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|  | **Timespan** | **Content** |
| 1 | 0:00.0 - 0:28.4 | P1: Male, P2: Male  ============================================================================  P1: okay. this is the experiment. we have player A player B, I'm player B,  P2: I'm player A.  P1: we are gonna talk about traffic simulation assignment. and we also have cards that we're gonna play. we're gonna match when we play, and we are also gonna log when we played . so lets talk about the context view point that we're gonna create. |
| 2 | 0:28.4 - 1:16.5 | P2: yeah. I think it's important to first look at all the requirements and get the variance for the context, functional and informational. just a bit of through the text and categorized them.  P1: yeah sure. so what's the first requirement that you see.  P2: visual map.  P1: visual map.  P2: let see. the over all requirement.  P1: so this is context the information or functional. functional. |
| 3 | 1:16.5 - 2:58.7 | P1: yeah. it should allowed road of variant length to be placed right. this also functional requirement. that also do with different arrangement of intersection. so the same one so varying length and different arrangement. at least six. this is actually a. this is a constraint really.  P2: constraint  P1: yeah. at least six. constraint or minimal requirement. I think most off all this will be.  P2: I think it's important to first what you said like make functional and see in which aspect the system interact with the user. the developer. therefore I think if we make those.  P1: I think it's best to start with the context view point maybe. and then from the context we can do the functional viewpoint. so we know which stake holder to address.  P2: yeah.  P1: do you wanna do the list stake holder.  P2: yeah I think that the first start |
| 4 | 2:58.7 - 6:28.8 | P1: we start with. professor E. the hypothetical professor who does this. the stake holders. we write it down the stakeholders. professor E. then we have the students. the students who will use it. students.  P2: programmer.  P1: yeah the team of developers.  P2: yeah. I think that's it for the stakeholders right.  (reading)  P2: students. yeah this is. that's it. so if we look for professor E. what are.  P1: it's a role.  P2: yeah. but what does she want. like .  P1: she wants her theory about traffic signal timing could be conveyed in the software. so she doesn't care about safety. or usability. or maintainability. she want just that her students get the general idea of with theory . so wants her theory conveyed properly. and then the students want the game to be  P2: fun and workable.  P1: fun usable. and they want to see some nice graphic maybe. see some. when should be car they want just like see them driving and that the red light when they are waiting something like that.  P2: yeah.  P1: graphic.  P2: nice graphics. the interaction with the control so like stimulated like the user did a thing. yes.  P1: development team.  P2: yeah. they just want to implemented they don't want to think about whether .  P1: they want a clear design.  P2: clear design. and easy not complex functionality I think.  P1: we'll define. |
| 5 | 6:28.8 - 8:43.0 | P2: yeah. I think that the design well define and not to complex system.  P1: I think. so .  P2: therefore to not want to make it to complex I think we should. see it from abstract level instead of really data type overall. in over all design.  P1: this also not be required to make high level decision design. so let see about detail in the information view I guess. want to start design the context. the context view. this one is after 15 right.  P2: okay let see the context view. we've got the system in the middle.  (drawing)  P2: so the system.  P1: we draw a square right now. we put traffic system in the middle. is it in the middle of the context.  P2: I was thinking we're. also what are the stakeholder. I think the overall car drivers.  P1: yeah  P2: when they use the theory. the students learned.  P1: sorry?.  P2: if when a students is like the end car driver who will . the students will finish the school he implement exact kind a system. maybe the car driver doesn't want to get like accident or stuff. |
| 6 | 8:43.0 - 10:08.5 | P1: yeah. but that was one of the requirement of the system. that car should not be able to collide. that should be basic.  P2: should that be transfer into the stake holder. like virtual car driver or something.  P1: no I don’t think so. because the virtual car driver is just the. the beep on the screen. the program.  P2: that's true. but the goal of this program is to give the student enough theory to implement the system in the future and that is for.  P1: traffic signal timing.  P2: yeah that is for the car drivers to be safe and to drive fast .  P1: yeah. but. of course but. they know they have to design a safe system. right. is not like they just learn the theory okay that everybody has to wait the shortest amount of time that they gonna design a system where everybody goes at the same time . I think that's too far. for head to drivers. the driver always just want to drive the fastest possible that also what the theory is. maybe is also just minimize waiting time |
| 7 | 10:08.5 - 11:11.9 | P1: so I think they have the same needs. the drivers and the professor. so I think it's just okay if we just do the professor.  P2: okay lets back to context view then. the traffic system. the professor. student.  P1: I think maybe the professor and the student can be cluster together.  P2: I think different view on the system. if you look at the professor if you draw a line for example you would name it in the line the professor want the theory to be provided clearly.  P1: yeah.  P2: and the student just want to have fun.  P1: if we. design all the three of them separately. if have the traffic system in the middle and just three loose circles as stakeholders with all they same arrows. |
| 8 | 11:11.9 - 12:24.0 | P1: I think that another way to draw them right. if you.  P2: isn't the professor uses the traffic system for the student to learn. on the other hand the student wants to have fun and learn in which the professor is happy. and on other hand the development team is more supportive.  P1: so they have an external relationship the professor and the students .  P2: I think yeah. you can see it like those are combine in the system and development team is just supportive is not the core.  P1: so you would on top of the above square of the traffic system you have two circles with the professor and the student who have external relation among them like the professor teach them the thing and they use the theory in the traffic system and bellow that you just have the box with the development team.  P2: yeah I think. I think those are more supportive and necessary, and in other hand the student and the professor they use the system in order to theory. |
| 9 | 12:24.0 - 13:49.4 | P2: let see professor . student.  (drawing).  P2: yeah then. you want to. to see the traffic system it's the core. I think the professor and the student are connected together by the system.  P1: they also have external relationship.  P2: yeah. but that's I think not the scope of the system. of course.  P1: no if you model all the stakeholders is also useful to know what their relationship among them . right.  P2: yeah.  P1: I think that only external relation.  P2: should the professor goes the traffic system with an arrow.  P1: yeah  P2: the traffic system gives feedback if the student do well on that.  P1: yeah it does. |
