PE 02 Transcript

Test group, professional experiment

All participants are male

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| --- | --- |
| Respondent | Text |
|  | First recording 49:25 |
| 0:00:05.5  PERSON 1 | I think with this one what we should do is, we need to be clear on the requirements. |
| 0:00:13.8  PERSON 2 | Yes |
| 0:00:14.0  PERSON 1 | So what we need to do |
| 0:00:15.7  PERSON 2 | Problem solving |
| 0:00:16.1  PERSON 1 | Yeah. But we need to discuss exactly what we need to do. Write it down, so it’ll be clear, and then we can discuss how to design that. [inaudible] |
| 0:00:29.1  PERSON 2 | Yes ok. |
| 0:00:32.4  PERSON 1 | So let’s- ok I think this problem is we have to create a traffic control simulation system. To allow the students to create the roads, and then put the traffic lights on the intersections, and then see the- so the students will be able to change the timing scheme, change the traffic lights, control properties. And then to see how that decision effects the traffic control. Effect the traffic so that- |
| 0:01:05.8  PERSON 2 | Yes |
| 0:01:08.8  PERSON 1 | Ok I think the first one- so the requirements, I’ll write down the requirements. |
| 0:01:28.4  PERSON 2 | [PERSON 1] the whole object of the exercise is to kind of give the students an idea of how a particular change in the traffic scheme can affect the traffic in the area. So the major gal, alongside the building, having the design is for them to be able to say, ok let’s clear the scheme, and we have this [inaudible], if we have this type of [inaudible] we will achieve this result, as opposed to having this scheme. So that we can better design traffic systems or traffic in an area. |
| 0:02:06.4  PERSON 1 | Yep |
| 0:02:07.8  PERSON 2 | Or even really design roads in a particular fashion like, if they ought to be constructed, but the traffic lights, whether you have a particular way of doing things. |
| 0:02:22.0  PERSON 1 | Yep |
| 0:02:23.2  PERSON 2 | So it should be able to kind of have an output which they can compare, ok this is what it is, and this is what it is and we could see the, like a snapshot of, they’re doing this was- it won’t [inaudible] in this bullet point. |
| 0:02:36.6  PERSON 1 | Yeah. That’ll be the measurement |
| 0:02:39.8  PERSON 2 | Yes, some sort of a tool at the end |
| 0:02:42.9  PERSON 1 | Yeah that is, yeah, if the traffic scheme is this, so it will be an outcome |
| 0:02:46.2  PERSON 2 | Then, correct, so if this was a traffic scheme, 50 cars for example would go through within this much amount of time. And this scheme allow only 25 cars to go and cause more problems |
| 0:03:00.6  PERSON 1 | Yeah |
| 0:03:01.8  PERSON 2 | Or, if you could took parts of these two schemes and put together with a third scheme then that would let 70 cars pass. |
| 0:03:09.3  PERSON 1 | Ok |
| 0:03:12.0  PERSON 2 | That also should be a part of our goals, before the requirements [inaudible] the goal |
| 0:03:16.2  PERSON 1 | So this [inaudible] the overall goals |
| 0:03:19.8  PERSON 2 | Yes. So that is basically what we want to achieve and we can not only check all of these things but also can divide some of it. What is a better design of the traffic system. Or traffic lights. |
| 0:03:40.8  PERSON 1 | So the goal is- so the input will be the roads and traffic lights, so the outcome will be the traffic status. |
| 0:03:50.3  PERSON 2 | Yes. And probably a way of evaluating. |
| 0:03:57.7  PERSON 1 | Input will be roads and traffic - |
| 0:04:05.9  PERSON 2 | Scheme? |
