Systems Analysis and Design

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These an electronic commerce, these time I will make very quick review in terms of the layered architecture which we looked at, layered architecture I said we will discuss each layer, so that the discussion is some what self-contained. And also during design, one concept with layered architecture primarily to make sure, that each layer can be independently design, and that interfaces between layers are clean; that is in other words, the concerns of different layers may with vary be with different people, so there is no need to mix up the entire subject in one big unit, if you know if we kind of make into layers.

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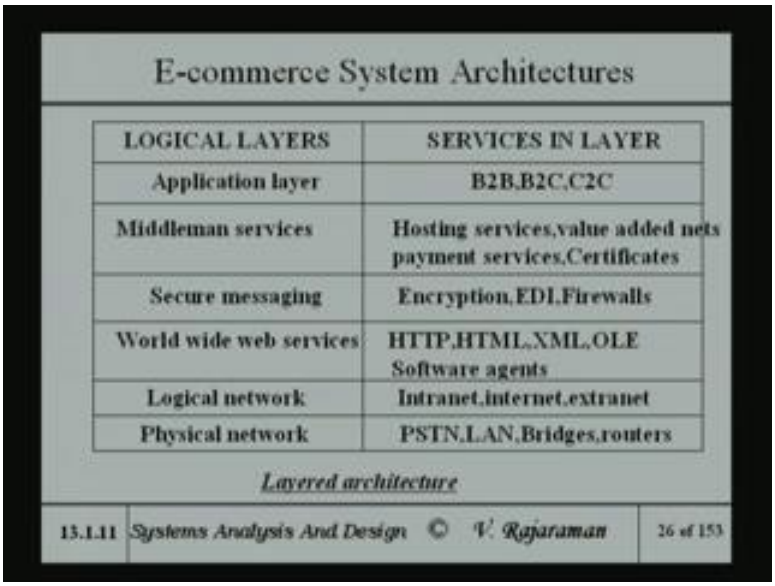

So, the layers which I describe starting from the top was the application layer, so the we started our discussion with the application layer, we said what is B2B, what is B2C and what is C2C, E-commerce and we described each one of them, and applications of each

one of them. Now, the then we end up to some extent to the bottom layer of course, the physical network we did not discuss in this course, as the physical network consists of the public switched telephone net work, the local layer network, bridges bridges and routers to connect the LAN to the PSTN or interconnect LAN's and so on. Because, internet depends upon the individual LAN's or individual computers being connected by PSTN; that physical network architecture is normally talked about in the computer network course.

So, that is the reason why this course we do not talk about, I will give very quick view of the logical network, namely the internet, the intranet and extranet; we define internet as a network of networks using uniform protocol for communication, called TCP IP Transmission Control Protocol, Internet Protocol. And TCP IP is what makes computers of different makers, and a computer on different LAN's to be interconnected and communicate in a uniform language.

So, that you can have diversity and still have unity, in terms of the the protocol and in terms of way in which the system works together, now we said that intranet of course, is a internet using something internet protocols use, based on single organization, that means there using the same protocol TCP IP. Once we use that same protocol many of the applications which have been developed for the internet, can also be implemented in the intranet, and so without to much of extra work a company an organization can put all the internet applications on ground local network.

And the advantage of doing that this we have security, you are not connecting at this internet, and making it available or visible to rest of the work with in the organization you are working with your own network, but are reliable to use all the tools which have been developed for the internet. And extranet beside is the connection of intranet the sense that, there are cooperative organizations which may like to do business in one another, and the interconnect they are local networks or intranets through either a private line or through a secure line, secure line being now a days virtual private network as I call it.

Just got slightly better security, then the public switch telephone network, one can divide the whether slightly more are it is where are tied, the by in large will you start using the public switch telephone network, you do have a certain kind of possibility of intrusion

which is not there will using a completely private network. But, nobody wants to invest on private networks, because a fairly expensive and much cheaper to use a public network, which enhance security; that is what the VPN type of a network does. And so there is more or less becoming widely used by in by many organizations, so we did talk something about to the logical network.

And then, over the internet is the world wide web, the world wide web is an application over the internet, and the world wide web provides same types of standards, and same types of services. Now, the important protocol on the web is hyper text transfer protocol, which allows the web pages to be link together; and then it allows the communication are actually being able to look look at the web pages or other organizations, and the able to also have a uniform method of communicating.

HTML is a Hyper Text Mark up Mark up Language, which the first one is came which the hyper text transfer protocol and HTML is primarily a formatic language. In the sense that it gives you something similar to work processor gives, in terms of paragraphing, bold facing, italic sizing; and also it is a it is got links to other pages that is why is called hypertext, and we can also link to a graphics, are either video are what not, that is other data types, other than textual data type can also be linked to the a using the HTML protocol.

And so, HTML has been more or less use these the family universal standard, for web based communication among organizations in the world, now one found that HTML does not tell anything about the nature the contacts, it only talks about formatic. So, if we want to transfer information such as, purchase orders and quotations and so on. One would like to have over an above the formatting also a method of describing, what does contain in that web page, in terms of some a data types, which a various part the web page has or might say in these case document has and really call it as a document drawer web page.

So, document description, in terms of control over document yes see, aim of XML more than that, it also allow as a certain kind of flexibility in the type of tags use, which makes it some what self explanatory, in terms of context. So, user defined tags, and data type definition language goes along with XML and XML has been widely used and becomes standard of course, all the time there are new variations coming, and improvements

coming and so on; there the various XML and so on and so on. And viewed on continuously actually improving those things in fact, I will started only talked about these thing, we need talk about software regions, really a programs be the little bit of common sense or intelligence, which are able to do slightly better job; in terms of describing content and being able to require in a search engine and so on.

We did really talk about, that we also done did not talk about object liking and so on, because there is not entirely relevant to our discussion; now over these one side of logical network, and wherever then services on which you can transfer in a transfer file files and have web pages and so on. And transfer documents using XML, the question of security of the transmission or must just come up, and so we talked about the secure messaging, there are encryption methods; we talked about both the public key encryption and the private key encryption.

And the advantages a one over the other, and these are essentially encryption as primarily for security of the message is chosen, and firewall is moreover, hardware you need to might say of course, you can implement some of the firewall functions thorough software, but most companies have a machine, which has these function, which has the filtering of communications, between organizations. So, what what comes into the organization, what goes out to the organization, all that is really filtered by the firewall.

And electronic data interchange, in fact is something little bit more about, more the web services, because it is a standard which in fact, one can implement using a XML, that can filled it is XML, in terms of the early measurement system and some externs EDI is put in to a secure envelope, and there we have to exchange. Over that are the so called middleman services, what as what is mean by middleman services is we said that, in the public key encryption system, in order to be able to a certify a public key which is essential for digital signatures; we have a public key certification authority, that is a middleman service.