| 10 | 13:49.4 - 14:54.2 | P1: I don’t know if it's give feedback it's not like the program to test them right.it just she wants they get the general feel about the theory. so I don't think it will give the feedback to the professor that this student did well this student did well.  P2: and more in general the professor can se like how the students perform if she need to provide more theory about.  P1: I don't know. they didn't say anything about that in assignment right.  P2: no  P1: that the professor need to know how well the students were doing.  P2: no it could be handy one.  P1: almost 15 minutes. it doesn't say we have to model it. let see.  P2: I'll write it down in here just to point to remember and maybe later on the process we can still model it.  (writing) |
| 11 | 14:54.2 - 15:39.4 | P2: okay the student interact with the system and the system interact with the student so both ways go the arrow goes an arrow goes both way.  P1: I guess so yeah . this traffic system show some UI but it did. okay that's 15 minutes. let's have reflection. just say.  P2: I wonder.  P1: evaluation of what we did so far. |
| 12 | 15:39.4 - 17:29.9 | P1: alright. so. I'm playing the context card. notes player A place the context card at 15.15. lets the context card. so we're gonna talk about the context that we just did. and we could play the assumption card. so a couple of assumptions that we have may or may not make. about what we just talk about. so we just talk about that we have three stakeholders. the professor, the student and development team. yeah one of the things may have been an assumption is that the professor only gain from the system is that she wants the student to learn her theory. maybe she want to sell the software.  P2: is that true. maybe she want to use it her self. yeah.  P1: maybe she want to find hopes that one of the student find some brilliant way so she can improve her theory.  P2: right. yeah. but then to give back the feed back of the performance of the students. yeah. so an assumption to would to be handy to prove the system later on or the professor to gain more benefit of the system.  P1: yeah bit if we were to . this is nice I'm gonna remove the assumption card. |
| 13 | 17:29.9 - 19:01.9 | P1: gonna play the trade of still with the context trade of .  P2: the time is 17.  P1: alright. so. the trade off would be if we were to design a feed back to the professor how the student perform. we would also have to model assignments. right so you can measure how well someone did. unless you have assignment.  P2: yeah. this scenario I think like over crowded not too crowded .  P1: yeah but. the way of the system appears to me from the text file. is that you just have some sliders like very busy, very quiet and that some slides on how often second or a minute light turns green. but if you do an assignment you have to model okay, fill three intersections and make sure they run optimally. or build six intersections with very busy street. make sure it goes under a minute or something. and to do this you also have to building some measurement measuring.  P2: indicators.  P1: and that can make the system more complex. that's a trade off. |
| 14 | 19:01.9 - 20:07.8 | P2: but on the other hand. if the student gets some kind of result. professor can get that result as well. so I think if all those student have the same scenario to them with the same amount of intersections. the students one by one get some information. but you can draw also an arrow to the professor in which all the data is combine into some kind of graph and then she can see like okay. this times are better or this times are better. the flow of the cars. you know what I mean.  P1: yeah. but it's a trade off in order to is it designable. or is it .  P2: does it take to much time to design it.  P1: yeah also become to complex you have to worry about the concurrency. like you can't just play around and prove the theory why you doing the assignment. because it's measured. |
| 15 | 20:07.8 - 21:17.0 | P2: yeah I think student also will play with the program especially in the beginning and that would on the result.  P1: so do . you need build two modes like free style modes with just to display and a the assignment assessment module  P2: and that's not one of the requirements.  P1: no this requirement we just thought about  P2: I think in this trade off I'm not sure what you think about it. I'm gonna play a card as well. I'm gonna the problem card. and next to the trade off of course.  P1: it still there trade off.  P2: I think it will become a problem. also I would play the assumption card. I think it will. because of the assumptions that we made it wasn't in the requirement I think it will become problem.  P1: what would become a problem.  P2: implementing the feedback performance of students.  P1: right. that is assumption that we make  P2: yeah for implementing this. |
| 16 | 21:17.0 - 22:39.2 | P2: and we can program everything but we don't enough time to program everything. so I think that for it will be problem for our time.  P1: I think so. it also be .maybe.  P2: also the assumption.  P1: yeah.  P2: so yeah therefore I think we should skip it. maybe in the future .  P1: at least for now we'll .  P2: okay. then I would redraw my card.  (writing).  P1: okay. so we're continue designing the models. and we will do another card session. we will play another card.  P2: after 45 minutes okay.  P1: okay lets see. where were we.  P2: we've got the student so it's interact with the traffic system both ways.  P1: right  P2: and then we have the professor who wants to teach the students it's indirect external relation. |
| 17 | 22:39.2 - 23:28.2 | P2: and the students do they have like do they want to learn something from the professor.  P1: yeah but. the teacher wants to learn the same thing right. I'm not sure. what the student contribute to the professor.  P2: what did we write down in our stake holder matrix.  P1: with the professor. she want the theory to be convey properly.  P2: yes  P1: and student just want fun usable graphic.  P2: maybe they want to learn also otherwise they wont go to school I think.  P1: yeah learn. |
| 18 | 23:28.2 - 24:55.7 | P2: so you have the. then I think goes both ways. also be an arrow that external should.  P1: yeah. but the students . want to learn is not really a relation. right. they teach theory to the student and then the student use the theory in the system. and make it back some kind of extra knowledge while using the system. but they don't convey that knowledge then to the professor. the professor also use the system. I think it's good like this.  P2: okay. let see the development team  P1: the development has.  P2: the team develop the system of course so that the scenario to the system. I think it also has relation with the professor and the student in order to see what the student wants. they have to test it with student in some kind of way.  P1: yeah maybe I don't know. they have relationship with us right. because we are the architect of the system and we tell them to what to design I'm not sure. I don't know if it's. |