| 0:04:08.1  PERSON 1 | Traffic scheme. Ok. And then the output of the system will be- is the traffic status in a measurable format? |
| 0:04:23.2  PERSON 2 | Yes. |
| 0:04:25.7  PERSON 1 | Traffic status in a measurable format |
| 0:04:45.3  PERSON 2 | Because if you’re not able to achieve that then how will you compare one is better than the other. |
| 0:04:53.7  PERSON 1 | Yeah that’s [inaudible]. So the requirement, the first one, the students should be able to use a graphic tool to build maps |
| 0:05:05.5  PERSON 2 | Yes, so correct, the [inaudible] should have a graphic tool with |
| 0:05:11.2  PERSON 1 | User will have a graphic tool |
| 0:05:21.2  PERSON 2 | Or perhaps the user will actually have a tool which will help them to create a graphic, more than having a graphic tool. Is that- |
| 0:05:40.6  PERSON 1 | [inaudible] with a map |
| 0:05:42.1  PERSON 2 | Yeah create a map or sections of road, I think |
| 0:05:45.6  PERSON 1 | Yeah, this is the road with intersections and the traffic lights |
| 0:05:59.9  PERSON 2 | Traffic lights yes. There’s actually one part of things that are not considered in the traffic lights and traffic simulator requirements is the distance between two sections, and the speed taken for [inaudible] for one point of other |
| 0:06:28.2  PERSON 1 | Uh yeah, so that’s what we did help design |
| 0:06:30.2  PERSON 2 | Yeah I was thinking how we did that yeah. How we, because that’s not mentioned here, that’s something we have to think of all- that would be something that we for this design- |
| 0:06:39.3  PERSON 1 | Yeah we didn’t establish a high level requirements, then we break down into each section to see what we need to implement [inaudible] |
| 0:06:45.9  PERSON 2 | Not just, what is coming into my mind right now, I’m just letting you know, so that we, when we’re doing things- |
| 0:06:51.8  PERSON 1 | Yeah, these are- we’ll have a tool to create a map, consists of roads, intersections and traffic lights. And now- [silence] we want user to make a map |
| 0:07:26.1  PERSON 2 | Yeah |
| 0:07:27.2  PERSON 1 | The map will be visually reflect the traffics- |
| 0:07:32.6  PERSON 2 | Yeah so basically- |
| 0:07:34.0  PERSON 1 | In different colours or- |
| 0:07:35.4  PERSON 2 | Or like a car icon which is moving up or down, that’s how I thought like, have- |
| 0:07:42.1  PERSON 1 | Car may be not as a- maybe it’s similar to google map |
| 0:07:45.4  PERSON 2 | Like a dot, like a |
| 0:07:46.5  PERSON 1 | No not dot. Like when you see the traffic in google map they use different colours like greens are good, yellow is a little bit congested- |
| 0:07:56.4  PERSON 2 | Yes but then |
| 0:07:57.5  PERSON 1 | You don’t need to have a car there to show |
| 0:08:00.5  PERSON 2 | The reason why I thought of having a car is because, otherwise how will you know how many vehicles are allowed to go or, how will you change the colour from green to red. What- how would you decide that? because the way I was thinking of doing- |
| 0:08:14.8  PERSON 1 | Oh that’s in the back-end data |
| 0:08:16.2  PERSON 2 | Yeah when we’re showing it, we’re showing the, this is how I thought. Because when I was doing world systems for [inaudible] we had done a simulator for a warehouse which was kind of similar to this one in which we had done- a particular box comes into the warehouse, and it’s supposed to do a whole stack of processing, and depending on the content it can go in different buckets, and then different actions would happen. And then, if something fails and something gets delayed, it’s a delay that you can enter, so if you put a delay on route B or on bucket B, how that would affect all the- the entire production line. |