In other words, it something which a service which provided for your to be able to make use of the network for electronic commerce; so these are digital certificates which are given, payment services will get credit card payment for the fair amount time, and how credit card payments are secure and various protocols for doing that. And in fact, the middleman services requires security aspects embedded to it; the point on trade make is

at the service is carried out the normalization, like in the case of a credit card payment, even acquire that is the bank, which are own future intermediate is putting the vendor and the customer. And so, this is remake their money as some can a broker between these two, the other kind middleman services we talk to about as the, center man agencies. And we talked about the possibility of value added networks, which provide the 24 hour secure communication with also as the this is certificates is given, and addictives being capital so on.

So, there is a kind of another middleman service might say; and hosting service, what is mean by hosting services is that if your web page of your organizations, you may not like keep in the computer, because at will be upload the lot of people, and it could be a security hold there. So, there are companies which polite servers, and which the host you are webpage and provide you appropriately ask required, but as far as the general (()) are really that is concern, he will login to the hosting services machines; so that we will not be able to intruder let your network.

So, many companies had a third party hosting of that web pages and so on that is what a mean by this hosting services. So, digital signature requires certification, and payments preserve they have, payments like check or the credit card payments or which across their can acquire you are have check payment, which again requires encryption and there are bank, and in the electronic fund transfer between banks, which are all middleman services. And then, we talked about net bill company which actually a middleman company, which provides a method of paying for a small small amounts for information such as music files, video files or text files by encrypting then and providing the key, when a pay for it.

And then, the net bank of courses, the agencies which is intermediate between the seller and the buyer, and the make sure that information which select gets it is authentic, and that the the the buyer place the appropriate amount to a seller; and the appropriate time, so these safety the service the provide. And last we talked about cash transactions, primarily small cash transactions because, large cash transactions are normally not allowed in many countries for various security reasons; and so small cash transactions take place there again you make a electronic coins, are the one which are assure by middle middle man services such as banks.

And then, they keep track of spend coins, so that the same coins is not spend over gain, it does not as the same advantages of dual cash, because anomaly is not preserve, and this who paid it and and I am I am not not preserve. And also one more important thing is about cashes that, if are you paying some money, you can paid to somebody else to buy something, without the first person know every thing about what you going to use that money far, so in other words the money is can a universal exchange medium cash.

Whereas, electronic cash is not a universal medium, it should the bank only you can use it, you give it somebody else that person cannot use it, because once we use it is called a spend coin; once it is spend coin the bank will disinherit, so the whole point that it is, it can ever not, not a complete analog of real cash, but it is a reliable able analog or real cash for a small cash payments. And that is what middle man one of the middle man, one more middle man services we talked about of course, application layer we spend fair amount of time, about these the three things.

The most people only talk about the application layer, they have to talk about the rest of the layers but, as a computer science students, and the student will be going to design some of these things, it is important for here to know, what you to believe that top layer in the B2B, B2C and C2C. And what are all the tools are important for you to consider, when we look at say for its senior advising, a company and he govern as we got kind of be able to advise them are in educated way.

In terms of what are all kind of security system are available, and how secure or realize the security systems and also the various formatting method in fact, the XML and so on it is very very important for people to know. And of course, HTML is talk to many places just be able to create a webpage, so these are all becoming a mode less time that, and so the first course is the system analysis and design.

In many other books, you do not to talk about the commerce at all but, I get make a decision that because, a lot of systems are go in to go towards the web, and web is an intermediary is important first once understand what implications are and also the for that in commerce the growing area, where many many company are going get into. And also the surprising management is a very important part, when we companies day to day working, so from all those point review, and supply chain is much better control, are much better it must the organized and so on, by the availability of a E-commerce type

into in to a use of internet, intranet and so on. So, the the slowly the world is going to us as situation where every computers connected to every other computer in the world; once you have the situation, no system can be designed in isolation system has be design tabling view the fact that you are going to be part of a large world wide network, so in this case you have in this case you have understand all these application of this and be prepared the design systems on this.

In fact, the one of the clients must be say next the killer, so is going to become more and more important is computer architecture itself is becoming service service oriented architecture, service oriented architectures in terms of the machines, and all the layers which go to it to be able to provide services over network of machines over the world. So, that is also trend towards what about cap, so bad are use computing and all these things are emerging and I has I has the student now you have to understand the implications of these, the long run during you are your own own a professional life that is the reason I spend a fair amount of time on this.

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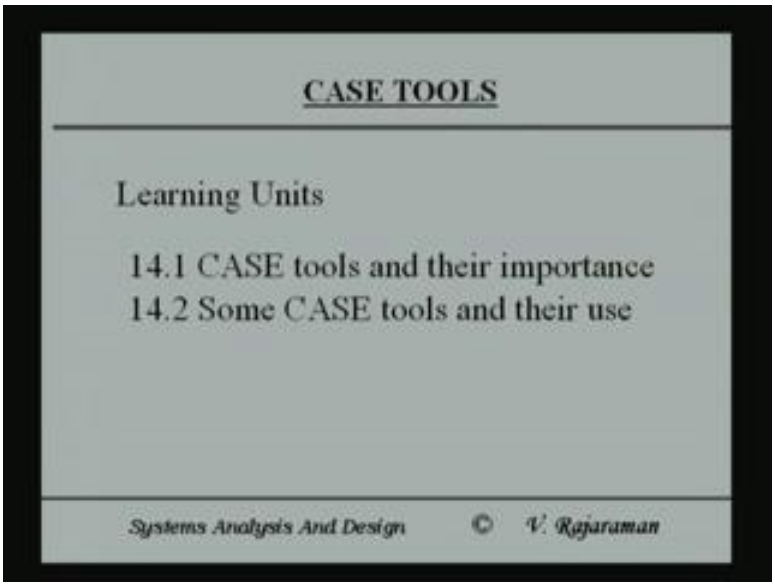

Now, the rest of the talk, I am going did walk to talk talking about some thing called case tools, the case c a s e transfer computer aided software engineering, the primarily we going to talk about, what are case tools, and whatever what ever the important, and how how do we use some case tools. Obviously in the lecture, how do use cannot be talked about in the direct length, it only bore you, you only know how do use by using it.

So, I am not give a certain (()) are certain case tools available in the open domain, so what you can actually play around with the and start using them, in a projection so on. So, purpose of this particular talk is to introduce due to the idea of case tools, and also tell we about existing tools for you to we able to use it, and more importantly a students should make it a habit to these case tools, the sense that it is not point and reinventing the wheel every time, lot of things has been done already, and they are freely available. So, whenever you design a new system, you should be able to use that the somebody else is done for you, and probably even tested it fairly well.

Because, one something go on the well lot of people have used in the some feed back, and developer as also use this feedback to improve. Hopefully, done of this open domain tools will have less bugs, because be removed over a period of time.

