this field of discussion will be related to that.

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The slide features a yellow background with a red title 'Issues in Computer ethics'. Below the title, there is a list of four items, each preceded by a square checkbox. At the bottom, there are logos for IIT KHARAGPUR and NPTEL ONLINE CERTIFICATION COURSES, along with a small video inset of a woman in the bottom right corner.

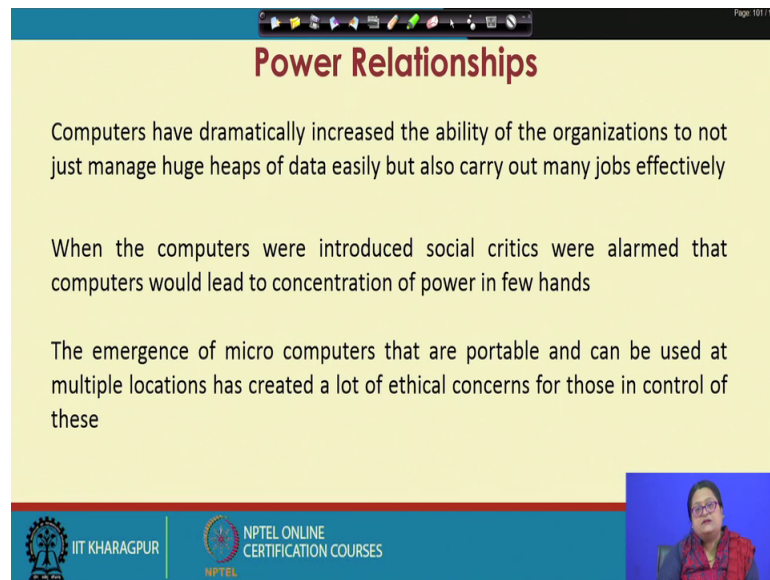
Issues in Computer ethics

- Power relationships
- Property issues
- Issues of privacy
- Professional issues

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So, what will be the important issues in computer ethics, as we told like it could be power relationships, it could be property issues, it could be issues of privacy and it could be professional issues also we will be looking into each of these one by one.

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The slide is titled "Power Relationships" in a bold, dark red font. It contains three paragraphs of text on a light yellow background. At the top right of the slide, it says "Page 101/102". At the bottom left, there are logos for "IIT KHARAGPUR" and "NPTEL ONLINE CERTIFICATION COURSES". At the bottom right, there is a small video inset showing a woman with glasses and a red patterned top.

Power Relationships

Computers have dramatically increased the ability of the organizations to not just manage huge heaps of data easily but also carry out many jobs effectively

When the computers were introduced social critics were alarmed that computers would lead to concentration of power in few hands

The emergence of micro computers that are portable and can be used at multiple locations has created a lot of ethical concerns for those in control of these

Starting with power relationships, we understand like computers have given like a huge power ability to the organizations to deal with in heaps and heaps of data easily and it has also given the capability to do many jobs effectively. So, because we understand in it is gives a lots of power to the organization.

So, when initially if you remember like when it was introduced, so many people thought like many social critics thought like it will lead to the concentration of power only in few hands. Those who know like who have the knowledge of computers who can use it and those who do not know, it will be the people who will be less powerful.

So, this was one issue concentration of power, another thing is that with the like increase in portability of the computers, they can be used at multiple locations, they can be taken anywhere and any device can be connected to the other device and it leads to lot of ethical issues responsibilities awareness for the for the control of these things, because all it may be in relates to is a responsible use of the devices to become more responsible towards the duties people have not only to oneself, but also to the others and to like understand what it means to be a responsible use.

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Job Elimination

Computers have led and will continue to eliminate some of the jobs. The emergence of computers in any organization leads to the removal of a few people as computers can handle many tasks with just one operator.

However in large organizations there is possibility of readjusting work assignments, adjusting work loads or assigning other tasks to people but such possibilities do not exist in small organizations

There is a need to weigh moral considerations of human costs attached with emergence of computers in the organizations

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So, one of the most important area of focus which falls under the domain of computer ethics and why there was the social critics were much concerned about the introduction of computers were for the fact of job elimination. So, it is a true fact like computers can do like heaps of jobs to be, you know like very easily and within a less time with more efficiency.

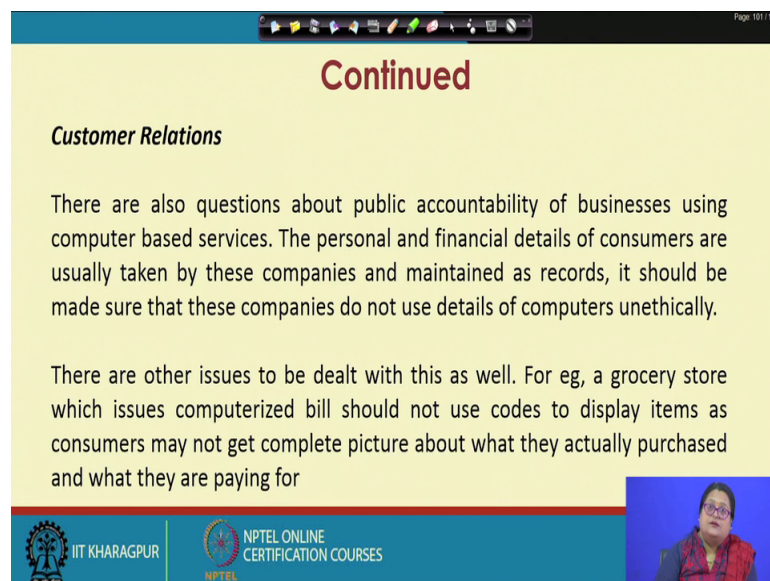
So, it has led to elimination of some jobs, clubbing of two three jobs together and it has led to like removal of some people from the job. So, this leads to an ethical question, so how to like ensure the right to work for these people, what is the responsibility to train them? So, can they mean like rescaled for another kind of work, which is more relevant and which the work which is not to become absolute.