| 0:08:59.5  PERSON 1 | Ok |
| 0:09:00.3  PERSON 2 | So that’s how I imagined you could have it, like we had not a proper graphic, but we had like, a stock standard graphic where things were going in, but here we’ll have to have a customizable graphic. What having vehicles come in would actually give a better visual que as opposed to having a white line- a red line or a blue line. Because here you’re just showing a section of the map, not the whole- |
| 0:09:25.2  PERSON 1 | Yeah. Putting a car on the map, what do you want to show. What do you want to tell the user, a car on the map |
| 0:09:31.8  PERSON 2 | What- the way I imagined- because, this is how I imagined it in my mind |
| 0:09:35.9  PERSON 1 | What information do you want to tell, by putting a count on that |
| 0:09:39.3  PERSON 2 | No, what I intend to show is this, like for example, we have- because it’s going to be a simulator we have, an example of this would be- let’s just say that we have got a T, a plus, which is a four way street, and a plus here, and a plus here, and then there’s a straight street. Yeah. So, vehicles going in here, so we start off with an empty map, in which there are no vehicles, and then start populating it, and then, have a different scenario, so you can start off with a populated thing that everybody is already in queue and cars are starting to move, and one scenario where it’s empty and you start, ok there are going to be 15 cars going into the intersection. One after the other, like how it would happen in real life, so there are cars coming in, the first light is hit, then the second light is hit, the other- the rest of the cars are coming in. if you have a straight line, how would you identify the particular cars going out of an intersection. You’ll have to kind of have some way of showing it to the student that, ok, a car has gone out, so if you hide it for 5 seconds |
| 0:10:53.4  PERSON 1 | No, we don’t need to see the car actually go past the intersection, or we can do is, put a number there- |
| 0:11:00.9  PERSON 2 | Ok, have numbers in 1 2 3 4 cars are here |
| 0:11:03.4  PERSON 1 | No, like per second, how many cars is passing through an intersection. |
| 0:11:10.1  PERSON 2 | Ok |
| 0:11:10.7  PERSON 1 | So that’s a straight indicator of the speed, our traffic status |
| 0:11:14.8  PERSON 2 | Ok |
| 0:11:15.9  PERSON 1 | Are the speed of the traffic like, 20 kilometres per hour? Or is it 80 kilometres per hour? We can just show a number there, without showing cars. |
| 0:11:27.1  PERSON 2 | Ok |
| 0:11:28.3  PERSON 1 | Because that’s the information that student want to see, is, am I applying this traffic scheme |
| 0:11:34.9  PERSON 2 | Yep yep, ok we’re going- I was actually gonna make an assumption in that’s sense that we will say, instead of having varying speeds, we’ll have everything at a constant speed? And say ok, on the distance the speed being on the intersections is a constant of 60 kilometres per hour. Because having varying speeds will complicate- it will in that sense. Once we cater for constant speed then we can look at improving it, to say ok we want to do variable speeds how would it make the car different |
| 0:12:11.9  PERSON 1 | Constant speed is fine, the traffic cannot be constant speed. There’s a road leaving at 60 kilometres an hour, but I think traffic would be like 40 or 50 [inaudible] |
