Ethics in Engineering Practice
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Lecture - 18
Computer Software and Digital Information (Contd.)

Welcome back today we will continue with the session on Computer Software and Digital Information. Yesterday discussion we have discussed about what is the necessity of computer ethics and, what are the different aspects of it what is data and what is software, what is digital information, today we will continue in details with some more discussion and we will discuss two relevant cases for it. So, let us see what is there in the outlines for today's discussion.

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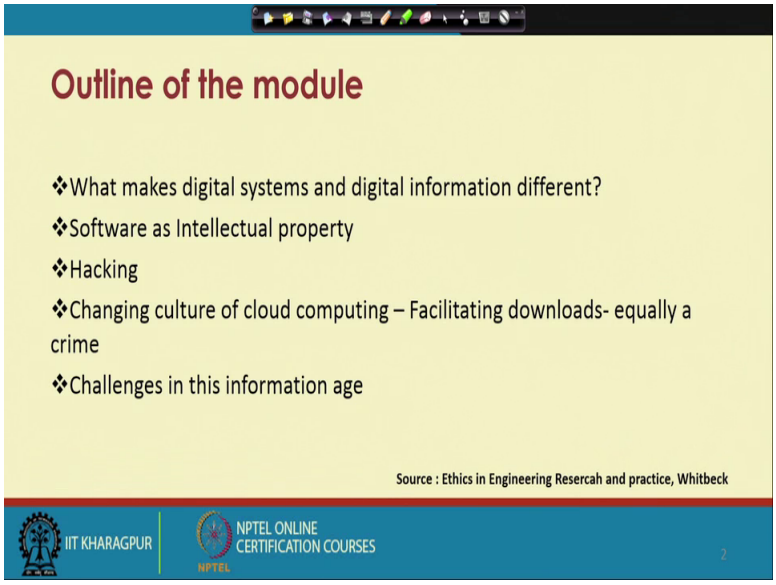

Outline of today's module is what makes a digital systems and digital information different, software as an intellectual property in the last discussion, we have discussed about what is software and what are the responsibilities of people dealing with software. So, today we will discuss at software as an intellectual property, we will discuss something more about hacking, and changing culture of cloud computing facilitating downloads equally a crime, challenges in this information age.

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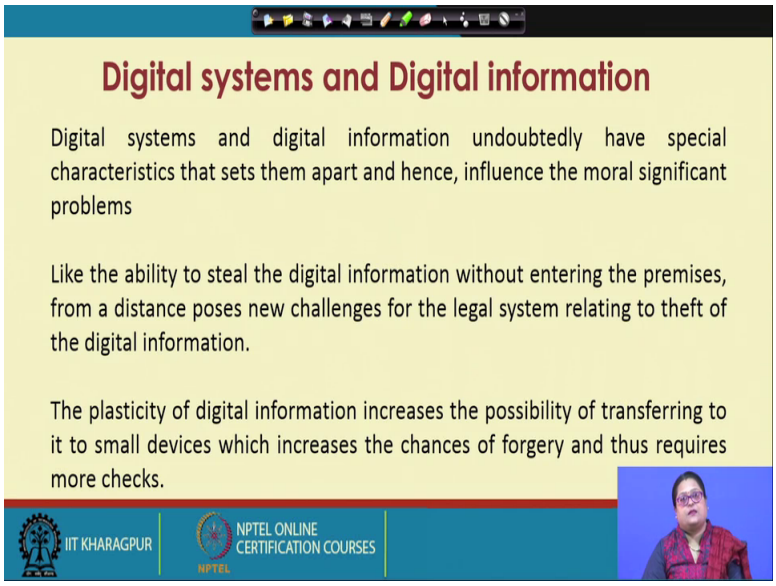

And so, we will continue with digital systems and digital information. So, digital systems and digital information undoubtedly has taken a special characteristics that sets them apart and, that is why the moral significance of it has becomes more important, because it gives us so much of power capability of getting information without maybe any barriers.

So, and getting information of maybe from others also without much effort taken so, how we use that power to what and for what purpose, that brings a moral significant issue and a problem for the digital systems.

So, like the ability to steal the digital information, without entering the premises from our distance process like a new challenge for the legal system like, if somebody has not entered the premises and there is no proof like how that stealing has been done. Then how do we consider, how that theft has been done and who is guilty, whose responsibility was it like was the security was the problem, or the person who were stolen, it is like he is guilty for it.