So, sometimes it happens like we think like the people has person has become absolute, but if we can train that person can we fit him to another job which is recent 1 by rescaling that person. So, these are some questions ethical issues to deal with, like when we are talking of the manpower reorientation after the introduction of computers.

So, what we can think like is that if you are in a very large organization, if there is a possibility of readjusting work assignments maybe adjusting workloads or assigning other tasks to people. But in small organization such possibilities are not there. So, what we have to understand is the way the moral considerations of human cost attach to the emergence of computers.

So, like can we drastically introduce computers and make people feel like they are redundant absolute and what is the cost related to it. So, cost in terms of maybe a person suffering job loss maybe his or her family suffering. So, we have to understand this and balance it with finding better opportunity for the person, if truly computer is required for the job that the person was doing can were skill retrain that person. So, that the person becomes more efficient more develops the competency for a new job role. So, these are the considerations that require to be maintained.

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Continued

Customer Relations

There are also questions about public accountability of businesses using computer based services. The personal and financial details of consumers are usually taken by these companies and maintained as records, it should be made sure that these companies do not use details of computers unethically.

There are other issues to be dealt with this as well. For eg, a grocery store which issues computerized bill should not use codes to display items as consumers may not get complete picture about what they actually purchased and what they are paying for

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Another important point is customer relations. So, it so happens because we understand like whether organizations who are using businesses who are using computer based services, what is the level of their public accountability. So, in many cases what happens the details the personal and the financial details of consumers are usually taken by these companies and maintained as records.

So, it is again the responsibility of the company to ensure like that nobody uses details in an very unethical way. So, it is not shared with other companies for their businesses without the prior knowledge of the consumers, but in many cases this is done. So, which encroaches upon the privacy of the consumers, like one company may have taken my personal and financial details.

It enters into understanding with another company with whom it shares a data and then that company starts promotional campaigning does phone call or sends you like

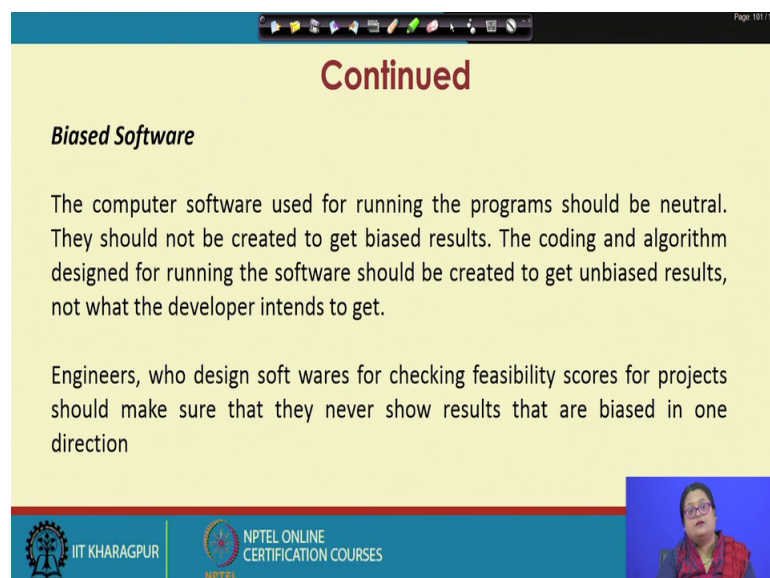
advertisements for accessing their services which sometimes become like maybe irritating for the consumer.

So, whether this can be done without the knowledge of the consumers, so we have said their data to a particular company for their particular purpose, but whether companies can share their data with each other without informing the consumer about it is an ethical question.

So, there are other issues also like if somebody this could be small issues like, if a grocery store is which issues a computerized bill should not use clue codes to display items as the consumers may not be able to map, what they have purchased and what they are paying for.

So, this example may be a very day to day small example, but these are important issues for understanding from the viewpoint, from the perspective of the consumer what they really want from the businesses who are using like computers for their ease of their functioning and what is the degree of responsibility they expect from these companies. Maybe some very big in depth issues some may be very small minor issues, but this could be the range of expectations biased software.

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Biased Software

The computer software used for running the programs should be neutral. They should not be created to get biased results. The coding and algorithm designed for running the software should be created to get unbiased results, not what the developer intends to get.

Engineers, who design soft wares for checking feasibility scores for projects should make sure that they never show results that are biased in one direction

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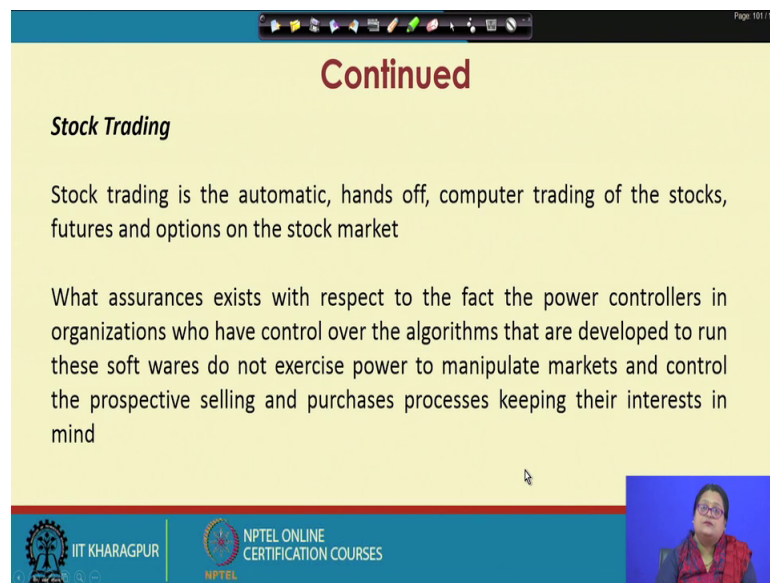
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So, the computer software which are used for running the programs should be neutral, it should not be biased to get they should not be created to get biased results; so it should be created to get unbiased results and not what the developer intends to get.

So, this is more relevant for engineers who design software's to check feasibility scores for projects. So, they should make it very sure like the software that they are designing a should not be biased towards the results in one direction only.