| 0:12:24.2  PERSON 2 | But then it would be vastly different if the speed in between is different to allowing it to 80 kilometres an hour. So we can say if the distance between two intersections is- allows the majority of the cars to reach 60 kilometres an hour, so then you can assume that part of the thing [inaudible] |
| 0:12:44.9  PERSON 1 | But that one we can, yeah. We can put the- that’ll be a [inaudible] |
| 0:12:52.4  PERSON 2 | Ok alright |
| 0:12:53.7  PERSON 1 | I will talk about this further [inaudible] and that and that |
| 0:12:58.0  PERSON 2 | Yeah ok, second thing you want is, we need to do this- |
| 0:13:01.2  PERSON 1 | The map will visually shows the current traffic status |
| 0:13:11.5  PERSON 2 | And this student should be able to set up the current traffic setting |
| 0:13:21.0  PERSON 1 | Why? what’s a- |
| 0:13:23.2  PERSON 2 | Oh that’s how- |
| 0:13:23.5  PERSON 1 | How would you apply the road limits, like 60 kilometres per hour, and then once they apply the traffic scheme |
| 0:13:32.3  PERSON 2 | Then it will automatically simulate it? |
| 0:13:35.1  PERSON 1 | Yeah it will automatically simulate the traffics |
| 0:13:35.7  PERSON 2 | The current status |
| 0:13:36.6  PERSON 1 | It will show you that the scheme, how many you know- what is the speed on this road, what is the speed on the other road. Then when it’s been set up they click the start simulate, the system will be start to simulate |
| 0:13:49.3  PERSON 2 | Simulate ok, automatically. Ok. |
| 0:13:52.6  PERSON 1 | That’s the [inaudible] ideal simulation. Intersection, traffic light- once user click start simulation then the system and the map, the map will visually show the [inaudible] yeah? |
| 0:14:48.3  PERSON 2 | Yeah. |
| 0:14:49.4  PERSON 1 | Actually that’s pretty much it isn’t it? That’s the two requirements. [inaudible] |
| 0:14:57.7  PERSON 2 | [inaudible] |
| 0:15:00.2  PERSON 1 | Is there a high level |
| 0:15:01.1  PERSON 2 | Yeah |
| 0:15:01.9  Instructor | It is now 15 minutes, 15 minutes so that’s the reflection period start |
| 0:15:08.4  PERSON 1 | Ok |
| 0:15:09.0  PERSON 2 | Sorry, what was that? |
| 0:15:10.9  Instructor | It is the start of the reflection period |
| 0:15:14.3  PERSON 1 | So that period means we need to play a card? |
| 0:15:16.4  Instructor | Yeah, you need to use the cards now |
| 0:15:18.9  PERSON 1 | Ok. At this stage we’re still in the context |
| 0:15:24.7  PERSON 2 | We’re still basically in the- more than context I think we’re into defining our problem statement, as to what what exactly |
| 0:15:37.0  PERSON 1 | Problems? |
| 0:15:39.2  PERSON 2 | We’ve kind of established the context and what we need to do in that sense, and we both I think are on the same page as to what we want to achieve. Kind of defining the problems and |
| 0:15:50.4  PERSON 1 | Context- |
| 0:15:52.7  PERSON 2 | Jotting down what we are intending to do in terms of implementing the system, or designing the system. The next important thing I think, there should be another point there [PERSON 1], [inaudible] requirements is this, that the behaviour of the intersections needs to be customizable. So the user should be able to define the behaviours for each intersection |
| 0:16:25.9  PERSON 1 | Yeah that’s all in the design part, in the design requirements we move into- |
| 0:16:30.4  PERSON 2 | Oh ok, so you’re splitting them into two halves, ok. |
| 0:16:33.7  PERSON 1 | Into the map, road, what options does the road have |
| 0:16:37.2  PERSON 2 | Ok, so you’ve listed what the basic requirements is, what you want to achieve at the end of it, ok. |
| 0:16:44.2  PERSON 1 | So the design requirement, and then the first one is the road right? |