| 19 | 24:55.7 - 26:28.4 | P2: let see.  (reading)  P1: I think it's. maybe they should do some support after they finish.  P2: development team doesn't have like a relation with the professor for example.  P1: well.  P2: because professor has interest in the system so. I think .  P1: I don't know could be. that she. but she state all her requirement in the description. through requirements and then we model it. and gave it to the development team.  P2: so yeah then it's better to leave it out.  P1: yeah I think so. because this is just a view when the system is done. is not the context view while the developer. when the system is done. how the relationship look like. development team kind a support it. they build it. I think maybe we should name the arrows  P2: ok let see the professor educate the student.  P1: yeah.  P2: the professor link to the traffic system. |
| 20 | 26:28.4 - 27:59.0 | P1: user use it. check it monitors it . she has to know how to use it anyway so she can explain it to the students.  P2: yeah sure. of course. but I think that's only once like not most of the time. I think maybe. the direct line educate the students. I think she educates the student by the system .  P1: also both. it's a supporting tool right. so she teach them about traffic signal timing theory, and then she has tool as the supporting sort. she can play around with it.  P2: yeah  P1: and learn a little bit more. so I think this between the professor and the traffic system should be know how. know how the system works. and the student use it and the traffic system gives them some insight maybe. because what see what happen when they play around with. the variables. inside into detail.  P2: is it inside or is it user interface or is it the graphical feed back.  P1: I would say feedback. |
| 21 | 27:59.0 - 29:33.0 | P2: the traffic system is program by the developers.  P1: build. maintain. supported.  P2: I think program. because then it maintain . all those are combine here  (drawing).  P1: I think we should take a picture of it right.  P2: yeah.  P1: so.  P2: maybe you should write down the timing as well.  P1: time is 28.25  P1: alright. we added to the report later. let see. are we satisfy with the context view or .  P2: I think it covers all the stakeholders and the other hand also. the flows.  P1: okay. so we still have an hour and a half to complete the functional view and the information. |
| 22 | 29:33.0 - 32:09.2 | P2: I think should we start now with the functional.  P1: I think so.  P2: let see the functional view.  P1: alright. for the functional view. we need have the system . so the actions by the users should result in what result on the screen.  P2: it should be some kind of input throughput output.  P1: yeah maybe that's information. alright so she do input throughput output that's information flow.  P2: yeah  P1: functional is more.  P2: I think we should write down all the function then see how it comes up with it. maybe we should brain storm first about all the function and see how they relation.  P1: okay.  P2: let see first of all.  (reading)  (drawing).  P2: okay so. back to road. I think it's different.  P1: so road variant length and different arrangement of intersection. is it same one or another one.  (drawing) |
| 23 | 32:09.2 - 34:28.5 | P2: and behavior of the traffic lights.  P1: students must be able to describe the behavior of the traffic light. I think it's write it down the sentence. variety of sequences and timing schemes.  P2: more specific.  (writing).  P2: another one. variety of sequences and timing schemes I think it's a different functionality.  P1: yeah. why.  P2: because timing scheme. let see. it has to do with time.  P1: yeah about the scheme. should do like green.  (drawing).  P2: for now it's good.  (reading).  P2: so the traffic.  (reading).  (drawing) |
| 24 | 34:28.5 - 38:10.8 | P1: I think that sufficient like a little . constraints. let see.  (reading).  P1: with or without sentences  (drawing).  (reading).  P1: traffic density.  (writing).  (reading)  P1: that they should be able to see the result of the changes. we have to take a look.  P2: the outcome. that could be a function. I think is more like standard outcome.  (reading)  P1: may add additional features.  P2: there's an existing software packages |
| 25 | 38:10.8 - 39:33.5 | P1: see this. we have to design the interaction that the students have. so design the appearances. how the people can interact and design the basic structure of the code. okay. and at least these three should  P2: okay  P1: I think we have enough function right. I think this were all the function that we need. do we need to model constraint or something like that.  (reading)  (drawing) .  P2: create a map. set the traffic timing schemes. and then traffic simulation comes out. so more enough an abstract way of thinking. but it's covers .  P1: but the time scheme already here right.  P2: yeah. this is more like an abstract more abstract way of thinking traffic simulation.  P1: this is functional map  P2: yeah but I think this is a good grouping method. and I think that can be like the structure of the program. should look at the functionalities. |
| 26 | 39:33.5 - 40:56.1 | P1: but we already model it here and here. right.  P2: okay I think we can take those as first functionality approach.  P1: okay. how would you slice this.  P2: like I said before like first start with creating a map. and tell the traffic density. and then view them as separate. traffic simulation. I think that the basic flow. which need to be. you know where can I make.  P1: it's kind a information. that just the steps that people go through in the program.  P2: yeah but it's functionality how they are. there are functionality . I think some kind of way which the program flows.  P1: yeah. but I think we have to do that in the information view points.  P2: yeah that's true. when you start a program what information is should through. but I think in general functionality probably we need to start somewhere. you need to end somewhere as well. |
| 27 | 40:54.2 - 41:52.3 | P1: yeah but I think you need to be more abstract then just which function go concurrently so in which sequence they were.  P2: but it's not the. this more the start like the sketch and from there we can alter it like the way we want. but I think it's a good start to begin with we create a map. what need to be implement.  P1: so you group functions.  P2: so you group one function of it's creating a map. you group other function in a put in density. then a calculation will be done I think. and then it will be visualize.  P1: yeah. that's how it works  P2: it's not really the sequence. a little bit. but I think like not such a detail manner here it will be in information. |
| 28 | 41:52.3 - 43:17.2 | P1: yeah. but still we can. or you can make a distinction between, customizable functions and the function that are in the system. so the students they can . customized this this and this. like the lighting sequence and a density. but they can't alter how fast the car would going or basic map physics. you know. you understand what I'm saying.  P2: yeah. I think what you mean is like you put some boxes in which the students interact and then the program does something and then it sends feedback to the user. right.  P1: yeah. yeah the distinction between. the things that user can influence. and the thing that just basic about the system. is that really functional you think. maybe you can do like an overall scenario like how the sequences. |