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Stock Trading

Stock trading is the automatic, hands off, computer trading of the stocks, futures and options on the stock market

What assurances exists with respect to the fact the power controllers in organizations who have control over the algorithms that are developed to run these soft wares do not exercise power to manipulate markets and control the prospective selling and purchases processes keeping their interests in mind

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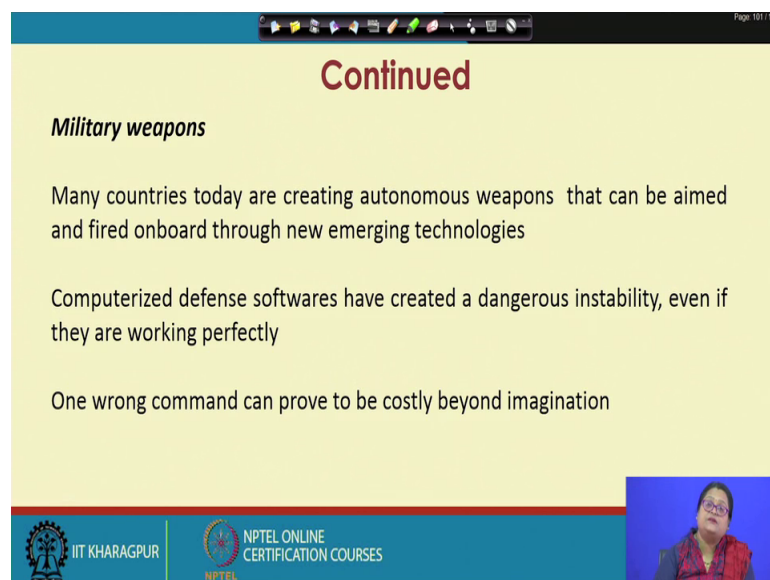
Stock trading, is an automatic hands of computer training of the stocks futures and options in the stock market. So, this we understand is very like sensitive issue in the sense, what assurances is exist with respect to the fact the power controllers in the organization, who have control over the organ algorithms that it developed to run the software's do not exercise power to manipulate the market and control the prospective selling and purchases of the processes keeping their interests in mind.

So, what we are discussing over here is the conflict of interest of the people who are developing the computer training like you algorithms for the stocks. But because they know the algorithm and maybe it is could be a conflict of their personal interest, where they try to influence manipulates the market and control the prospective selling and purchase processes.

So, these are called like conflicts of interest happening and again what is the degree of self discipline and whether you will be doing it or not doing it. But who is going to give that assurance so who is like who is trustworthy, how can we trust what are the qualities which needs to be present in the person. So, that we can trust that person so this again becomes a question of not only rights and responsibilities and duties, but the virtuous nature of the person who is dealing with these important algorithms.

So, we when you are talking of ethics here we are more talking of the personal values and dutiful nature of the person, who which makes the person realize the importance of their duties towards the greater society and to others.

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Continued

Military weapons

Many countries today are creating autonomous weapons that can be aimed and fired onboard through new emerging technologies

Computerized defense softwares have created a dangerous instability, even if they are working perfectly

One wrong command can prove to be costly beyond imagination

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Military weapons this is another important area which needs to be focused is like, when we talk of defense software's many countries today are like creating autonomous weapons that can be aimed and fired on board through new emerging technologies.

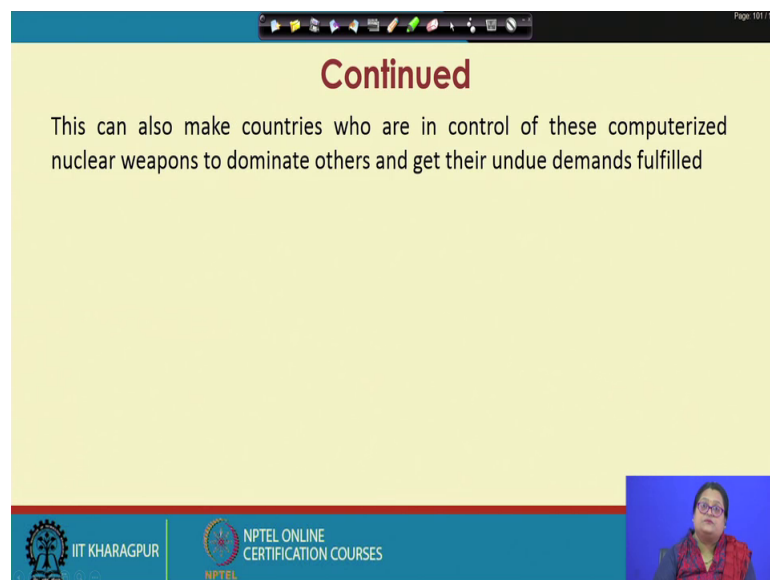
So, what is the degree of perfection required in it, who is responsible for it, how many checks do you do to understand it is like full proof it will be working correct, what is the degree of care that you take in developing it. These are very important aspects to be dealt with this computer is this defense software's.

So, because it has created dangerous instability even if they are working perfectly, because we understand one wrong command can prove to be costly beyond imagination.

So, we have to understand we have to realize the degree of harm that may be provided by a small level of negligence on 1 spot.

So, what is the due care taken what is the extent of care taken to find out, what is the depth of maybe alternatives that we have tested to find out like, whether it is working properly or not so to and maybe to what extent we have extended our moral imagination to find out what would be the possible misuse also and what are the preventive actions that we may take. So, that nothing wrong is going to happen because again we understand 1 wrong command in the sense is really very costly.

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This can also make countries who are in control of these computerized nuclear weapons to dominate others and get their undue demands fulfilled

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So, these are important because, it means power. So, those countries who are in the control of this computerized nuclear weapons are may dominate others and they and they get unused demand fulfilled.