So, this poses new challenges for legal systems, in finding out who has done the crime and who is at fault. Also the plasticity of digital information, that is like it can be stored in and transferred in any small devices. So, because of that thing it in it is increase the chances of forgery and that is why it requires more checks.

So, what we can understand from here, it opens up a great world of possibility, in front of us in terms of gaining knowledge, sharing information becoming more capable in doing more things knowing more things and using it for different purposes, but again it brings us the risk of also losing information maybe attack on privacy and forgery thefts and which is becoming more complexity by deep. Because it is very hard to make a control mechanism available, who which is going to prevent these kind of things, that is why this is becoming more and important of moral significant issue.

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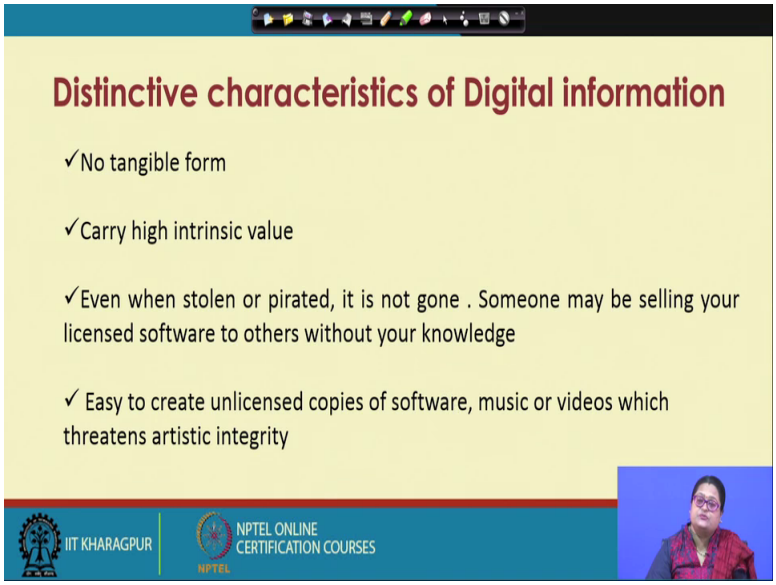

So, what are the distinctive characteristics of digital information is no tangible form, its plasticity its nature. So, it can be installed anywhere it carry high intrinsic value even when stolen, or pirated it is not gone. So, somebody may be selling our licensed software to others without our knowledge so, it is easy to create unlicensed copy of software music, or videos which threatens the artistic integrity.

So, in the large discussions we have discussed about copyrights, we have discussed about patents and how this tries to protect the artistic value copyrights and integrity, but when it comes to the digital world and it becomes. So, easy to create unlicensed copies of software and music of videos it is really a threat to the artistic integrity.

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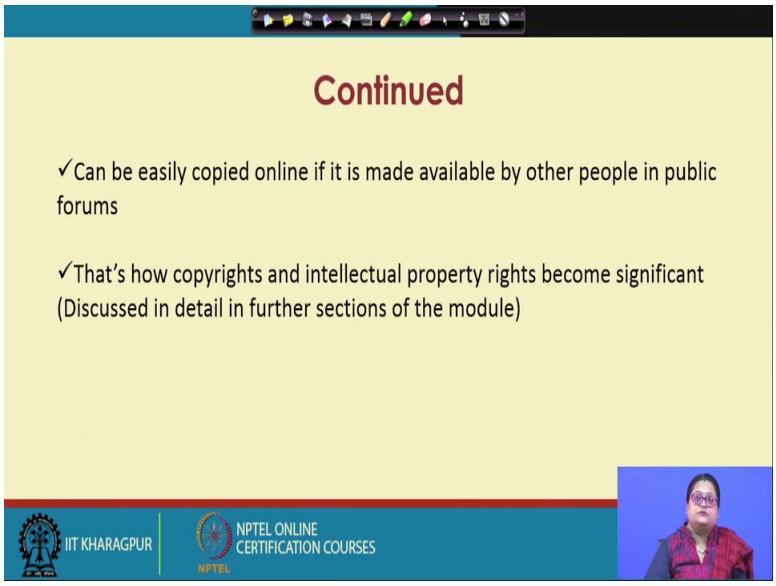

So, can be easily copied online if it is made available by others in public forums. So, because of this thing we have already discussed about the importance of copyrights and intellectual property rights, because these because of this nature like it is become easily available to others and others who can use it as per their like requirements without even acknowledging, or referring to the original creator of that information. That is why copyrights have become important and that is why the intellectual property rights have become important. So, for a detailed discussion you can refer back to the discussion which is already being done, on copyright and intellectual property rights.