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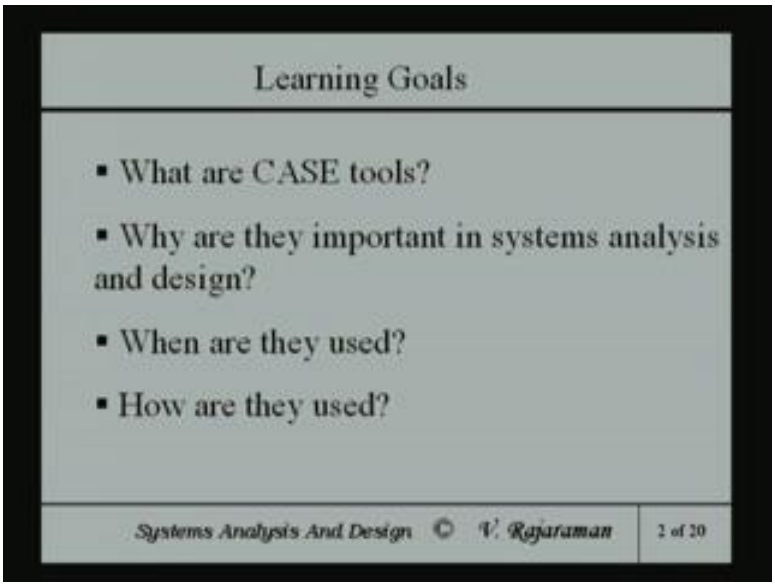

So, in this particular module then, we will talk about what are case tools, why are the important, when are they used and how are they used, so that is what the various points are want to mention are.

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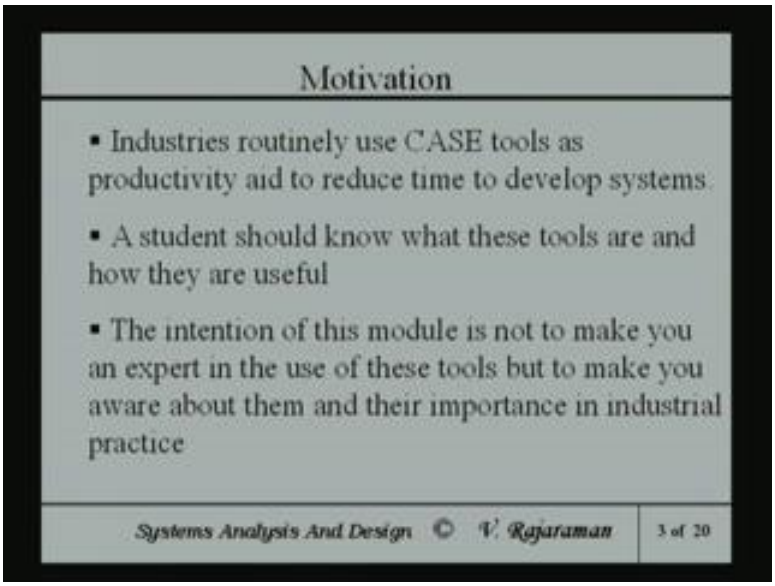

Now, the reason where we to talk about case tools as a (()) what is case tools of course, I firmly have to say in the say some thing, case tool case tools transfer computer design engineering tools, so c a s e as they implies, they are computer based programs to increase the productivity of analysts.

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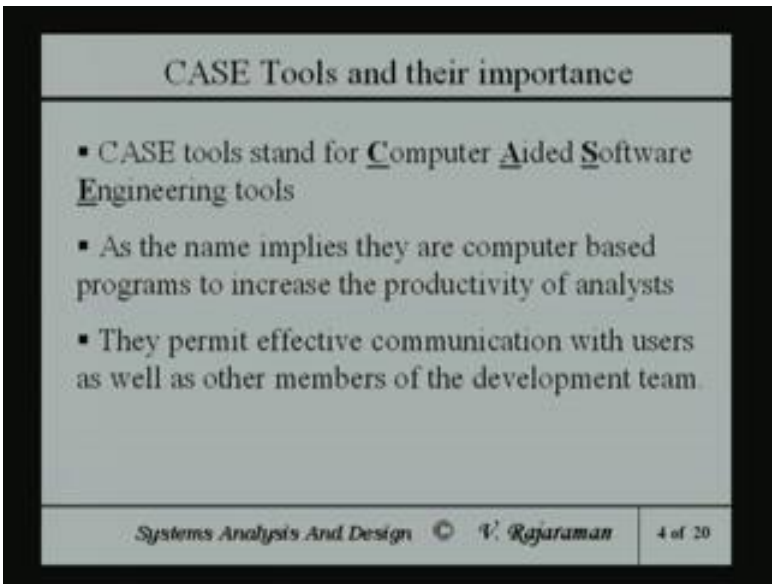

However, gives you a certain types of predesigned systems, which arrives you to very quickly these the analysis and design, which you want to do. Lot of clerical thing goes into the analysis and design, and what about clerical to use I have the switch that again

care of by the case tools; because, there is any design there are certain parts are clerical might say, and certain part which are intellectual in that intellectual part do really. The clerical part is where the tools coming, just like we where the book the clerical as it and so on, the intellectual part is actually carrier to the idea and writing the structural book and deciding where has to go where, how the organize and so on, that is a part which is purely intellectual.

But, the word processor does in true, we are productivity it makes it makes faster for you today your work, they permanent effective communication which uses, as well as other members has of the development team, towards if a you can create a so called rapid prototype. So, you can make look and feel the system of the ultimate system where going to design, this can be given for apply a user, and so are these called rapid prototyping.

So, give a turn over you do not could everything into it but, you give a you might say a sample are its going to be look like, look and feel as a collect, look and feel what the system will be like, were it is completely implemented; so there is (()) what the case tools also along you today that can we are prototyping. The reason why we are going to be talking about case tools industries routinely use case tools, as per active in to use their development time, for the system development time the tools are a great help in reducing the overall time.

For instance, let me taken example of your company provide some system for a bank, once you decide a system for a bank feel various system for a another bank, lot of things are common between these two banks. So, if you clear the holder of tool which it make it possible to kind of parameterize, many of the changes between banks, the tools are very usable from one application to other application. So, there are apart from that this course particular to a particular application, but say in general things like dataflow diagrams used review.

So, dataflow diagram into is something which is a you should into have, ER diagram is again used the quarter bit, so some tool to allowing to make a ER diagram will be rise to have. And then, increase the productivity, then reduce the time, we ultimately the probability of a company in services area is to be able to give the system, at low cost in a short time, short time is also of date consequence. So, student should know what these tools are, and how are they useful, there is even you have to talk about this, integration is

not over these not to make a expert they is the this stores but, make a wire about them. And there importance and their importance in the industrial practice, as a wire out see no lecture can give you, something about how to use the tool effectively you have to use it to understand how it works, so what I can especially tell you here is the importance of them; and fact that they are very important, and very useful to improve your productivity.