| 0:16:53.8  PERSON 2 | Yes, so creation of a visual map area. So- now then under the roads you want to create, just like- |
| 0:17:07.3  PERSON 1 | [inaudible] road |
| 0:17:07.7  PERSON 2 | Yes. So what do roads need, roads need- |
| 0:17:13.1  PERSON 1 | Speed limit? |
| 0:17:14.1  PERSON 2 | A visual map, so- different types of intersections. So you want to have an- |
| 0:17:21.1  PERSON 1 | That is a road, road is different from intersection |
| 0:17:24.4  PERSON 2 | Ok, so you- |
| 0:17:25.1  PERSON 1 | We have a road, we have objects, the road is a- |
| 0:17:26.7  PERSON 2 | I think what we’ll do is, then we’ll define the biggest entities that you want to do it- |
| 0:17:31.0  PERSON 1 | Yes |
| 0:17:31.4  PERSON 2 | [inaudible] so let’s just only define what the entities- one is road ok, another is an intersection. |
| 0:17:42.4  PERSON 1 | Traffic lights |
| 0:17:42.7  PERSON 2 | Traffic light, and each traffic light is an entity yeah. So intersection, road, traffic light, then what you have is- vehicles, or how do you intend to represent that? cause that will also be an entity going through the system. Or that will be something that- |
| 0:18:07.9  PERSON 1 | [inaudible] extends traffic status |
| 0:18:12.4  PERSON 2 | Status? Ok. |
| 0:18:13.1  PERSON 1 | Yeah. So [inaudible] this road, how many, what is the speed that vehicles travel- [phone rings] |
| 0:18:24.7  PERSON 2 | Good morning [name] speaking. Hi [name] how are you. [PERSON 1] is actually in a meeting, is it ok for you to give him a ring later? Ok, I think it should be about by 11.30. ok, cheers, bye. Traffic status |
| 0:18:53.0  PERSON 1 | Four objects here, road, intersection, traffic lights, and traffic status |
| 0:18:56.8  PERSON 2 | And, [inaudible] we’d set [inaudible] ok. That’s fine. Ok, traffic status, road, intersection. Ok yep, I don’t see any- |
| 0:19:31.2  PERSON 1 | So the property now will be- the property of the road? |
| 0:19:34.1  PERSON 2 | Yeah |
| 0:19:36.0  PERSON 1 | What kind of property, like object oriented design |
| 0:19:41.2  PERSON 2 | Is that how you want to design it? Cause it doesn’t require it to be object oriented? |
| 0:19:45.8  PERSON 1 | Yeah that’s my thought. I prefer to use our [inaudible] |
| 0:19:53.5  PERSON 2 | Oh in the function- based on inaudible] object is what we use most so |
| 0:19:58.3  PERSON 1 | Yep |
| 0:19:59.5  PERSON 2 | Ok. So for a road would the property, in terms of- |
| 0:20:06.3  PERSON 1 | Yeah. So the road will be, distance or length of the road |
| 0:20:13.6  PERSON 2 | But when you define length how will you saying it from one point to the other? |
| 0:20:18.9  P | Yeah like, 10, 2 kilometres, 10 kilometres road section? Yeah |
| 0:20:24.5  PERSON 2 | Ok |
| 0:20:25.0  PERSON 1 | From one intersection to another. Like this road, how long is the road? [inaudible] |
| 0:20:32.0  PERSON 2 | So, a road by definition for you is between two intersections. |
| 0:20:36.3  PERSON 1 | Yes |
| 0:20:36.9  PERSON 2 | Ok |
| 0:20:38.6  PERSON 1 | Yeah? |
| 0:20:38.9  PERSON 2 | Ok |
| 0:20:41.8  PERSON 1 | So it does need length, kilometres, so the other one is- |
| 0:20:51.7  PERSON 2 | I’m not really convinced that that road is actually an entity, but- will it valuate it again |
| 0:21:01.5  PERSON 1 | What do you mean? Put it there on the map like |
| 0:21:03.4  PERSON 2 | Yes |
| 0:21:04.2  PERSON 1 | You need to put a road there, put intersection there, put another road there, isn’t it? That’s a design block or |