| 29 | 43:17.2 - 45:32.6 | P2: yeah. let me start with the.  P1: lets. you wanna quickly do like both in the sketch. that we have it in our mind. then we can play the card game.  (drawing) .  P2: I think when I read this line. you should design the basic appearance of the program as well as the means by which the user create the map it's traffic, time scheme, and use the traffic simulation. I think your point of view is more close to than what is asked.  P1: I think is separately because now we are not designing these three viewpoints and this are not requirements. just to draw like okay . so this what input section look like. this is what the box looks like. when you can move the slider of density. and this is where you can add a new things and change directions lights. I think that's what they . the means by which the user creates a map. so little box create map, set the scheme. and view the simulation.  P2: basic appearance.  P1: yeah. I think this just what the should look like. and not much as how the functional viewpoint is. from there. |
| 30 | 45:32.6 - 47:07.9 | (drawing).  P2: yeah. no it's more like. you can model it as well. look at this line. like you told before interaction. basic appearance of the system. so system . and then .  P1: yeah.  (reading)  (drawing). |
| 31 | 47:07.9 - 49:05.9 | (drawing). |
| 32 | 49:05.9 - 50:07.6 | P2: so. this is what I think just a general sketch is not really specific. yeah. first it creates a map, set road, set intersection. then the .  P1: you talking about the functional.  P2: yeah then the user set the properties. set the sequences. then the program start calculating. and from this calculation visualization. visualize the feed back will be generate. so bit of input throughput output mechanism. which this is the throughput. this one kind a sequence. I'm not sure if that what is needed but it is my way in which I would think the functional view will be done. |
| 33 | 50:07.6 - 51:41.0 | P1: yeah. and also. a viewpoint has multiple views right. so this is two views of the same viewpoint.  P2: this is the viewpoint of the end user. how would you?.  P1: I divided them up between interaction and system layer. so interaction layer is what user can control. which is schemes, sensors, density, arrangement. and road length. and system properties. is no crashes. visual map. light direction. and the simulation traffic flow. yeah which also the functional a view on the first of viewpoint. I think we should do both I think right?.  P2: maybe yeah.  P1: maybe we should play the card game right?. alright. so a little bit late it's fifty one. fifty one. twenty. and which card I'm gonna play. |
| 34 | 51:41.0 - 53:09.2 | P1: let me see. I play solution card. let see the time. yeah. so solution time. and I'll do trade off. right. so what just happen. we both make little sketch about how what we think the functional viewpoint should look like. and we had two different ways of modeling this. one was to have a separation and layers. so interaction layer and system layer. where the user could edit certain things and could not added some other things. with the other perspective how the system function really. so how the user can create maps. how the system set up the road. how them calculates. the traffic flow. and then visualize it on the map. I think both should be in there. right. I think the two different views make up. functional viewpoint. |
| 35 | 53:09.2 - 55:33.8 | P1: so. the. I think we should name the pros and the cons of the .  P2: I think that's a good so. in order to . the cons I think that's should trade off of course.  P1: yeah.  P2: and maybe what kind of card we can use as well. before.  P1: yeah. so the trade off both model would be.  P2: I think we should name the problems in our models. the needs of our stake holder. I think that good point of view we should look at. for our stakeholders. for this functional view.  (reading).  P1: so continue  P2: . if you look at my system. I think what problem can be is that calculate is not really a thing. one of stakeholder understands. I think too general.  P1: I think that development team understands.  P2: yeah but in other hand we have also the professor and the student. and they would to know what calculated. it's easy to see what the interactions are. so what the students can do and what they get back. and I think calculate. I think it should be more specific in order for our professor an student to understand it.  P1: I'm not sure because it's functional viewpoint and do they need to know which method we use in the functional viewpoint.  P2: I think it can be handy for the student and professor to see. |
| 36 | 55:33.8 - 56:39.6 | P1: differ.  P2: how the system operates. and not too vague like it calculates.  P1: yeah but that's a functional right. so how does the program functions. it takes input and calculate. and they have output. like a little bit like black box. I think we can go into that much detail but I think it's better if we just create a general functional view. and if you wanna stipulate which method they use.  P2: I think we don't have enough time for that. to go really in depth and see how to calculate it. so I think that would be a problem. if we want to model it. we have to take more time for it and we don't have so much time anymore.  P1: okay right. so we are assuming that calculates we already have the model and thing that can just do calculate. |
| 37 | 56:40.0 - 59:40.0 | P2: what in my or in your model do you think are assumption, and what are like . why. I hate all our requirements. because I took them out of the requirement section. have you got any assumption you think.  P1: well my assumption are that in the interaction layer that the user can customized schemes, sensors, density, arrangement and road make. and I think assumption is also that the user cannot influence whether there will be crash or not. how the map is visualize. which direction the traffic lights are. and it does also have no control of how the flow of traffic is calculate.  P2: yeah. it's true. so no crashes I'm thinking is that much. isn't that just not only. is that a functionality or is it just requirement. I wonder if no crashes is like functionality.  P1: I think so.  P2: or more extra.  P1: is just a quality requirement.  P2: yeah that's right.  P1: not really function. yeah you are right. I think we leave this one out.  P2: will draw my cards now. because we now start with different.  P1: I think we've done with the card game right. so  (writing).  P1: and we are also would take some pictures of the models.  P2: should we do it now.  P1: yeah.  P2: now we have two models before we.  (writing).  P1: write functional.  P2: maybe A and B. let see you are. okay we took some pictures and now I think we should try to create one. but if you wanna see it from different view  P1: yeah. so one view point can consist of multiple views. so now we have two views. and together they are the functional viewpoint. I think that's a okay.so lets continue with the information viewpoint and once we done with that we can start with the appearance and the code structure alright.  P2: should we take a rest. take some coffee. and  P1: yeah. notes. we're taking 5 minutes break. |