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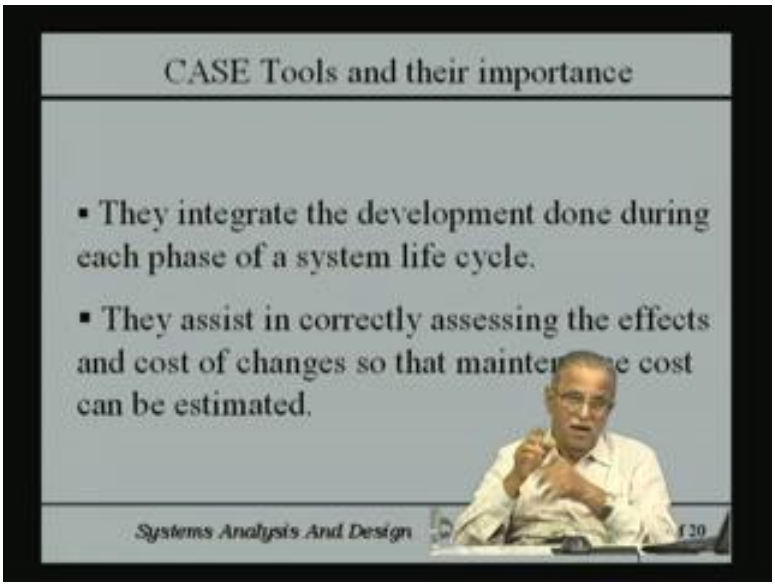

They case tools integrate the development done during each phase a system design cycle, we have a distance system so called life cycle which we talked about, start with requirement specification and going ultimately the implementation; and also they review post implementation review, so there are number of different steps we talked about. And we said said the software engineers sometimes call it the, water fall modal but, then low system is developed entirely in in one track, they are normally do 1 or 2 part then go back a kind of change, there is one to govern the requirement verification, you go to next step.

And if you are having some problem implementing the requirement, you are go back to either and as for the first requirements, say what a difficulties say in and implementing the particular requirement or case implications or time implications. And so (()) gradient before you try a talk about possible divisions, you especially they are more over spiral spiral table development there is feed back at every stage to a previous stage on me and

is to steps earlier. The essentially find out that the entire process is iterative, it is not really a a straight system internet, the case tools also correctly in associate, correctly assess the cost of changes; so the changes which are requested by user requires time and effect whose translates into the money. So, one should found the estimate, what is the cost of this maintenance of a change and so on; and the use of tools does along you, in same cases to be able to estimate this extra cost, because of the a changed requirement and so on.

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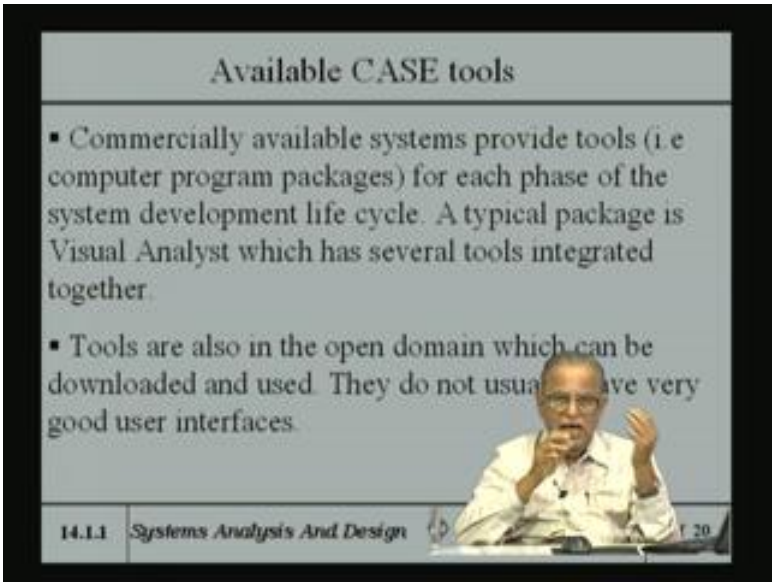

There are was a commercially available tool; there are actually program packages so by the vendors, for each phase of the system development life cycle, starting with the system requirement specification, to feasibility analysis, to the system design and process physically application and things like that. And there is one tool called behave analysis, which is several tools integrate together to take care of the all the lifecycle phases in a system development, but this tool is extremely expensive but, many loss companies you have several copies this tools.

And then we because, its fact is the profit making organizations, and they have to reduce the development time and use productivity of the unless in programmer mode they are actually by this tools at sometimes very high cost, sometimes actually rupees. Whereas in a education situation, one can really affect the by this commercial tools, we simple division that, that will expensive. And they are not necessary the page, what necessary

this give you an idea and how is to be used, and what the look like, and not the (()) fully full fudged commercial tool, it provides the lot of face. So, what is the reason I am going to talk only about open to (()), because most call this cannot effort by usual unless in this like that to expensive. So, open about it when we talking about which we are boundary are freely, and most of the fortunately PC, require in a PC and of course PC is the in, and normally required windows operating system in 95, window 95 are above request most had know, they will be require you get the most recent windows version, like window (()) and so on, so fourth.

Recently windows is sufficient and also require a browser like internet explorer or net scape and of course, we need to we have to internet connection to be able download this tool, they do not by anybody user interfaces, the graphical user interfaces which are provided, by this open (()) are not variable; I mean that is the advantage if a commercial tools. They provide the very good user interfaces, and some other we provide very good documentation also, is in its what not some other to be good some other make indefinite, so one can really we say that the tool as uniformly excellent documentation and so on.

But, in the advantages many of these tools they provide the source code also to you, and you can understand the source code, may be improve it, not were ever we provide but, some of them we provide.

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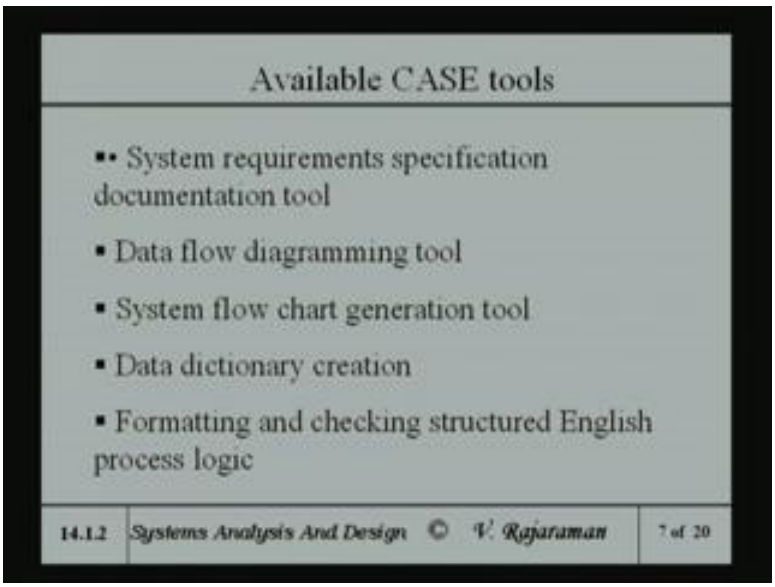

The available case tools are particular they are in mean systems requirements specification, documentation tools there also write system requirement specification or SRS, where document the SRS and we have able to show to the user. And may have it, may have to be shown different levels of people, and it is very important documents, because why we say, SRS is approve by the user and sign and max a sale that then this forced.