| 0:21:14.9  PERSON 2 | Ok. Because the student should be able to configure a map, or create a map, so if you’re creating a map you’re, say ok, let’s have two intersections and the distance between these two intersections is gonna be 5 kilometres and the third intersection is gonna be 10 kilometres. So, when the road is, the distance is actually the parameters between two- ok road, so that road will also have intersection 1 and intersection 2. So that will be between two intersections |
| 0:21:50.2  PERSON 1 | Yes in general. So I visualize the graphic tool will be this, you have [inaudible] on the- |
| 0:21:55.9  PERSON 2 | Left hand side |
| 0:21:56.4  PERSON 1 | Road, intersection, traffic lights. So drag a road here, we can rotate the angle of the road and put in intersection here, then put another road here. Ok, one intersection may have 4 roads or 5 roads or 6 roads. |
| 0:22:11.6  PERSON 2 | And if you’re giving a left going road, a particular curved road as well that goes out, [inaudible] straight |
| 0:22:20.5  PERSON 1 | Ok, [inaudible] the property is less kilometres, and the other one is the lane, how many lanes a road have, [inaudible] both way. One road can have 6 lanes, lane, both way |
| 0:22:38.3  PERSON 2 | [inaudible] have- |
| 0:22:47.7  PERSON 1 | And- [inaudible] lanes, the other one is intersections |
| 0:23:01.6  PERSON 2 | Yes |
| 0:23:02.5  PERSON 1 | Intersection ok yeah. So road, normally you will have two intersections. Already just one. |
| 0:23:11.3  PERSON 2 | Because in this case we’re doing four way roads, I read it somewhere in here, let’s see, four way roads |
| 0:23:22.0  PERSON 1 | Or four [inaudible]. Intersection will be four way, intersection |
| 0:23:29.1  PERSON 2 | Yeah intersection |
| 0:23:30.5  PERSON 1 | It’s not the intersection |
| 0:23:32.0  PERSON 2 | It’s not the intersection [inaudible] yep yep here |
| 0:23:34.1  PERSON 1 | 1 2 3 4 |
| 0:23:36.3  PERSON 2 | Point B, at the constraint |
| 0:23:37.7  PERSON 1 | Yeah |
| 0:23:40.3  PERSON 2 | Or requirement yeah. |
| 0:23:42.9  PERSON 1 | So intersections, [inaudible] lanes, intersections, that’s pretty much it. Right? |
| 0:23:51.2  PERSON 2 | Yes |
| 0:24:00.1  PERSON 1 | Intersections will be linked to intersection object. And this intersection will have properties |
| 0:24:18.2  PERSON 2 | Traffic lights |
| 0:24:20.0  PERSON 1 | Yeah |
| 0:24:20.8  PERSON 2 | And status, that would be [inaudible] |
| 0:24:26.5  PERSON 1 | The status? Won’t be on the road, traffic status is it for the road or the intersections. I think it’s for road. |
| 0:24:34.1  PERSON 2 | How would you do it for the road, because you’re looking at- typically with [inaudible] we always say that [inaudible] road’s busy, but people want to say- |
| 0:24:43.9  PERSON 1 | The road is- |
| 0:24:46.6  PERSON 2 | This intersection is the wort intersection, because you can’t get through it. |
| 0:24:51.8  PERSON 1 | Yeah |
| 0:24:52.4  PERSON 2 | So |
| 0:24:53.3  PERSON 1 | Normally, yeah, but normally if you see the google map, the traffic- |
| 0:24:57.5  PERSON 2 | It says the road |
| 0:24:58.3  PERSON 1 | The road yeah. Normally people look at the road. Before I’m going to this road [inaudible] |
| 0:25:02.3  PERSON 2 | But how- ok |
| 0:25:05.7  PERSON 1 | Because intersection is the cause of the- |
| 0:25:09.8  PERSON 2 | Ok |
| 0:25:11.0  PERSON 1 | It will cause the traffic status of the road, but mainly the state of the road will be the concern |
| 0:25:16.5  PERSON 2 | Or does it have to be doing anything, can be an independent thing. |
| 0:25:19.4  PERSON 1 | Which one? |
| 0:25:20.3  PERSON 2 | Traffic status, we just had |