| 38 | 1:00:00.0 - 1:00:13.5 | P1: okay now. we're back from five minute break. unfortunately made a second file of the voice document. so this will be the second our long document |
| 39 | 1:00:13.5 - 1:01:50.7 | P1: we just discus. I think we're gonna make the information view point now. I think we are satisfy with the context and the functional view point and so lets start the information view right. so the information view point is how information is dealt in the system. how (inaudible).  P2: I think we can look at the functionalities again. and see which function that we start and how the information will flow through the system. at each functionality.  P1: yeah.  P2: and try to get a chronological flow through the system as well.  P1: yeah.  P2: should we take both of views and combine them and see which one start first which function.  P1: you mean functional viewpoints.  P2: yeah together. maybe we can do this together I think.  P1: yeah. but maybe we start over with the information viewpoint. we have this function from the text.  P2: okay. I think maybe it's good to do together so when we have some arguments then we have something for rationale as well.  P1: yeah.  P2: maybe we should right down as well all our rationale we make.  P1: sure.  P2: when we draw. |
| 40 | 1:01:50.7 - 1:02:46.4 | P2: okay. which function do you think starts first. I think the creation of the map.  P1: yeah. and in this flow should I. do you want to make an UML class diagram ? the data store.  P1: yeah I think so. then you have like . but UML diagram are different class right .  P2: yeah. and every class in there you see which information is store and how that information is connected to another.  P1: okay lets do it.  P2: lets start then maybe a bit more abstract with creating a map. and there is stored like the information about intersection about  P1: how many intersection how long are the roads.  P2: yeah sure. should I then yeah the map or the road in it. |
| 41 | 1:02:46.4 - 1:04:03.4 | P2: here it starts. the map has intersections. and . length. road length.  P1: yeah so number of intersection and length should be in the map module.  P2: also length intersections. I think that would be it. like the properties you just said to the traffic light I think the traffic light it separate class.  P1: yeah I think so to.  P2: so you start with creating a map.  P1: yeah.  P2: after the map comes the traffic light.  P1: yeah.  P2: I think.  P1: and if the map can have multiple traffic light no need. if traffic light could only in one map.  P2: yeah.  P1: need some model cardinality.  P2: yeah.  P1: okay. traffic light.  (drawing). |
| 42 | 1:04:03.4 - 1:05:18.5 | P2: how is it connected with each other. how is it related. how would you call relation. as . one map has zero to many traffic light.  P1: no six to many.  P2: six to many. and on the other hand one traffic light is in one map. one to one map.  P1: yeah.  P2: okay. the traffic light if you look at those attributes what kind of attributes does traffic light has. sequence.  P1: yeah a sequence and timing scheme. but I don't know if one traffic light has a sequence scheme or that the whole intersection has a .  P2: do you think this should be a class in between. in between traffic light and map. like.  P1: maybe this class should be called intersection.  P2: yeah.  P1: so in intersection there are traffic lights. |
| 43 | 1:05:18.5 - 1:06:31.1 | P2: and then also we laid those to one traffic light you mean or.  P1: yeah we relate them to. yeah. so in the intersection at least four traffic light. I think .  P2: yeah.  P1: so four but it goes both way. so there are.  P2: intersection stores a traffic light maybe or locates.  P1: no it's .  P2: like the relation how we call it. part of.  P1: this part of intersection . the intersection part of the traffic light so.  P2: you can make it instead of active you have to make it passive. so traffic light is part of an intersection. intersection has a traffic light part of something like I'm not sure about it either.  P1: no idea how relation should be call. |
| 44 | 1:06:31.1 - 1:07:27.0 | P2: okay yeah like. stores traffic light. yeah sure. traffic light is stored in intersection. and then you said like four. so one intersection has four to many traffic light.  P1: yeah depends if you going straight you see an intersection whether there just one light and if it goes green you can go either left, right, or straight. or if there is separate lane goes straight and a lane to go left and a lane to go right. that's we don’t know right.  P2: no, that something for the rationale as well.  P1: I think we should.  P2: can I give you a paper to write down the rationale.  P1: yeah. |
| 45 | 1:07:27.0 - 1:08:10.1 | P2: okay.  P2: I think they said something about this right.  P2: they said something a T section or not. so we should only allowed to four. in here  (reading)  P1: yeah your approach should also be able accommodate left hand turn should protected by left hand green arrow lights. so that means that you can you could just only go left. or only right. so that mean you have three. three lights for every intersection for every thing so that's six. twelve.  P2: yeah maximum of twelve and minimum of four.  P1: are they all the same. |
| 46 | 1:08:10.1 - 1:10:31.1 | P1: we either make a choice this design choice. wait.  P2: what I mean you have like minimum and a maximum. and minimum is four and maximum is twelve.  P1: why should. then you have to choose if you make a map. do I wanna four light traffic intersection or twelve.  P2: but that's the type of road you choose I think but the type intersection you choose.so maybe we can call here what type of intersection. and then three two and one. I think it could be handy for the students to have.  P1: but there all four way. there all just crosses you know there all four way intersection. so that will take whole different theory if they are all. they all the same and they only have four of traffic flows and they all the same they all have twelve . if they all have twelve . is much easier to direct traffic coz this arrow and this arrow could go at the same time and if there just two is no way this and this could go at the same time. this traffic could go in each direction so only one light at the same time can cross.  P2: yeah  P1: and if you have six. this can also cross at the same time.  P2: but if you look in real life. I think you have both options you can also have like a traffic light who goes straight forward and right. and one traffic light only goes straight one. in order to reach it. and also to restrict the driver to go somewhere in order to keep the traffic flow flow. you know what I mean. so you can also have like one arrow and the opposite direction is two arrows. the direction it can go to. the one is one direction. in order to get the traffic flow good.  P1: yeah.  P2: so thoose restriction are in real life I think. so I think it should be model as well program as well. |