And so later on if any changes in the SRS are required by user, then the vendor has got every justification to be able to charge more, because is in deviation from the original SRS. So, the amount of time spend, and designing in SRS carefully is well spend because, if you have very good SRS, which every need to by the user also, then lacking on you are getting a trouble, latter we find out some difficulty the more expensive it is it is to fixed.

So, it is much better to clarify all doubts, early in the game when we starting actual design, so the very important for you to spend of fair about a time at these stage, there are tools available for making data flow diagrams, things of leveling diagrams, thinks like to be erase in the data flow diagrams, which are not allow by syntax in the diagrams. For the file are are data flow is essential file to file or a data flow as a tells we try to update, something come from the external entity this like that, we are not allow is detected by this diagramming tool.

And the system flow chart is the picture representation are the various steps in the system design process, system designing in a flow chart design design into, generate into, actually can generate the system flow chart by using the appropriate symbols, standard symbols. Standard symbols are library of symbols, you can drag and drop and make a complete picture and gives a new picture, we should be describe the user how should make sure that, is in multiple pages in the proper connection between the pages is maintained, so the system give flow chart generation tool is important made it dictionary creation.

Now, given the dataflow diagram and what are all is contain in the files are to better in the read a dictionary, creating a general dictionary and so on; is a again a clerical chart, which is done by this tool. Formatting and checking structured English process logic, the process logic you can have a nice structure, structured description with the proper

intending and so on; and sometimes some simple logical errors can be point it out, in these system flow chart, apart from that the apart from structured English, we also said that for a complex decision making process, you work to decision tables.

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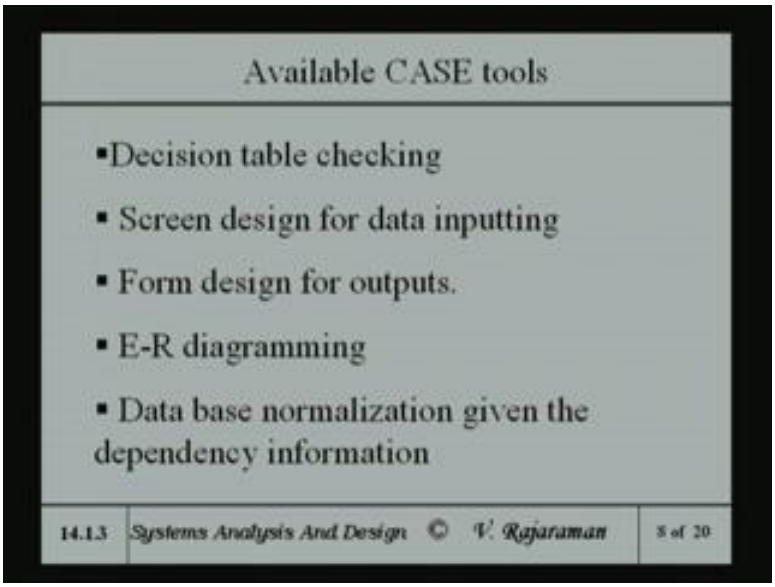

The two aspects of decision tables, what is the logical correctness of the table has we checked, and the many tools to check the logical correctness, apart from logical correctness checking is very important, you can generate test data from this table, test in the generation from decision tables is another tool, which is normally available. And thirdly you can compare automatically a decision table to a required one program, language such as COBOL, so there are outhunted in tool available to convert decision tables to programs, in some high level language.

And some other try also to optimize it, given the a frequency occurrence a various rules and estimates a time taken to check the various conditions, which are relevant in the decision table, is there also interesting in tool such kind those your pattern, program writing and deduce also the error which made in programming writing. Screen design for data inputting, there input say the extremely important, in the sense that it is done by operators very often, all the way users and you have to kind of given reasonably nice format.

And we talked about form design, and we talked about good methods of form design, and back the sense of form design to which uses good practices effectively, and fills its

nice screen, because many of this input systems, they are based on screens, on the PC. So, this kind of form design tools is various tool have, and entity relationship diagram is an important part and any database to creation; so once you specify what they entities are, and what relationships are, then natural diagram can be drawn, is after all it is a picture.

And (()) a tone is available for diagramming tool, it is not the either relationship module it self, requires the intellectual inputs, because relationship something you have to know and you have to judge, machine cannot do that fortunately; machine can give elevate to these are pictorial representations, database normalization also given the dependency information. See dependency information something which only you can give, because that is semantic again, where as in normalization steps are somewhat mechanical.

So, there are some very intelligent tools which tools are normalization, so at the at least first type normalization is there, so that let long to because, a check it along with the improve it, so what you have a certain aid it doing it, and reduces time taken to do it. Normally tools are used throughout the system design cycle, as now as you do not as you there are tools only for certain steps, throughout the system development there are different varieties of tools available for each step; and so terminal visual analyze and so on commercial tool, nicely integrates all this together.

And provides where integrate view, where we know start using a open domain tools, the integrations are available, you have got at least or you may have to use and select the appropriate tool for the appropriate job; and that concept of practice, they actually doing it on certain case studies, which I will talk about lecture.

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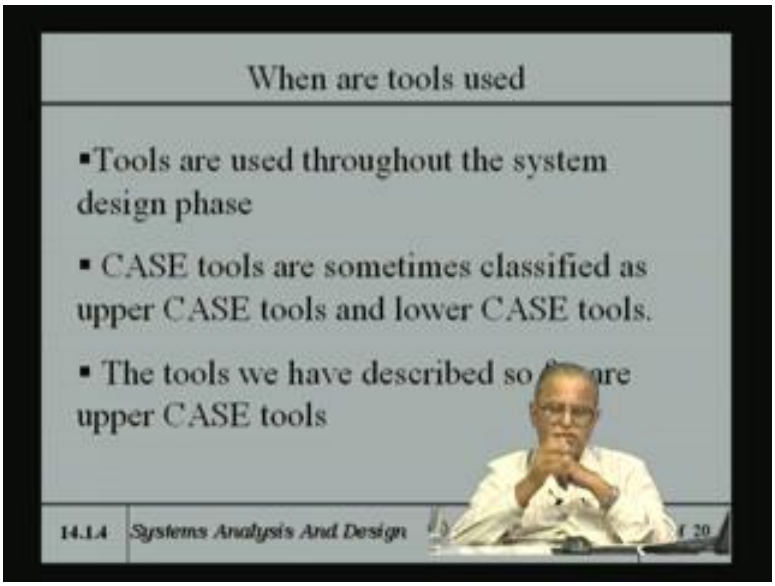

Case tools as sometimes classify as uppercase tools, and lower case tools, there is an arbitrary classification. The tools which are described so far, or not very intelligent tool where essentially tool which help you, to reduce the clerical chart, they are called uppercase tools tools are available which is generate computer code, from higher level descriptions, such as structured English and decision tables.