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Property

Two of the most widely publicized forms of computer crimes are;

Embezzlement of funds

Stealing money or financial assets

With the control of computer technology, in just a few clicks, millions of money can be transferred from one account to another, creating the bankruptcy in seconds for the other

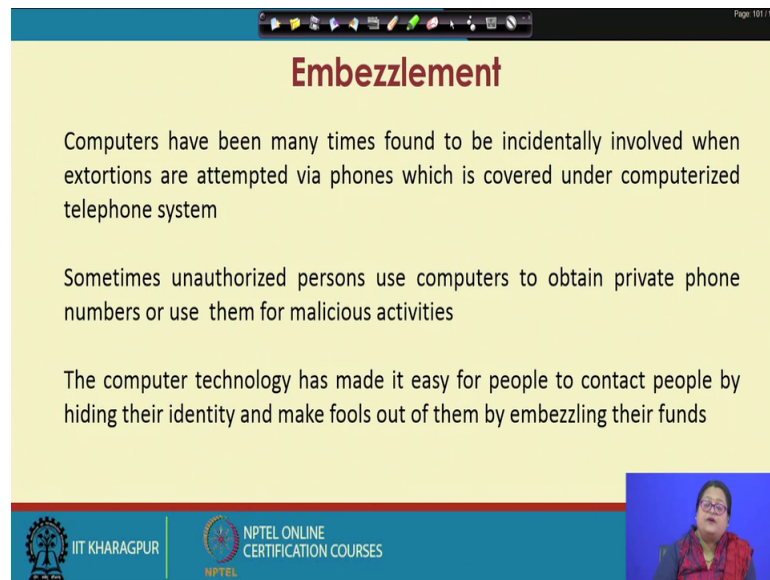
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So, that is why it is very important to understand the degree of like consequences that may happen, if one wrong commands happened or what is the like importance of this. So, that we need to have a proper check on it is proper function.

When you talking of property we understand the one like very very widely discussed area of computer crime is that with related to property, where we talk of embezzlement of funds and stealing of money or financial assets.

So, what we find like in many cases with the advent of computers and computer technology with just few clicks millions of money can be transferred from one account to the other creating bankruptcy in seconds for the other.

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Embezzlement

Computers have been many times found to be incidentally involved when extortions are attempted via phones which is covered under computerized telephone system

Sometimes unauthorized persons use computers to obtain private phone numbers or use them for malicious activities

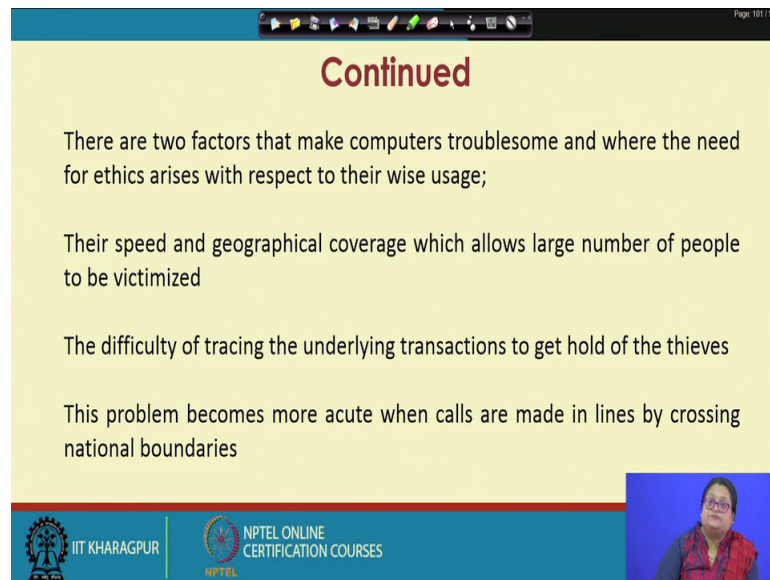
The computer technology has made it easy for people to contact people by hiding their identity and make fools out of them by embezzling their funds

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So, these are some of the threats that which are there. When we talk of embezzlement, so, we find like computers are in many cases are involved. When extortions are attempted by a phone switcher covered under computerized telephone system. So, sometimes un authorized persons use computers to obtain private phone numbers or use them for malicious activities.

So, like the technology has made people made it very easy for people to contact people by hiding their identity and make fools of them by embezzling their funds. So, these are important areas where we need to keep our self check on and maybe understand the what are the degrees of risks involved and more so like who can be trusted and what are the trustworthiness and at the end of course is self responsibility understanding our duty to others and not to get involved in these type of activities.

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There are two factors that make computers troublesome and where the need for ethics arises with respect to their wise usage;

Their speed and geographical coverage which allows large number of people to be victimized

The difficulty of tracing the underlying transactions to get hold of the thieves

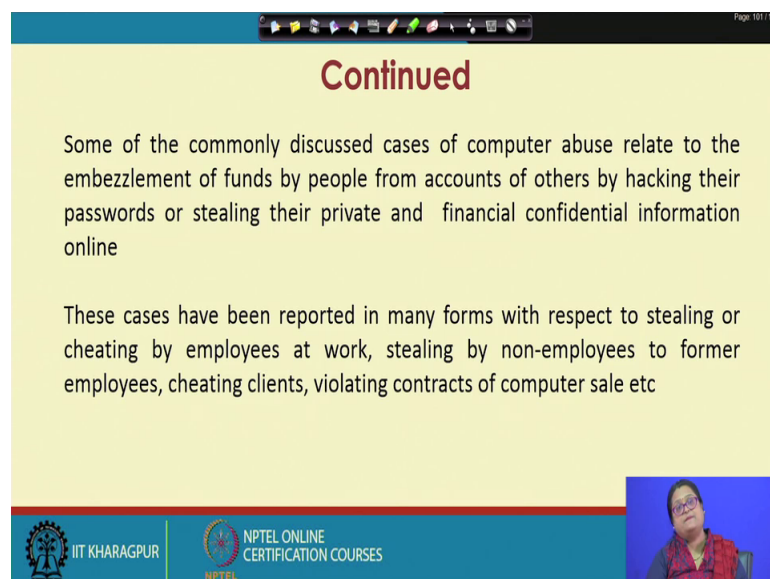
This problem becomes more acute when calls are made in lines by crossing national boundaries

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So, there are two factors which makes computers very troublesome and which like makes it is very important for their wise usage and their speed and like geographical coverage is huge which talks of which allows large number of people to be victimized. So, and it is the difficulty of tracing the underlying transactions to get hold of the thieves. So, and maybe if it is crossed borders using lines by crossing national boundaries to come into the problems becomes further more complex.