| 47 | 1:10:31.1 - 1:12:30.7 | P1: yeah but I think.  P2: with the modeling it's not too much effort. and I think.  P1: I think it is. coz if you can choose. well is two different ways of calculating. coz this the way traffic flows here is much easier than the way traffic flows here. you can you have instead of four you have eight. twelve different option a lot of different schemes with sequences and stuff. so it's very different to calculate and it' s get even tricky if you can. if there the two types of traffic light are in the same map. so if there's one with four light and one with twelve lights and this one goes and this one just take this expecting this one to go. there is no traffic in this way also more complicated.  P2: but I think if you look the perspective of the professor. I think for the theory to cover the theory I think it should be handy to have those option as well. and I think for the architecting is not more difficult. is only the cardinality we give it.  P1: yeah but it works differently in the calculation process. alright because this is more difficult. I think this will help the traffic flow faster but it's more complicated to calculate. is just more calculation to be made.  P2: yeah. but in the other hand those calculation like theory is already there. so is just implementing the theory about all those.  P1: yeah but the theory is about twelve way or four way.  P2: I think the four way. |
| 48 | 1:12:30.7 - 1:14:26.4 | P2: yeah. twelve way I'm sorry. twelve way. yeah. just to get another dimension in the theory if the student also want to learn something real life I think it would twelve way but it also possible four way. like it's also possible you have ten now. I think if you restrict somebody to go left. but people from the left can go right. there also .so I think it should be four to twelve .four lights to twelve.  P1: and people can choose whether they want a four light or twelve light.  P2: yeah. or ten or eight or seven they can choose how many light light they.  P1: yeah. if you let them choose six or seven a lot more complicated to calculate. it kind also distorts just a flow of data if you have all the same lights. you can just the only variables are length, road, timing of the lights and the sequence which the order (inaudible) if you also add how many light there are per traffic light kind a defeat the purpose. so you don't actually see result of your scheme. but it also how many are the light are there in the traffic intersection.  P2: that's not a requirement that was given. so would you go for twelve. only twelve. or would you only four. because if only take four you don't cover this requirement and we go.  P1: no so I think we should do all the twelve I think. |
| 49 | 1:14:26.4 - 1:16:10.0 | P1: and let see. yeah.  P2: you must  (reading).  P2: also able. also an option for four.  P1: no. that mean that's mean this four is not an option . they. this is the requirement. that the student must be able to describe the behavior and it should also be able to accommodate left hand turn. so four is no longer an option. you have to do the left hand.  Instructor: hello. (inaudible) |
| 50 | 1:16:10.0 - 1:18:01.4 | P1: so to make easy do you wanna do twelve. so that every intersection has twelve. right. to prevent this kind of manipulation and view fraud.  P2: yeah. do you want the minimum of twelve and maximum of twelve which you say like minimum of four and maximum of twelve.  P1: but minimum of for we can't do minimum of four because you need to have left hand turn. so if you have four light on the intersection it just go. and its like it's not accommodate left hand turn.  P2: okay. so twelve twelve. right.  P1: yeah.  P2: and in the other hand one traffic light is stored at four intersection.no yeah one traffic light stood in one traffic. one to one. okay the traffic light what kind a attribute does it have. it has the not the sequence that is important in intersection.  P1: sequence of the intersection yeah.  P2: the traffic light is more like green .  P1: timing also. how long does it stay.  P2: the type of light like left the direction type.  P1: direction. |
| 51 | 1:18:01.4 - 1:19:06.5 | P2: on the other hand. the . or is it sequence which color it gives at the moment. the color or is it.  P1: that is the sequence and timing so this one it show green for twelve seconds. it can have a the state or color.  P2: state yeah. on the other hand the intersection is a sequence direction maybe or.  P1: no I think that's traffic lights. intersection has.  P2: it's a bit limited coz you can only go for three way on every corner it's like intersection of four direction.  P1: I think it's just a sequence it coordinate which one go to green. |
| 52 | 1:19:06.5 - 1:19:51.1 | P2: then we have next intersection with class which called like traffic density?.  P1: density yeah I think that in map right or do you want to make another class called traffic?  P2: traffic yeah I would point it intersection.  P1: yeah. ok. it's handles.  P2: I think it's a good word handles. yeah sure. |
| 53 | 1:19:51.1 - 1:20:59.5 | P2: then we had one zero so many traffics. one intersection handles zero too many traffics and there's no traffic.  P1: yeah.  P2: so many in other hand if traffic is handled by one intersection.  P1: there is still too many, right?  P2: six yeah too many. in the traffic it is density I think it is distributed?  P1: yeah.  P2: the direction it flows?  P1: yeah. I mean yeah the direction or it can turn left to right to it is to make decision at every intersection right?  yeah. so the current direction and the future direction or something?  P1: yeah |
| 54 | 1:20:59.4 - 1:23:13.2 | P2: direction and a flow?  P1: yeah I think flow is more.  P2: direction.  P1: no where the flow goes  P2: sorry?  P1: I don’t know where flows goes kind a congestion and  P2: contain the direction and direction maybe or route? I think that covers both. route. lets see if we look at our functions and any other any other things which did not model and ok.  P1: arrangements? intersections? maybe that's a map? how do you think so arrange like do have six in a row or like two two two or do like cluster?  P2: yeah arrangement. arrangement. arrangement.  P1: yeah so variety sequence and timing we have those both and the direction of lights no crashes.  P2: is part of the intersection I think but it's more seal qualitative requirement  P1: yeah information flow it's true. sensors. yeah.  P2: sensors. map? or the  P1: no is either intersection or traffic light I think.  P2: then intersection. it's property of an intersection it talks with the traffic lights of course but I think it measures at the intersection.  P1: I think so too coz she see if there is a lots of people come from here and turn this model there is no no data from the sensor you lead them right  P2: yeah  P1: sensor here. yeah and yes and no sensor.  P2: Boolean |
| 55 | 1:23:13.1 - 1:24:21.5 | P2: direction of course traffic flows we have those in the route.  P1: yeah and traffic density  P2: density we've got as well.  P1: create a map.  P2: the density is connected to some kind of scenario I think. I think it should should a scenario should be like like they use it as like we want this scenario and then the calculation some kind density will random generator but with restriction on with scenario it's connected.  P1: I think there's just a slider, right? the user want to change the density it slides from not dense to very dense.  P2: isn't there also a little bit like something random generator connected to it if we maybe close to density we should put scenario as well. don't you think or |