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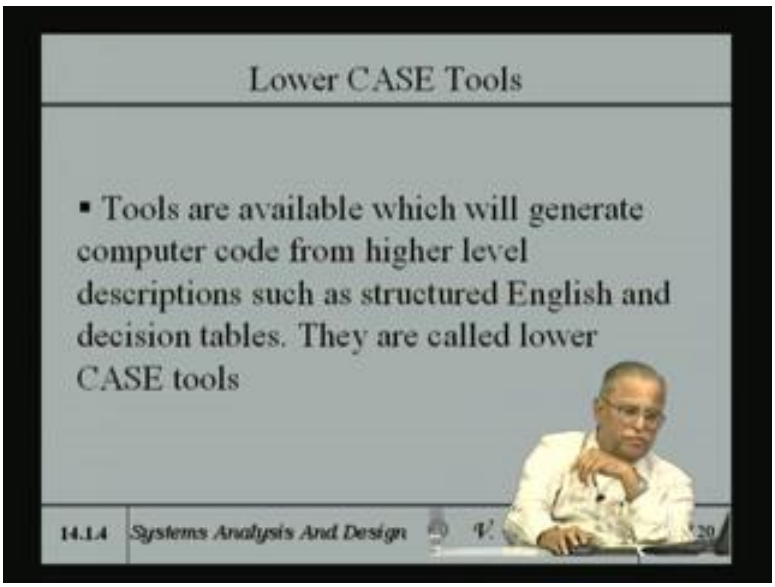

They are called lowercase tools, words their there more intelligent in the sense their given the structured in that description high level language program, comes out an

output, that means using all the syntax rules and semantic rules, high level language, some automatic generation that program text place. Decision table to program conversion tools have been therefore, a long time almost 30 years are be in (()) myself in the mid 60s. So, there are plenty of such tools are available, which are called actually lower case tool, because of course there more intelligent tools, it call more intelligent programming and may often optimization. In which a good lower case tool, it can save a lot of time in program writing in also, some extreme in automatic text generation also there, they also text that program.

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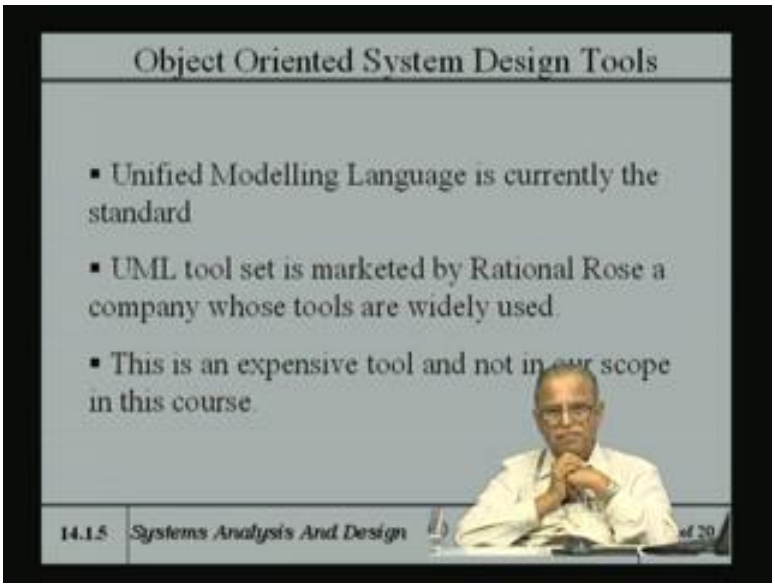

Of course you have a kind of Ethiopian very often to be done do that, will they stay programming manual is a very big part of the join of any entering a graduate student (()). You know if you enter a company from the college, the first kind of is as to give a test existing card, read existing card, and you want really get into development (()), you get the development slowly.

And there are lot of object oriented courses kindly the practices going towards object oriented system design, apart from away from so called structure design, structure design is a earlier approach, and it is not completely elevated, it is not a kind of (()) might say it is not through away is till useful in not a systems. But, in have a very large system and want to use and so on, then the orbit oriented techniques, becomes important, we did talk about object oriented systems design, in this course.

But, is there in the entire course on that, there are certain courses are higher level, which talk about objected oriented design from step 1 to step and the last step they different mind set the mind set. But, it is important in terms of fact that is the client for various uses, reuse encoding primarily the fact that reuses probably the most important reason, why people go to words object orientation.

And we can reuse a change lot of money for you, and it also become a moderate design is for possible and so on; some we called unified modeling language is the current standard, which is the way in standard for object oriented design and is reversely used. As the company called rational rose, which markets the EMI tools to give very expensive and again I do not know of many a many many situations with by this rational rose, and so on and but, we go to company start working there they have that such tool available are widely use.

And it take long time for you to first learn (()) varying that give you, so I may not talk about that, in this in this course was not impudence that I am not used my self, and could not access to it and also this courses not about EMI have object oriented design.

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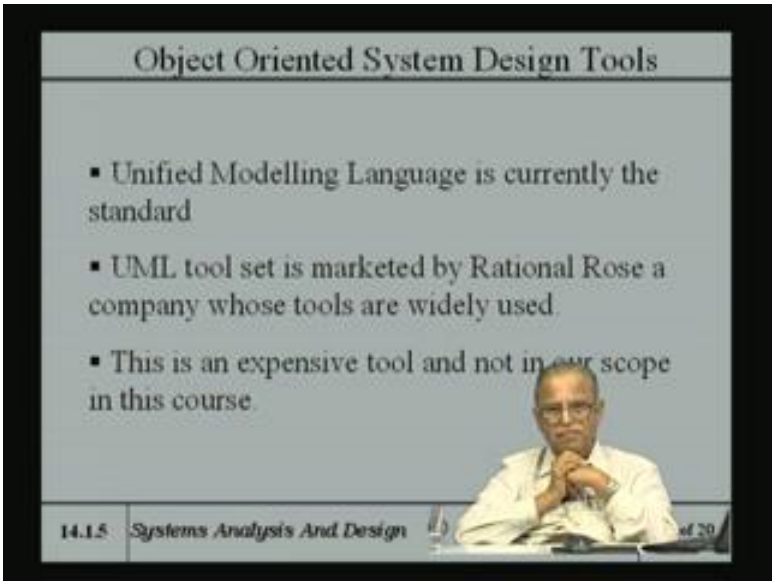

Most tools have users guide, which is given as help files along with the tool, there is normally both commercial tools and open the main tools, some help files are there. Many have frequently asked questions or FAQ's and search capabilities, if you give into some doubt you actually tied as those awards and so on. They will they search and can give,

some part to the documentation to help you, details on several open domain tools and what they do and what they talk now.