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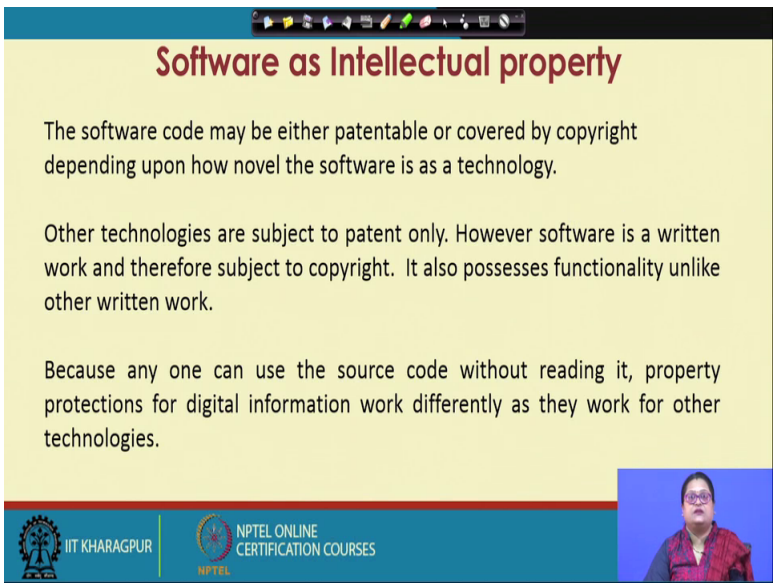

So, we will refer back again to discuss like why we consider software as an intellectual property. So, we consider software to be an intellectual property, because the software code may be either patentable or covered by copyright depending upon how novel the software is as a technology. .

So, other technologies are subject to patent only so, but software because it is a written work, we have to understand patent or patents are applicable for things, which are more of a design qualities there, but when you are talking of software, because it is a written work it is more subject to copyright. So, but it also possesses functionality unlike other written work. So, that is the juncture again which brings it under patent. So, because it patents is for such designs which has got a functionality.

So, because software is a written document it comes under copyright, but like other written work it has functionality. So, because anyone can use the source code without reading it, so, that is why property protection for digital information is differently as they, work differently as they work for other technologies.

So, this thing like anyone who has got hold of the source code they can run it and like get the outcome. So, that is why property protection is for digital information. So, it is both under patent and copyright.

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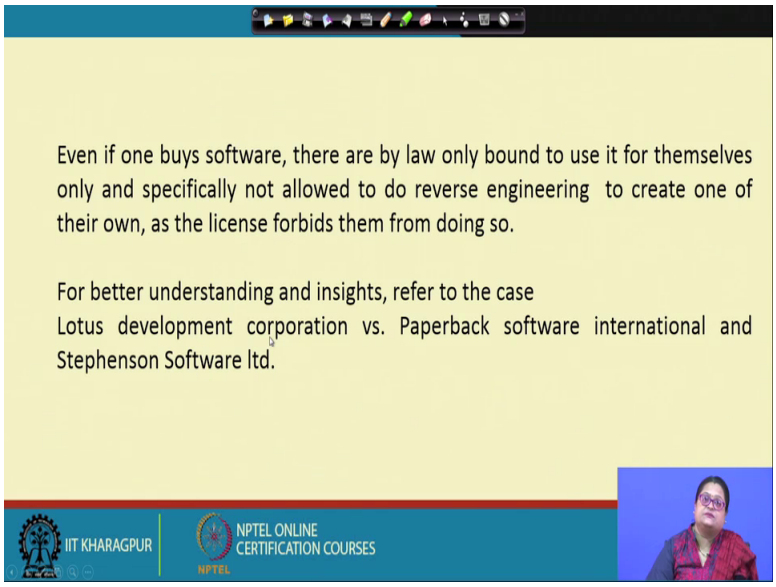

So, even if somebody is buying a software. So, there are by laws only bound to use it for themselves only and, specifically they are not used to do reverse engineering to create one of their own as the license forbids them from doing so. So, if you are buying your software you can used for your own purpose only but you cannot do a reverse engineering, to create one software as their license that you brought it forbids you from doing so.