| 56 | 1:24:21.4 - 1:25:15.0 | P1: I don’t know what you mean with scenario.  P2: like scenario yeah. it close to density so we find to calculate the density I think. this is. ok. let's see  (reading).  P2: I think we've got an information of.  P1: I think so too. so yeah it's right information view right time time stamp. |
| 57 | 1:25:15.0 - 1:25:43.2 | P2: yeah  P1: time is now 1.25 lets start first 1.25 to 30. |
| 58 | 1:25:43.1 - 1:26:53.3 | P1: alright so let's continue working on the other two requirements. right. so design the interaction that the student will have and the basic structure of the code  P2: okay.  P1: and we also have to download the architecture document template from the website.  P2: yeah. that's after.  P1: we still have half an hour.  P2: yeah.  P1: in about 15 minutes 20 minutes maybe we gonna discuss with the cards again. so let's the 15 minutes or starting now from the interaction design and 15 minutes for the code design, right?  P2: yeah. |
| 59 | 1:26:53.2 - 1:28:37.3 | P2: ok what do you think with for the interaction. I think there should be some kind of. if you look at the information flow I think there should be something like a mapping after the mapping in the mapping like an mapping because a mapping window? in this window that mapping is done so you slide the things in speed with you want to connect and then there is slider with density or maybe there is another window stimulates the model and with density can be.  P1: I think it should like a side model like a side side bar or side window anytime you want to you can slide.  P2: density  P1: density. yeah I think that's the only slider we have, right?  P2: yeah.  P1: and then maybe also like a little box with like. like a creator door where you can just drag new intersection on there, right?  P2: like in Visio  P1: yeah  P2: and maybe when when you you slide like same kind intersection that pop up same kind like properties screen in which can do the sequence or some model property.  P1: yeah yeah exactly. so you can set it to automatic maybe. yeah but because we have sequence for every separate intersection.  P2: yeah |
| 60 | 1:28:37.3 - 1:29:18.3 | P2: so yeah then this will be a basic screen. right. then on the right or left pane we do like the intersection.  P1: yeah so do you also need road tool or just intersection tool and then automatically connects to roads  P2: new shapes right  P1: yeah  P2: and the road  P1: yeah this road |
| 61 | 1:29:18.8 - 1:32:30.0 | P2: sensors. intersection.  (drawing)  P2: the intersection sensors.  P1: I think you can drag this and then either here or here have a slider density.  P2: on the top the play button.  P1: yeah sure.  (drawing)  P1: and just number of traffic. number of intersections and number of cars maybe. and maybe number of the lane traffic waiting time . average weight.  P2: what else that you say.  P1: number of intersections, number of cars, that what we design.  P2: traffic waiting time, number of cars,  P1: number of intersection.  P2: maybe we can also like if something is wrong and we can give it color as well when it's like how do you call it like when it's all go it also not floating smoothly, and when it's like a problem it turns red. so people can see whether the problem lies and then  P1: yeah but is that in here  P2: no no this more in here and maybe also a slider up way with properties so in which we can put in the sensors, the compute.  P1: yeah need a few click on like an intersection. something should come up here and it says you can take the sequence you can turn off the sensors  P2: so then .  P1: so it should be just be like helicopter view right.  P2: yeah  P1: not in 3D.  P2: no just.  P1: so draw a couple intersections here I think. draw at least six, then draw like an arrow pointing to one thing that this is the intersection that we can open. |
| 62 | 1:32:30.0 - 1:34:59.9 | (drawing).  P2: one two. just. for now like this.  P1: yeah that's good.  (drawing).  P1: yeah.  P2: and then we select this one.  P1: yeah. and then on the right.  P2: therefore.an arrow. the properties.  P1: yeah.  P2: with density. sequence. time. right. we had sequence and we have timing.  P1: yeah timing is part of traffic light so I think you gonna do. yeah sequence. maybe like an edit button here or something. so you can program sequence. and on off button for the sensor. and then maybe here at the bottom you can go to the lights page or something. once you pick on the intersection then you can. on the intersection you call each network light you set timing direction and the state.  P2: light properties  P1: or maybe. direction.  P2: when you press this button a new window will pop up.  P1: yeah. you can do the only one intersection  P2: then only have one intersection. like this the intersection. |
| 63 | 1:34:59.9 - 1:36:49.6 | P2: again. some lights.  P1: yeah. but it's twelve lights right. so one in the middle. one here and one there.  P2: yeah we just thought it like this.  (drawing)  P1: you can click on one and you can set timing the maybe. but the state is determine by the type is it red green or orange. and the direction also set.  P2: so this one is select then.  (drawing)  P1: property.  P2: direction.  P1: yeah. and the timing. yeah I think that's it right.  P2: state  P1: no. state is already.  P2: alright. now  P1: box this.  P2: like this.  P1: no I like the whole box.  P2: whole box.  P1: yeah.  P2: lets maybe also good to see is maybe some kind of colors what do you called it (Dutch).  P1: exclamation mark. |
| 64 | 1:36:49.6 - 1:40:22.1 | P1: alright. when there's a lot of cars waiting like a pop up comes up. with little exclamation mark.  P2: yes.  P1: and maybe a just arrow here to explain traffic jam. traffic jam notification.  P2: in here.  P1: no just a little point this is traffic light. traffic jam indicator. to notify.  P2: yeah.  (drawing)  P1: this is design basic appearance. we have that. create a map. set traffic timing schemes. and view traffic simulation.  P2: yeah  P1: I think that goes everything right. yeah. okay so.  P2: UI. user interface. we'll gonna take a picture of this.  P1: one. thirty eight.  (drawing).  P1: so you wanna start on the code now or you wanna play the card game first. coz we have twenty minutes left. the card game you have to discus the flow, the information model. and the UI.  P2: we got 20 minutes left.  P1: if you do the card game now then we have. 15 minutes left for the design.  P2: first we can do the design because.  P1: the code.  P2: I think a bit we would one line I think with the code we will have some arguments.  P1: I don't know how we're gonna code.  P2: and then we can put the cards by . if we have an argument then just say this is a problem or hey this is not.  P1: okay so the basic structure of the code that will be use to implement the system you should focus on the important design decision and the foundation. limitation. work out that.  (reading).  P2: we should have like a calculation class.  P1: sorry.  P2: calculation class.  P1: yeah.  P2: with the code I think this just. boxes.  P1: yeah. like we saw in (inaudible).  P1: yeah.  P2: I think the functionality start needed. this one is needed.  P1: so you have that.  P2: and on there on we just. okay.  (drawing) |