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Some of the commonly discussed cases of computer abuse relate to the embezzlement of funds by people from accounts of others by hacking their passwords or stealing their private and financial confidential information online

These cases have been reported in many forms with respect to stealing or cheating by employees at work, stealing by non-employees to former employees, cheating clients, violating contracts of computer sale etc

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So, in this case again, it is very important like it is not only a wise usage is required in this, but also it is the wide usage of those computers throughout which you requires a wise usage and responsible usage of the computers. So, that we like it is a sort of self discipline and control on our greed.

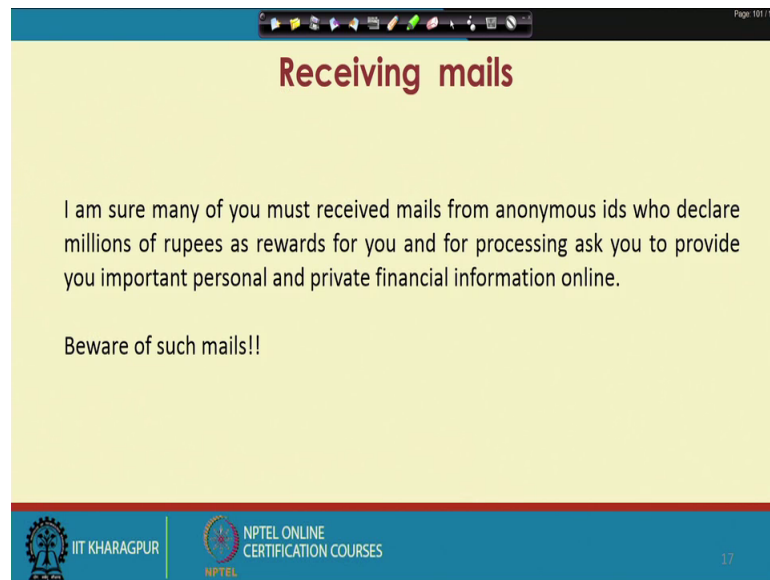
So, these characteristics becomes a more important when you are talking of this because, if we understand so much wide usage like it is become untraceable thieves are not being able to court like it is been used cross boundaries then and it becomes difficult to check. So, it is a like it is a free playing ground like if you want to do anything you can do anything then who is going to stop you.

Of course, it is me who is going to stop myself if I do have a conscience, if I do have a caring mind which tells us about like makes us aware of the duty that we have not only to ourselves but also to others, because if everybody is not becoming responsible for their duties this cycle of harm is going to prevail.

If I am going to harm someone today so I cannot guarantee I cannot ensure like the other person is not going to harm me in the next day in a much may be trickier way, where I am not able to understand how I got cheated. So, it is a self question of trust and trustworthiness self discipline these are the things which becomes important in the wise usage of the computers.

So, some of the commonly discussed cases are computer abuse relates to the embezzlement of funds from peoples accounts, by hacking their passwords or stealing their private and financial confidential information. So, this has been reported in many cases with respective to cheating by employees at work non employees to former employees, cheating clients violation of contracts or computer sales etc. So, there are repeat cases about it.

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The slide features a yellow background with a blue header and footer. The title 'Receiving mails' is centered at the top in a dark red font. Below the title, there is a paragraph of text in black font. At the bottom, there are logos for IIT Kharagpur and NPTEL, along with the page number 17.

Receiving mails

I am sure many of you must received mails from anonymous ids who declare millions of rupees as rewards for you and for processing ask you to provide you important personal and private financial information online.

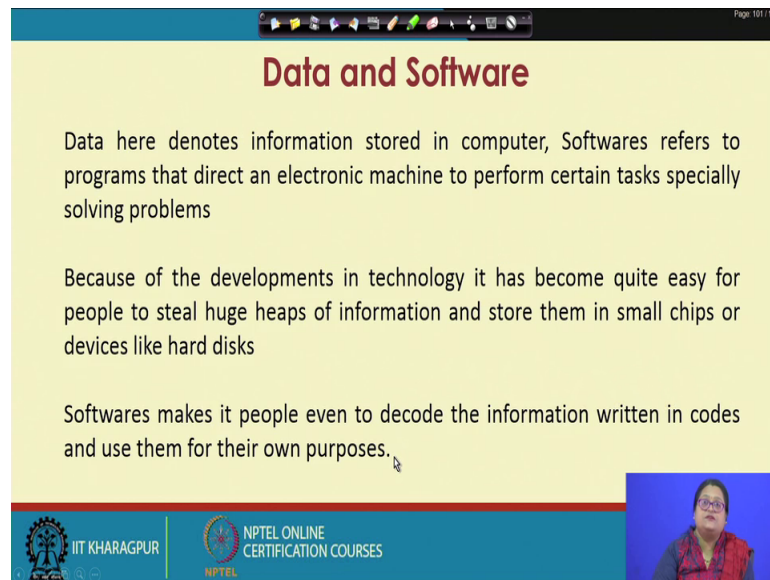
Beware of such mails!!

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Another important thing which has become like very rampant these days is that of receiving emails and receiving mails about certain things, which will try to see like what about what issues that we receive mail. So, it is been sometimes what we sometimes receive mails from anonymous id's who declare millions of rupees as rewards and the as a part claim of processing asking us to provide or important personal and private and financial information's.

So, we should be like aware of this mails, sometimes it happens people may ask like they have got trapped somewhere and they have got trapped somewhere and they need fund stood a which is a sort of help that needs to be transferred to their bank accounts and all these type of mails come. But we really need to be careful about these type of mails.

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Data and Software

Data here denotes information stored in computer, Softwares refers to programs that direct an electronic machine to perform certain tasks specially solving problems

Because of the developments in technology it has become quite easy for people to steal huge heaps of information and store them in small chips or devices like hard disks

Softwares makes it people even to decode the information written in codes and use them for their own purposes.