So, for better understanding of this insight, we can refer to the case of lotus development corporation versus paperback software international and Stephenson software.

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So, the case we are going to refer to is like, we have to discuss over here is it wrong to copy vendors ID. So, SCSI an industry standard system for connecting devices like disks to computers provides a vendor ID protocol by which the computer can identify the supplier and model of every attached disk.

First company makes a file servers consisting of a processor and disks, disks sold by first identify first in their vendor ID. Disk from other manufacturers can connect to first file servers; however, the file server software performs certain maintenance functions, notably pre failure warnings based on performance monitoring only on disks made by first company.

Competitor incorporation decides to compete with first, by supplying cheaper disks for first five server. It quickly discovers that while its disk work on first five servers its disks are at disadvantage with compared to first five first disks, because they lacked a pre failure warning feature of the first disk.

The CEO of the competitor therefore, directs the engineer in charge of the disk product to find a solution for this problem. The engineer of the competitor incorporation, does reverse engineering and discovers that by making the vendor ID on its disks match on the first disk, the first five server will treat competitor disks as first disks. Competitor incorporates this change into its product. And advertisers the disks as 100 percent first compatible, representatives of the first charge competitor with forgery, they maintain that whether or not competitors practices illegal, it clearly violates industry wide ethics.

Competitor justifies its action on the grounds that the favored treatment of the first disk, by first server is unfair and monopolistic. Moreover it argues that using first vendor ID is not forgery, because it does not mislead people, competitor disks are clearly labeled as coming from competitor. Competitor's action at most misleads first software, if this action is not forgery, what it is what if any ethical rights are infringed by copying the vendor ID of the competitor disks.

Now, if we have to discuss this case, then we find that both the first and the competitors have given their arguments, which are again pro which consists of pros and cons. Like if we go in depth of the case, then what we find like first when first server is making the server, then why they are making the software, which is more like favorable to the first disk.

If we remember from yesterday's discussion, then softwares even if developed by someone needs to be neutral in nature, this cannot give any preferred treatment to someone, or arrive at any conclusion results which the designer of the software aims to achieve, that was the discussion that we had on software yesterday.

Competitor curve incorporation is questioning first disk on that issue like if, they have made of server, then why it is like their only their disks are getting a preferred treatment. So, that is their argument for the competitors argument for the against the first, but also that does not make the competitors like practices ethical.

Competitors as we have learned from today they have done, a reverse engineering and tried to find out the vendor code and, mapped it to the vendor code and the without the knowledge of the first company the developers and, that is where they have they violated their copyright.

So, in both the cases that we find it is, we find here like both the parties are at fault the developers have developed it in such the software developers have developed it in such a way, that it is only in their disks who is getting a preferred treatment, which should not be done ethically.

The competitors have also done a forgery by reverse engineering in it entering into the vendor's code and, mapping their disks to it and without the knowledge of the developers and, that is where it is coming under like violation of copyrights and forgery. So, this what we find is both the parties are at fault it is not like it is only competitor is at fault, but it is really both the parties who are at fault and, corrective actions needs to be taken by both.

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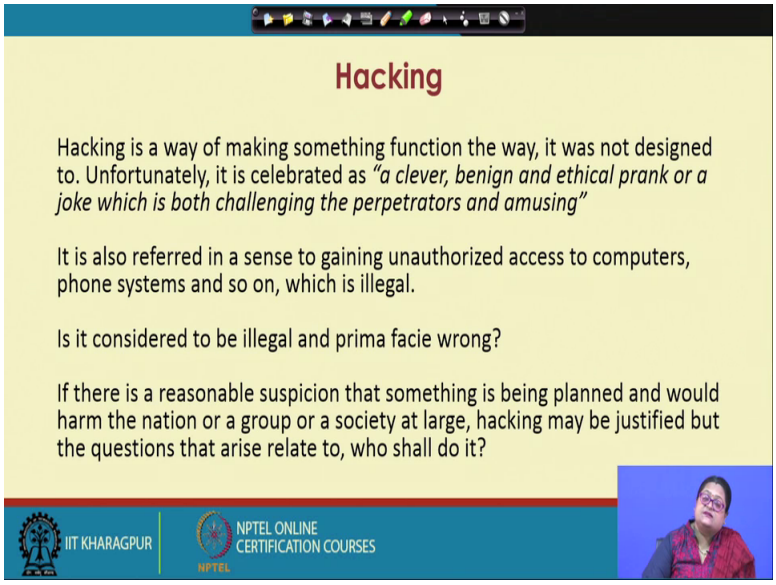

Next, we will be discussing about hacking, hacking is a way of making something function the way, it was not designed to. Unfortunately it is celebrated as a clever benign and ethical prank, or a joke, which is both challenging the perpetrators and amusing. It is also referred to a sense to gaining unauthorized access to computers phone systems and so on which is illegal.