| 65 | 1:40:22.1 - 1:43:17.0 | P2: which will be the first class. the user interface. the mapping.  P1: yeah. first class UI.  P2: UI class. then we can just see it from the information view.  P1: so you want just.  (drawing).  P2: traffic class which (inaudible) density and also the route. I think.  P1: or maybe.  P1: a route class. density class.  P1: no I think density and route should be like.  P2: combined.  P1: no I think density should be a variable. standard set up like one car for the whole thing and it should be in the more general thing. if you use a slider. that's the variable so from one to two hundred. and it's write of the variables and then the main program says place so many cars as the variable density is to the map. and then at the root is just randomly generated. so either left straight or right. is one two or three. I mean you create random integer between one to three. and that's for every car that with (inaudible).  P2: yeah I was thinking about like having one car and had those direction in it. in mind. so different direction and then if you want bigger density you just generate more classes of car.  P1: yeah exactly. so in the main program there's the variable density. number of cars really. and then you have a class called cars . car which has functionality. and then you say just how much in the variable the density is. create. so many cars in the map.  P2: yeah. then with the UI. with the main model can we call that.  P1: yeah main.  P2: main .  P1: main has the variable call density. |
| 66 | 1:43:17.0 - 1:44:44.1 | P1: and then there's not a little function that says, density slider.  P2: that's part of the UI. so the UI is connected to the density.  P1: most every class we make has the end show in UI. something like that. so the UI should just be this I think. and this the variables. traffic density. and then in here you have little function called density slider like that.  P2: maybe those viewers of sliders and the text views and all those part are already in the library. so you don't have to program it. you just can ask that library. so like the slider and stuff is all part of the UI. all those functionality I think too specific to put in .  P1: yeah then you also need a place intersection . okay.  P2: and now we can make a class maybe with shapes.  P1: yeah.  P2: this is just the model . draw. draw model.  P1: yeah. okay lets do the card.  P2: yeah. now we can do it together. otherwise do so much time.  P1: okay while we're doing it we're gonna play some cards.  P2: yeah. |
| 67 | 1:44:44.1 - 1:47:04.0 | P2: let see . couple of shapes. oh wait .main density and then we had a car.  P1: yeah.  P2: the car which has a route.  P1: okay so I'm playing the solution card. at 1.45.  P2: shapes of model.  P1: and I'm playing the constraint card. so our solution to the problem of modeling the code. is to make a separate class for cars. and then to append them to the main the density. so this is a constraint for placing on the code that every car you see should be a separate object. which will be appended to the main .once the density increases. so we have a car. yeah it has a route. which is randomly generated I think or should have to. whatever set route. and that's it right for the car.  P2: yeah.  P1: is there any other constraints we can think of at the moment. constraints. at least six intersections. that what we constraint our self on.  P2: yeah but is the program code.  P1: yeah it is. yeah.  P2: but then also no jam no no no .  P1: yeah is a constraint because if you build a map and you put one intersection in there. you should give notification like this is not working. |
| 68 | 1:47:04.0 - 1:49:05.5 | P1: so car route. should we make a class for the intersection.  P2: yup. with the properties of each intersection.  P1: intersection right. so the intersection has . the properties I think the sensors should also be just in the inside the intersection. the sensors. program sequence.  P2: yeah. sequence. sensor. properties. the direction.  P1: yeah and then the calculation right.  P2: yeah I think that all of it is in the main.  P1: alright. so the main calculate. if that many cars come in intersection equals traffic jam.  P2: traffic jam.  P1: maybe notification.  P2: notification. yeah. and we have a car.  P1: taking with the constraints.  (drawing). |
| 69 | 1:49:05.5 - 1:50:29.9 | P1: yeah in the main also. I'm playing another card . I'm playing the problem card. so one for the nineteen. and then the risk . okay so. one of the problems that we're facing is how to do all the calculation and stuff. are we gonna do all in the main. risk is that we are creating code to large and complicated.  (writing).  P1: or that we create separate module to do all the calculation. we think that is easier far to do in the main. also to model because if we want to model separate class here it model or calculation. that it then it would be very difficult to .  P2: scalability will be difficult as well if you put it all in one steps.  P1: yeah. absolutely. great. |
| 70 | 1:50:29.9 - 1:52:04.9 | P2: yeah. I'm going to put in the solution card. combine with your risk at the time  (writing).  P1: risk and solution yeah.  P2: yeah well to give solution on those risk I think is just a small program I think it still stays readable because not such complex program I think how we can make a solution on this is if you make a new class. in which you put all the formulas which can be edited by the professor.  P1: yeah.  P2: the logic. you put in the logic like logic class. and that logic class talk with the main. and the main combines all those classes together. so then in the future when there's new theory on something. they could put in the logic class.  P1: really that easy yeah. but it's this class would be basically the theory stated in the mathematical way.  P2: formula. yeah. so called it the logic class. |
| 71 | 1:52:04.9 - 1:55:08.0 | P2: okay now. write that card as well.  P1: I think we put enough time in there.  P2: so we have we got everything. I think maybe only the traffic light is not taken into account and that's connected to intersection.  P1: yeah. definitely need to be there just make it here. and do we also model dependencies.  (talking Dutch to another group).  P2: okay I think we don't have the time to put in . maybe we can sketch it  P1: the dependencies.  P2: yeah. like this connected to that one. and that one is connected to that one. logic is connected to that one. intersection. the shapes  P1: is connected to UI.  P2: those are connected .  P1: yeah.  P2: the shapes is connected to UI.  P1: yeah.  P2: and also to the main. coz it has properties.  P1: okay. yeah.  P2: intersection.  P1: okay.  P2: so put the code. the code constructions. maybe we should put the sequence in that as well.  P1: no it's okay. just put the time stamp. I'll take a picture.  P2: maybe if we lost five minutes we can look again on the functional overview. and see if we .  P1: we still have to fill in the provided questionnaire. so I'm assuming we don't have to record as filling the questionnaire.  P2: good bye.  P1: so this been fun. good luck. |