| 0:25:23.1  PERSON 1 | Has to be on each road, because [inaudible] says, you know, each road will be different. |
| 0:25:28.0  PERSON 2 | Ok |
| 0:25:30.3  PERSON 1 | Combine them all, you have the overall traffic status of the whole map. But each road has to, will have their own personal traffic status |
| 0:25:40.9  PERSON 2 | Because I think it’s actually removing the traffic signal scheme. Signal actually affects an intersection, not the road |
| 0:25:51.7  PERSON 1 | Yeah, and then, but in the end the road status is- the people want to have a road |
| 0:25:57.6  PERSON 2 | No but, the student’s actually not looking for the road status, but are also looking- they’re actually looking at how changing a particular scheme will get an intersection faster. What- |
| 0:26:13.3  PERSON 1 | I think intersection faster, and the road status will do the same thing |
| 0:26:16.4  PERSON 2 | Ok so you’re looking at- |
| 0:26:17.8  PERSON 1 | I think they’re the same thing |
| 0:26:18.6  PERSON 2 | Ok |
| 0:26:19.2  PERSON 1 | Cause you cannot have one intersection is very fast and road status is very slow |
| 0:26:22.9  PERSON 2 | No that won’t happen because- |
| 0:26:24.7  PERSON 1 | Unless there’s accident on the road |
| 0:26:27.4  PERSON 2 | Yeah ok |
| 0:26:28.4  PERSON 1 | This thing is |
| 0:26:30.9  PERSON 2 | But that- |
| 0:26:31.5  PERSON 1 | Is an assumption we are having, I’ll play the assumption card |
| 0:26:35.5  PERSON 2 | Then again, we’re not gonna have any accidents |
| 0:26:37.1  PERSON 1 | No accidents |
| 0:26:39.3  PERSON 2 | But it is a [inaudible] thing that [inaudible] should not result in- that is one of the requirements, that we should not- our traffic simulator should not cause accidents. So we cannot have this one going green like, not going green and- |
| 0:26:52.5  PERSON 1 | Oh that’s the traffic yeah [inaudible] |
| 0:26:53.6  PERSON 2 | And then right going green [inaudible] |
| 0:26:56.8  PERSON 1 | Yes that’s right |
| 0:26:58.0  PERSON 2 | So I was thinking we design the trajectory |
| 0:27:00.4  PERSON 1 | Yeah we design trajectory so the user won’t, should not worry about |
| 0:27:04.2  PERSON 2 | Ok let’s, [inaudible] situation that people won’t have accidents on their part, is the assumption, right? |
| 0:27:11.0  PERSON 1 | Yeah |
| 0:27:11.5  PERSON 2 | Ok |
| 0:27:14.0  PERSON 1 | So I run the design someplace here. [silence] The map is designed correctly right? So let’s go back to intersection, that’s the object we’re having, intersection, the traffic lights. Traffic lights, and the roads, apparently it will be linked to roads. Because one intersection will have mainly four roads, so intersection is four way |
| 0:28:28.2  PERSON 2 | Yeah [silence] traffic status, [inaudible] property. |
| 0:29:02.2  PERSON 2 | Why don’t we use just a tab. Yeah, that’s easier. |
| 0:29:21.9  PERSON 1 | So each object will have a property and have |
| 0:29:24.5  PERSON 2 | Functions yes |
| 0:29:25.2  PERSON 1 | What we can do is also like, change [inaudible] you can change event |
| 0:29:32.1  PERSON 2 | You can change [inaudible], length, lanes |
| 0:29:34.9  PERSON 1 | Yeah, ok let’s do the property first, finish property. Intersection will have traffic lights |
| 0:29:41.3  PERSON 2 | Intersection will have traffic lights |
| 0:29:43.3  PERSON 1 | And the road, apparently |
| 0:29:44.5  PERSON 2 | And roads, and also the intersection should also have an option of, saying whether it has a sensor detected or not. Because one of the items is that an intersection can have a sensor. |