Why then it is considered to be illegal and prima facie wrong. So, if we take it to be a ethical prank or a joke and challenging, and amusing and then gaining sense sort of access to the computers phone systems so which is obviously, illegal. So, but why is it considered to be illegal and prima facie wrong. So, because this action may have a long term effect on or a wide range of effect on the whole nation, or society at large.

Now, if we have a suspicion and for also the purpose for what it is done, if we are arguing like somebody has planned a major attack on the nation and, then or on a group or a society, then somebody hacks those information and comes to know about it. So, then should we take hacking to be analytical, or should it be justified so, the purpose of the action what it is putting what it is put into many cases tells like whether it is justified or not. And also the question that arises related to it who is doing it, who is doing that hacking and for what purpose and, whose information is getting hacked.

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We will discuss about another small case over here, which is about the pirate bay file sharing case. So, the pirate bay file sharing case, it is a which saw four men who founded the pirate bay, a torrent tracking website found guilty of assisting making available copyrighted material.

Three of them Gottfried Warg, Peter Sunde and Fredrik ran the site. The fourth Carl Lundstrom helped finance it, charges were brought in 2008 and the trial was held in winter and spring 2009, the 4 are charged with accessory and conspiracy to break the

copyright law. Although their website did not host the copyrighted material, it allowed users to download copyrighted software, music, movies and computer games without paying for it.

The trial has received unprecedented coverage in Sweden, pirate bay supporters have come out in force. The pirate bay set up a blog about the trial in which the accused made light of the claims, for the compensation and damages amounting to 120 billion kroner about 14.3 million dollar saying, they have no money to pay any damages. In addition to fines they were also each sentenced to one year in jail however.

So, by the from the extract from where this case has been taken. So, from the book; so, it does not have the conclusion about it, because by that time this book was still in press. So, question comes in like what is wrong who is responsible for this, what we find over here, there were four men who were accused 3, who ran the site and 4 who financed. Now, fourth one who financed it?

So, what the were found was that a torrent tracking website, which is pirate bay was assisting in downloading, copyrighted materials. So, there were two things like one is they were made for torrent tracking website, but they were helping to download copyrighted materials. And though there did not host the material, it allowed users to download copyrighted software. So, that is why it became very popular, there were many supporters there were many followers who used to do it, who used to like download the copyrighted materials from this side.

Question if you are talking of the ethical perspective of it. And we want to see like who is responsible for this action, who is at fault is it only this four people who have founded the site and who has maybe financed it is at fault, or it is the public at large also, who is downloading this copyrighted materials, without paying for it they are equally responsible for this action.

So, this is a debatable issue and maybe pros and cons with like arguments and counter arguments. So, first of all we may argue like why at all like, if it is a torrent tracking website then why at all they gave that this facility for it, why they give why was this copyrighted material got downloaded from it, what was their purpose for it. So, why they started a business like this?

Now, if you argue again for the from the general public's perspective and maybe from the organizations also, they why then the what is the responsibility of the public at large. To respect the copyright of the like original creators of these music's, videos and etcetera movies computer games and why they are going to download something which is freely available without acknowledging the due payment, the payment that is due to the original creators of these artistic works.

So, we find like it is been a huge claim that is been done up fine which has been imposed on this company and they were also sentence to one year in jail so, what we find over there so, because we find again by the counter argument so, people would not have accessed of these services sites. If they were not given this chance to do so. So, if you are talking of who is more responsible maybe they again it comes back to these people and, that is why this may be imprisonment for one year in jail, or the your the fine which is been imposed on it.

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Next, we are going to discuss about a very sensitive issue, which is the issue of privacy. In this information age can we say like our private information is safe, or because of the access easily accessible nature the our private information's are also accessible to the may be public at large.