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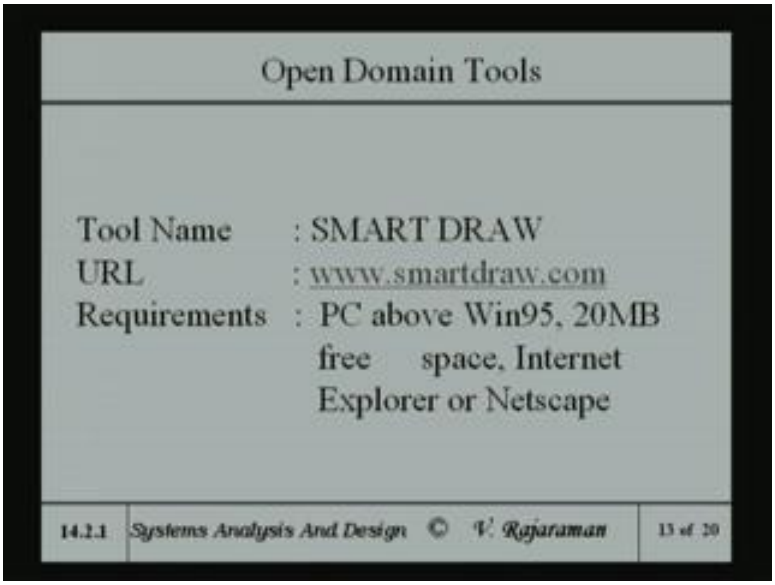

There are tools called smart draw, and that is available in a www dot smart draw dot com as the name itself is used, and then PC will do as I said, in a above windows 95 at least 20 MB free space on your on your memory, Internet Explorer and Netscape.

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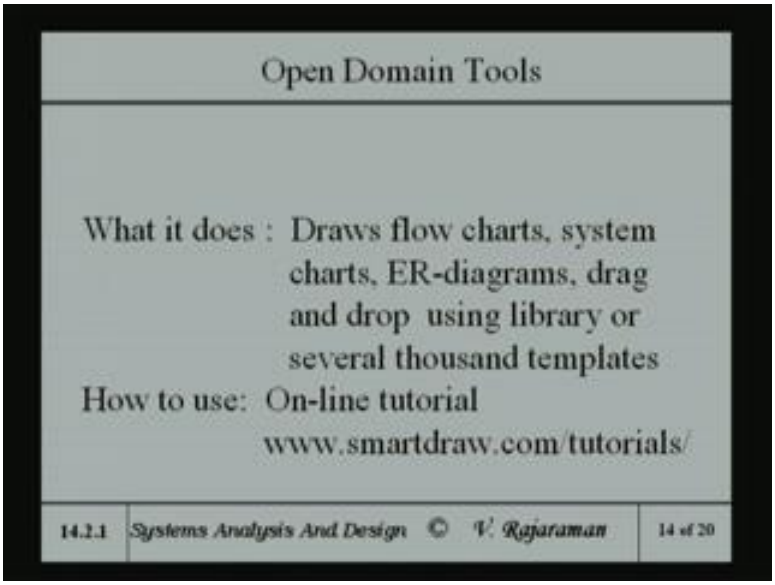

It draw flow charts, it as smart draw it as it implies, it is the drawing tool is used for drawing flow charts, system charts ER diagrams as got a use library of you make it as

templates, can be draw the template, and drop it where ever you want on the screen, integrate by lines and clear all these nice drawings, and even print it out.

So, you have sit down with a paper and pencil do you have drawing, they are advantage of this smart draw, but immediately go to, I seen it to you first and I made must to its use it is got online tutorial, so that you can learn about that use it and so on. So, anybody with reasonable amount of practice of the computer will be able to kind of down load this tool to the internet and use it and start learns about from the tutorial.

And of course, where in that you learn by practice, you make a mistake and you correct it and you regarding by the tutorial (()) start by reading entire manual, this type using it. And them will get time only then they go to the manual, that is human nature.

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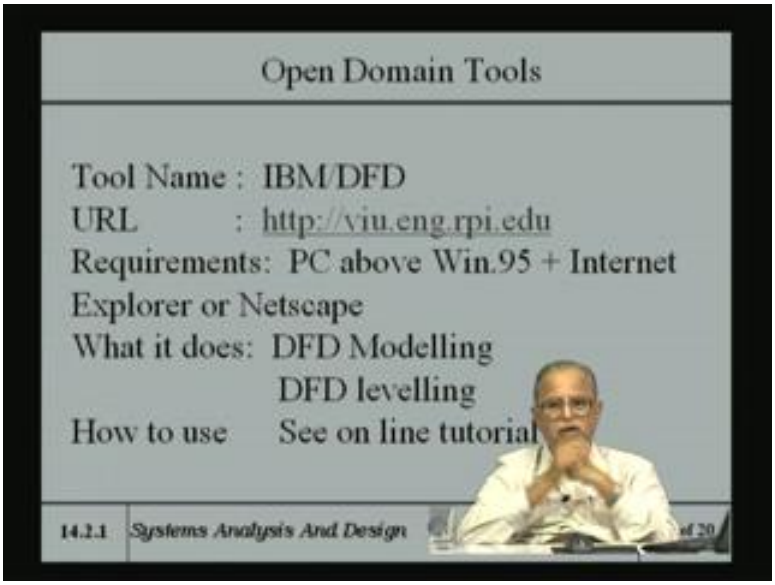

There were tool which is name the IBM, the dataflow diagram tool, IBM and viu dot eng dot rpi dot edu, it is not really IBM tools it is the rpi is the rocher polytechnic institute. And this that the tool developed by the student is there and the URL is given there in viu dot eng dot rpi dot edu. Again use PC and in thus DFD modeling, thus DFD leveling and so any mistakes in drawing DFD is rejected by this tool, and so it is a its got also online tutorial, for we learn about this this this tool.

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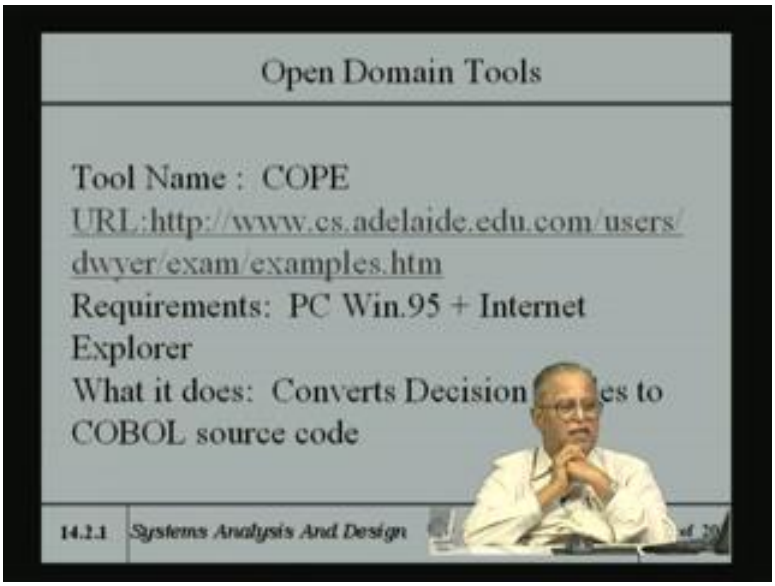

There were happen domain tool called COPE, and URL is www dot cs dot adelaide, there adelaide invest in Australia and dot edu, I think dot it should be dot au in that I am not mistaken, dot com is normally used for commercial site, it must be use the (()) university dot edu dot au slash users dot dwyer exam examples htm.