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When you talking of data and software So, data denotes information which is stored in computer software talks refers to programs that direct an electronic machine to perform certain tasks specifically solving problems. Because, of the developments in technology it has become easy for people to steal huge heaps of information and store them in small chips or devices like hard disk. So, software's help people to decode information; written in codes and to use them for their own purposes.

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Privacy

Storage and retrieval of huge data bases has become quite easy because of the developments in technology and it has thus made easy for people to access the private information of people

By making data easily available to people , computers have made it difficult for people to protect their privacy

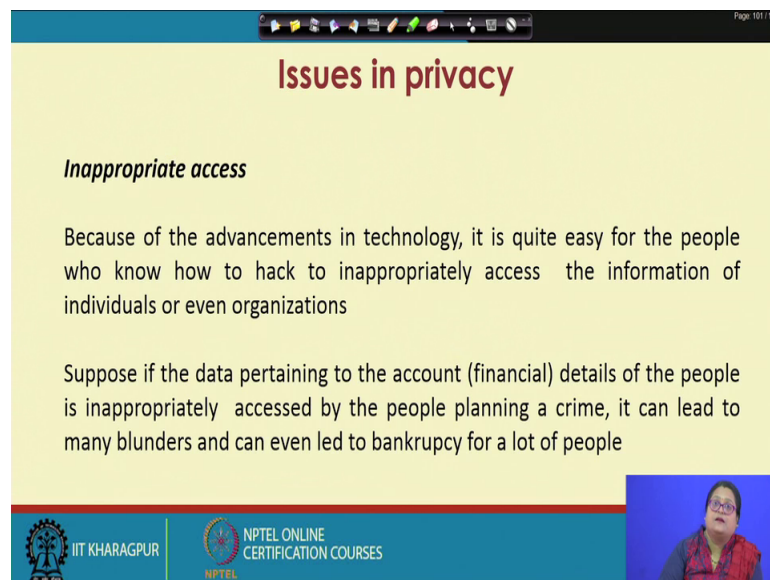
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So, again capability given is huge like the power to use given is huge and also the power to misuse for providing harm to others is also given huge, it is the path that we choose for ourselves. So, because storage and retrieval of huge data has become quite easy; because of the developments in technology, it is thus made easy for people to access the private information of others. So, that is why by making data easily available to others computers made it very difficult for people to protect their privacy.

We may debate about the fact like why we what why we need to maintain some privacy, why the information should not be shared with others. So, these are again questions of debate like what are those information's which needs to be shared with others and for what purposes we are going to share it and what are those information which are private and we are like we can tell like they are not going to share these things with others.

So, their this could be debates there could be changing views different views, but we have to understand. So, it is computers are make it difficult for people to protect their privacy and what could be the issues in privacy like inappropriate access.

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Issues in privacy

Inappropriate access

Because of the advancements in technology, it is quite easy for the people who know how to hack to inappropriately access the information of individuals or even organizations

Suppose if the data pertaining to the account (financial) details of the people is inappropriately accessed by the people planning a crime, it can lead to many blunders and can even led to bankruptcy for a lot of people

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So, be that we were discussing it is because of the advent of technology because of the advancements in technology, it has become quite easy for people to know how to hack or get inappropriate access into the information of individuals and even organizations. So, if such like informational details are suppose the financial details are accessed by people who are planning a crime.

So, it can lead to blunders and bankruptcy of lot of people, so again who is going to stop it how like, what are the legal procedures that we may have, what is the degree of vigilance that we will be having.

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Continued

Data recording errors

Sometimes the errors made while making records in data bases or not updating the records on time could prove to be very costly

For eg, while maintaining record of the criminals, photos of two criminals are replaced by the innocent people

Or Mr. Yen had already cleared the loan amount but the details were not updated by the bank officials in the system. Because of his visibility of name under defaulters, a case was lodged against him.

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So, that we can stop these issues are important points of discussion, because though we are telling like it depends on the self responsibility of the people it understands the duty of the person to do something.

So, like can we expect every people to be responsible to understand their self responsibility or we need to have side by side also, some institutional mechanism very strong to understand how to arrest for these people check on this type of behavior and what are the degree of like vigilance to be maintained. So, that we can prove actively do something we can set some guidelines we can set some codes, we can set some guidelines to what how can we make the legal mechanism very strong. So, that we can like arrest these type of behaviors getting repeated or done again and data recording errors.

Sometimes the errors made while keeping records in databases or not updating the records on time could prove to be very costly. So, what happens like if while maintaining the records of criminals photos of, if suppose in hypothetical case photos of 2 criminals are replaced by innocent people then, their life will become miserable. So, or suppose

like if somebody has already cleared the role amount, but the details are not updated by the bank officials in the system.

So, it seems mainly appear to be a defaulter and bang you start taking actions on if him, but with which is due to no fault of his because, of the come maybe the data were not updated. So, there in this case we can understand who is at fault who is responsible, so like mister yen is responsible or the bank is responsible there could be again debates of a like why maybe he has not kept the receipt and why the he did not tell like I have submitted the documents I have submitted the load. So, there could be series of arguments for it, but what again it hints towards responsive use of the technology the power of technology that people have attack hackers.