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We have already discussed in yesterdays discussion like how companies, who may be taking some of our personal data, we told me I have shared some data for some purposes, sharing it with other companies with the without the knowledge of the consumers. And that sometimes becomes embarrassing for the consumers, if they are using it for promotional purposes for their own products.

So, some information that maybe I have shared with a particular company, for buying its products it is sharing that information without my knowledge to other companies also. And they are using it for their promotional purposes. Now, we should not like it is not a blame game that we are going to blame the company only for it.

The users, the consumers also are equally responsible for the safety and privacy of their information, what we find is like before we enter any information and, before we like agree to sharing our information, there are always certain like clauses written documents of agreement written. And written in depth and, then points are given do we agree do we agree do we agree and then finally, we have to click the submit button.

Sometimes it happens like we are in such a hurry, that we do not read what is written, we do not try to understand the consequences of sharing that information, or we are in such a hurry to possess the like, whatever is being delivered by that particular company, or that website we feel like you will just share our information. So, that we can grasp the

whatever deliverables that website is giving, but we do not take time to pause and take a second thought like who else can use my information and for what purpose.

So, we as users also need to become responsible users, like rational users think, before we share our information and like analyze what could be the consequences of it. Because nobody forces us to share yes there will be some like greed factor, which may like work like we become greedy, or getting some information or some deliverables. And, that is why and we are all like maybe pressure is by time and, we do not take an effort to read in details what it is written and to see like, whether if what purposes they are going to use it. And whether it violated what could be the consequences of it and, we just go on taking yes without even reading in details what is given.

So, we cannot just tell the company is using our data, we are equally responsible for letting the company use our private information, or data and we need to be careful about it. So, let us see what are the challenges in this information each authentication it is harder to prove that you are you and somebody else is not you, and you can be anything and anyone in internet. So, that happens whenever we are talking of maybe certain websites social networking sites, where people are able to hide their original like identity and lots of cybercrimes happen due to that.

So, who is going to authenticate like you were you and somebody else is not you, there are so, many fake profiles developed and people like become friends start talking, enter into relationships to find like it, they have been talking to a wrong person and lots of crimes happen after that.

Phishing, it is deceiving people and churning out their financial important information like, their account passwords that we find sometimes we receive means, telling us that we have got a lottery, or something and they want our personal bank account number then maybe ATM card number and code. So, those we need to be very very careful about these type of mails. Spam these are unwarranted messages usually advertisement sent to a large number of people, without taking their permission and which really becomes irritation for people.

So, we will this we try to focus like, what could be the challenges and what could be the ethical issues, what could be the dilemma in these ethical issues, like if something happens, then who is responsible we have discussed two cases, where we see like in the

first case both the companies are responsible for maybe the wrong turn like. They have when the first company, they have like try to gain develop the software in a way, like only their disk gets a preferred treatment and the competitor company has forged into that data.

So, both part you are equally wrong and in the second case that we have discussed about the pirate bay, what we find over there is like they have made a website for a certain purpose and, they and the users are able to download copyrighted files, music files and videos and games without making payment for it.

And then, it comes to like question is like we can talk of like in this case, because the general public did not know maybe about it at first and, it is they who have introduced it. And they have given this facility and made people like the eagerness motivated them to use these files, we use this website.

So, the main owners lies with a four people, who have been charged with fine and one year in jail, but we cannot tell for sure that the public at large is not responsible also, even if 1000 like such websites are there, then why should I get tempted to use them, what is my part of responsibility to not to use violate the copyright of the original creators, why should I get tempted to use something without making payment for it.

So, there lies again the values and ethics of the users also So, both the parties are responsible over here so, but here in this case the owners is more on the people who have introduced this site, but we cannot tell the public at large is not responsible. We have also discussed about the challenges of like authentication phishing and spam.

And which are becoming day to day challenges and we need to see like how we can overcome it. But of course, to conclude this is this is a domain, which again gives us so, much power of information so, much capability to like churn out information knowledge, from that information and use it for like some purpose question comes again and again, how we use it in a responsible way and for what purpose to be use it.

So, the duties of the both the producers and the users and the responsibilities of the producers and like the developers and, the users of the productor both are equally responsible, for the use of this beautiful, we can tell this is a placing of technology to use

it for a purpose which is for the good of the whole humanity and not to provide harm, or to bring disturbances in the life of others.

Thank you.