And it convert decision tables is to COBOL source code, now was it will provide distinct table in some vertical format, and converts it into a small program, they will give an example of this, to online manual is available. And table is given on fact normally the conditions are given below in the left, and rows are given in the right in a table but, here in these condition are given as I know and so on.

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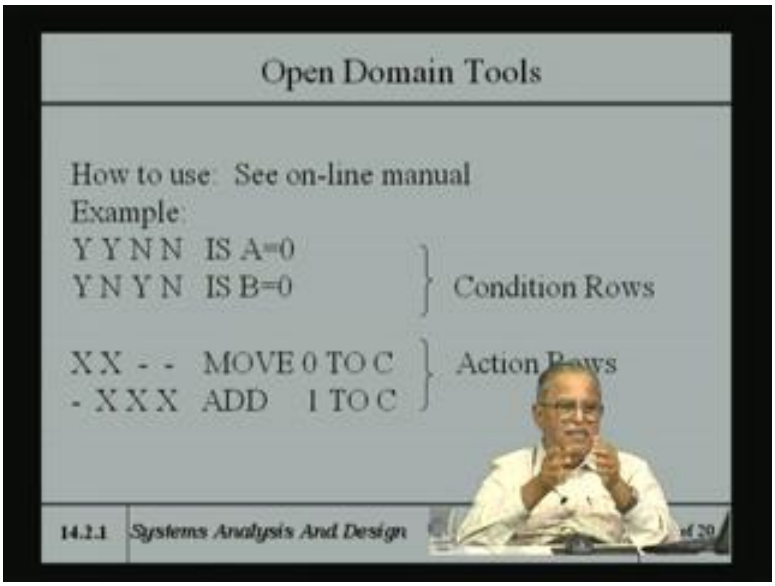

The there are the rules the condition is if a equal to 0 and is called a equal to 0 and this is B equal to 0 for two conditions of checked. And the actions are X for carrying out the action that for not carrying the action, so the interpret as A equal to 0 and B equal to 0, then the move 0 to C, if A equal to 0 and B is not equal to 0, then move 0 to C add 1 to C. And A is not equal to 0 and B is 0 add 1 to C and a both of them are not equal to 0, A and B add 1 to C.

Obviously there is the is the redundancy in that these and it can combine the last two, reuse into a single rule no dash but, then this tool they are actually automatically do this for you.

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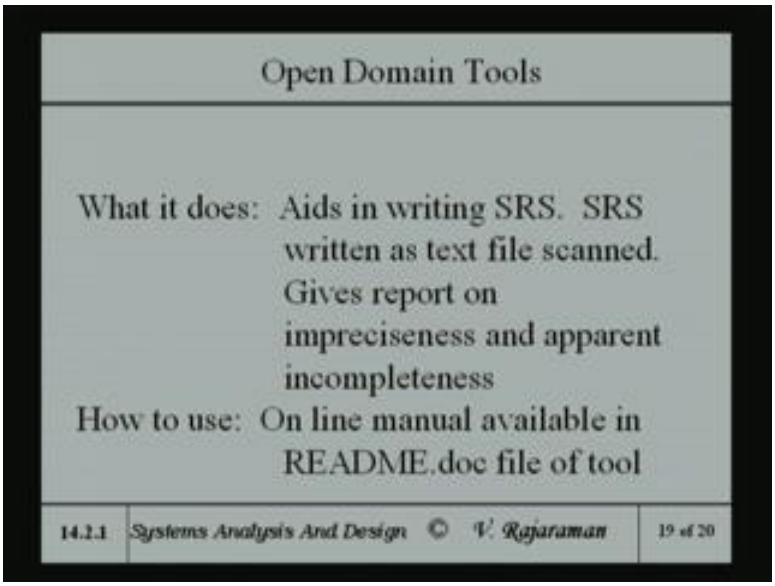

That is another tool called ARM Automatic Requirement Management and it is a Nasa tool from the (()) and the URL is given sw assurance dot gstc dot nasa dot gov slash disciplines slash quality slash index slash php, and these is the program to allow you to a come of the a requirement specification document.

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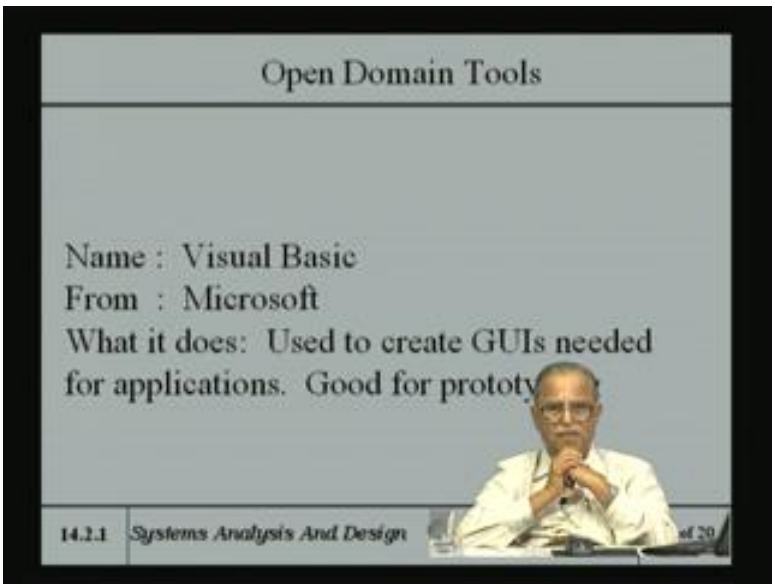

In the aids in writing SRS written as a text file scan gives reports on impreciseness, and apparent incompleteness, do a does a little bit of a checking of the SRS, not complete for through of checking but, reasonable checking online available.

Online manual is available in readme dot doc file and that say 1, and course visual basic is a enter enter is some thing which is microsoft wide, it allows you to good GUIs all these radio buttons and tool bar instead of like that. So, visual basic is the very usual language to learn and to particular GUI is for and particular rapid prototyping it is very useful. So, this conclude my discussion of case tools, next time when we looks at of the case studies, which will be concluding lecture of this series lectures thank you