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Continued

Hackers

These are people who compulsively challenge any computer security system

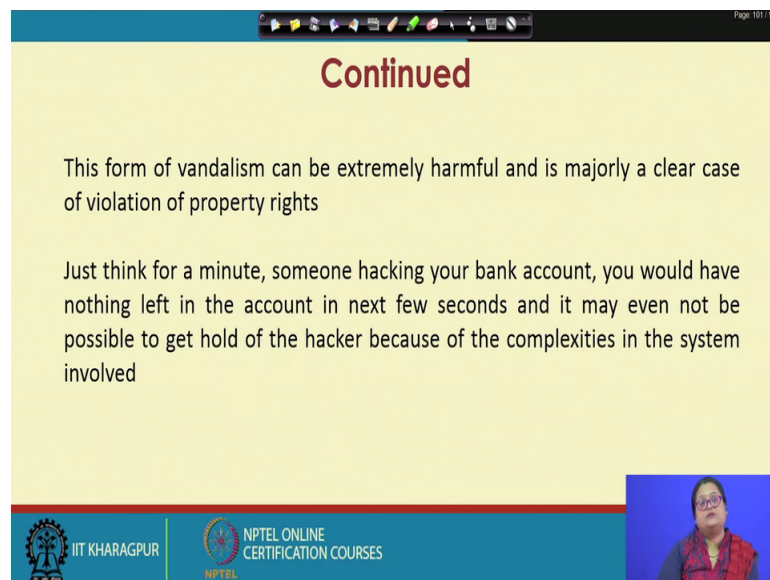
Some even carry the art to place “Trojan horses”, (unwanted codes that copy themselves into larger programs) that choke networks with dead end tasks and spew out false information, erase files or even destroy equipments

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So, these are people who compulsively challenge any computer security system, some even like carry the art to place Trojan horses that choke networks with dead end task and spew out false information arrest flights or even destroy equipments. So, these are like should we be doing it is again a question and because when we understand any information, which is important. So, at people have taken time and invested money invested time invested manpower in like getting those information, then should we doing it and again the counter argument could be. If we understand this will be there then what is the degree of security that should be embedded in the computer security system, so that we can prevent these sudden attacks.

So, this is like an ongoing circular process, but again it talks of responsibility on both of sides like those who are dealing with the securities system. We have to be like cautious about have we made the security strong enough have we made the security system strong enough, so that we can withstand our system can withstand any sort of attack.

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Continued

This form of vandalism can be extremely harmful and is majorly a clear case of violation of property rights

Just think for a minute, someone hacking your bank account, you would have nothing left in the account in next few seconds and it may even not be possible to get hold of the hacker because of the complexities in the system involved

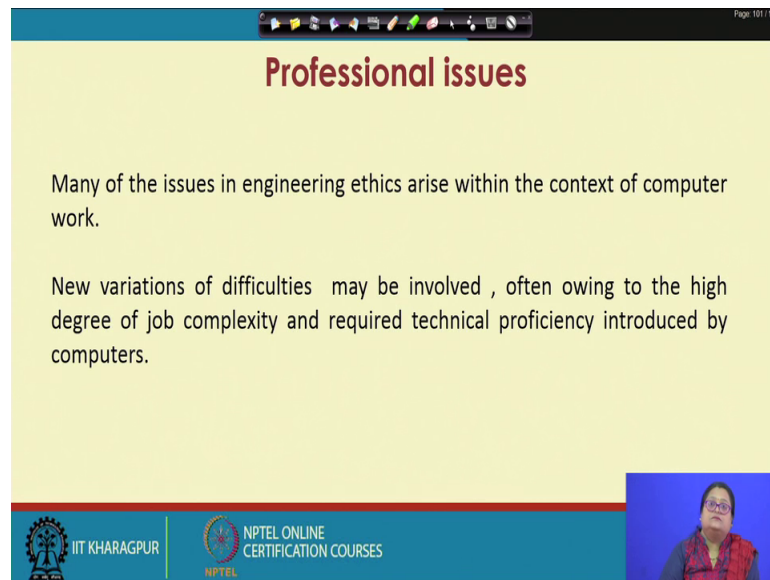
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And again from the hacker's part like should we be doing it, when somebody has really taken effort to collect this data and that data is that information is important to that person.

So, this is a like a clear case of violation of property rights so because, if you can understand because of the complexity of the system and the due to the hackers activity if the you may have like if your bank account is hacked. So, then what happens you will have you will have nothing left in the account, it is not possible even to get hold of the hacker.

So, it brings a lot of disturbance in the life of the person and it is a very like tedious process to like serve this. So, again who is responsible and to what extent and what is our degree of dutifulness to others are the things which gets repeated again and again when you are talking of this.

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Professional issues

Many of the issues in engineering ethics arise within the context of computer work.

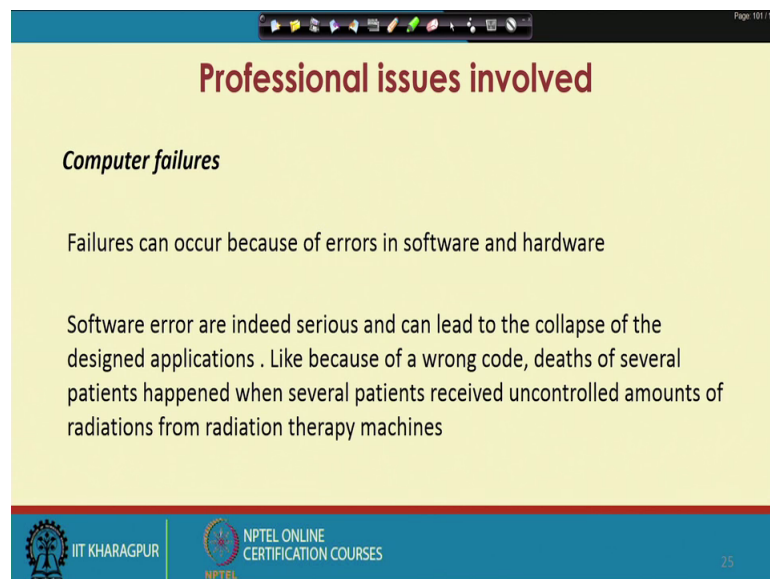
New variations of difficulties may be involved, often owing to the high degree of job complexity and required technical proficiency introduced by computers.

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Professional issues, so like with many of the issues which talks of degrees of job complexity and required technical proficiency are introduced. So, this may lead to like new variations of difficulties will be involved, like what is the information which needs to be shared what is that information we are not going to share with others.

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Professional issues involved

Computer failures

Failures can occur because of errors in software and hardware

Software error are indeed serious and can lead to the collapse of the designed applications. Like because of a wrong code, deaths of several patients happened when several patients received uncontrolled amounts of radiations from radiation therapy machines

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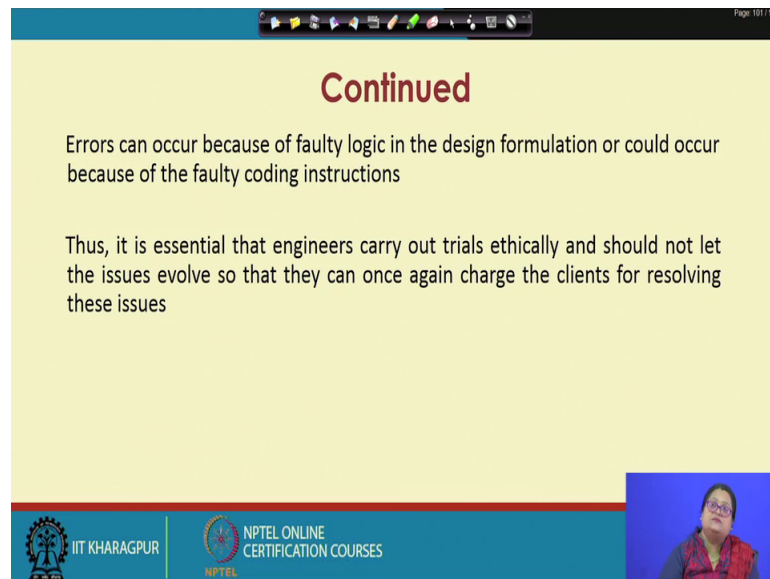
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So, then what is our responsibility in terms of will suppose like computer failures so and that to failures in terms of software and hardware. So, like if software failures may is happening, then it will need to like collapse of the whole of the design application and

we can understand like because of ROM code see a several patients may die because, of the uncontrolled amount of radiation.

So, what is again the degree of responsibility both for while we are talking of the failures in software and also failures in hardware?

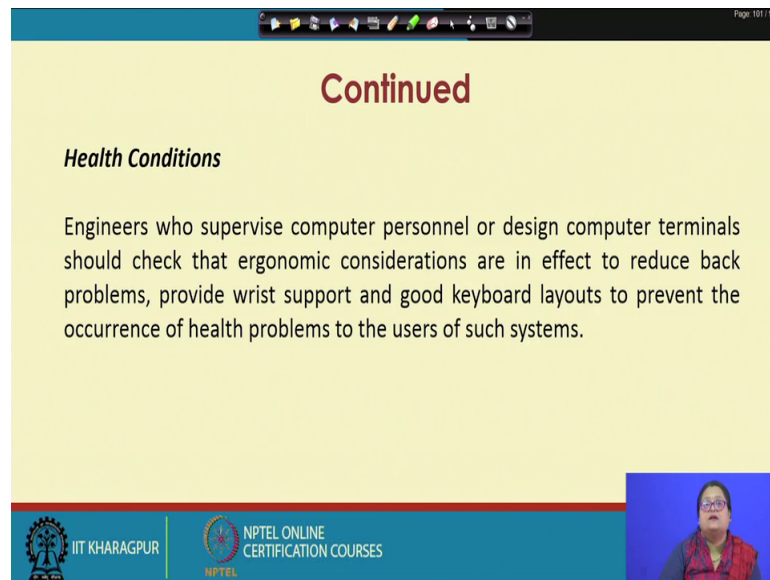
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The slide is titled "Continued" in a large, bold, dark red font. Below the title, the text reads: "Errors can occur because of faulty logic in the design formulation or could occur because of the faulty coding instructions". A second paragraph follows: "Thus, it is essential that engineers carry out trials ethically and should not let the issues evolve so that they can once again charge the clients for resolving these issues". The slide has a light yellow background. At the bottom, there is a blue footer bar containing the IIT Kharagpur logo and the text "IIT KHARAGPUR" on the left, and the NPTEL logo and text "NPTEL ONLINE CERTIFICATION COURSES" on the right. A small video inset in the bottom right corner shows a woman with glasses speaking.

So, so it can occur due to the faulty logic in the design formulation or faulty coding instructions, so it that brings into the forefront the importance of trials and how many trials they should be doing ethically and they should not be taking anything very lightly casually less seriously, because and they should even in the trial phase and because they should not make that error remain. So, that when they can charge the clients again for resolving these issues these are not expected and these are unethical.

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Continued

Health Conditions

Engineers who supervise computer personnel or design computer terminals should check that ergonomic considerations are in effect to reduce back problems, provide wrist support and good keyboard layouts to prevent the occurrence of health problems to the users of such systems.

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So, in health conditions so, while working in computers sometimes affect the health and of the users of this system. So, what are the ergonomic considerations which are in effect to reduce like back problems, provide risk support and good keyboard layouts; these are like important issues because ultimately a person who is working in the computer terminals again and again repeatedly, it may affect the health condition of these people.

So, how much caring we are for these people, what is the degree of care we take for these users and what is the ergonomic support that we give to them are also very important part of the professional risk, like responsibilities that the employers may have towards their employees.

So, or the supervisors may have towards the team members or their juniors. So, these we have discussed like what are the issues related to computers weapons data software, the issues related to the professional ethics, they are issues related to very small like different facets like professional responsibilities with respect to computer failures and not only their work. But what is the responsibility of the engineers towards the users of these maybe computers there has only care taken for their health aspect the ergonomic expects.

So, it involves a wide facet of discussion and 1 or 2 things which comes up prominently again and again over here, because computers equip such with power computer equipments with the capability to make our life more comfortable, make our work easy. But again it

demands from us a responsible use of it because; the same power which can be used to do good for lots of people if it is misused it brings disaster to the lives of people.

So, it is a point of our choice how we are going to do it, use it for the good of the humanity or misuse it and bring disaster to the life of the people. It is our responsible use it is our duty to others and to our self also because, it is a relationship of trust and trustworthiness and a sense of care that we have for the humanity and to the environment to the whole like connections at large. So, that this balance is not disturbed, we have power but we have responsibility also to use it for the good of all and not to provide harm to any.

Thank you.