| 0:29:59.5  PERSON 1 | Yes, traffic sensor |
| 0:30:05.4  PERSON 2 | Traffic sensor |
| 0:30:07.6  PERSON 1 | Yeah, traffic sensor I think will affect the traffic status. |
| 0:30:11.4  PERSON 2 | Yes, traffic sensor will definitely affect the traffic status. |
| 0:30:19.5  PERSON 1 | The last one is traffic light. traffic light, there’s also different traffic lights [inaudible] |
| 0:30:35.9  PERSON 2 | I don’t think [inaudible] |
| 0:30:37.4  PERSON 1 | All standard, isn’t it? Because all four way, so traffic light should be standard. To control, right. |
| 0:30:52.1  PERSON 2 | They need to have the status, traffic light will- they just have the status. With green dot, or is that [inaudible] the traffic with the intersection? |
| 0:31:02.8  PERSON 1 | Yeah. Basically we have two types here, one is the traffic light, our traffic lights, with the right turn control. |
| 0:31:13.0  PERSON 2 | The left hand control, left hand, not right turn control |
| 0:31:15.4  PERSON 1 | Left turn is controlled by the green red yellow light, is it? |
| 0:31:24.8  PERSON 2 | Not really. |
| 0:31:25.8  PERSON 1 | I mean that there’s a one simple traffic light is three colour |
| 0:31:30.0  PERSON 2 | Yes correct |
| 0:31:30.9  PERSON 1 | At the other time we have a right arrow, to control the right. Yeah, so basically we allow these two types of traffic lights, that should be enough. |
| 0:31:41.0  PERSON 2 | It’s not only [inaudible] you’re also getting from left. |
| 0:31:43.7  PERSON 1 | Nah |
| 0:31:45.4  PERSON 2 | Why not? |
| 0:31:46.4  PERSON 1 | Oh yeah, left yes. |
| 0:31:47.7  PERSON 2 | Because they select a class thing, [inaudible] one here and one there |
| 0:31:52.1  PERSON 1 | Is it a requirement? Or- |
| 0:31:54.1  PERSON 2 | I [inaudible] I did read it somewhere. |
| 0:31:57.1  PERSON 1 | Must be [inaudible] |
| 0:32:04.6  PERSON 2 | See, I’ve covered the left hand turns, point two. |
| 0:32:09.0  PERSON 1 | Oh yeah? |
| 0:32:09.3  PERSON 2 | Point 2 left hand turns. [inaudible] left hand turns. So basically if the intersection is a T, which is four way, four ways |
| 0:32:20.3  PERSON 1 | What does this [inaudible], accommodate left hand turns, protected by left hand, oh ok |
| 0:32:27.2  PERSON 2 | So what it means is that you need to have that left hand signal |
| 0:32:29.9  PERSON 1 | Yeah |
| 0:32:30.3  PERSON 2 | So it’s not gonna be just one strip of three lights, red green and yellow. |
| 0:32:34.9  PERSON 1 | Yeah, there’ll be three strips. So the traffic lights will have options. |
| 0:32:39.9  PERSON 2 | Yes |
| 0:32:45.6  PERSON 1 | So by default is a simple one street three colour traffic lights |
| 0:32:49.1  PERSON 2 | Yes |
| 0:32:52.6  PERSON 1 | Simple |
| 0:32:55.2  PERSON 2 | That is- |
| 0:32:56.3  PERSON 1 | Three colour |
| 0:32:57.0  PERSON 2 | That is a value of the property, not a property by itself. |
| 0:33:02.3  PERSON 1 | Yeah. Property of the- |
| 0:33:03.3  PERSON 2 | So that is basically traffic light type, just simple or with allows left or allows right. |
| 0:33:10.9  PERSON 1 | Or both, is it? |
| 0:33:12.3  PERSON 2 | Yeah |
| 0:33:12.4  PERSON 1 | So that’ll be three strips |
| 0:33:13.3  PERSON 2 | Yes |
| 0:33:14.8  PERSON 1 | Type. Type has got- |
| 0:33:18.0  PERSON 2 | Simple? |
| 0:33:19.4  PERSON 1 | Simple |
| 0:33:21.2  PERSON 2 | Rather than calling it simple, just call it straight, you can only go straight. |
| 0:33:26.0  PERSON 1 | Straight, and a left protected |
| 0:33:31.7  PERSON 2 | Right protected, and both. |
| 0:33:39.5  PERSON 1 | And both protected |
| 0:33:46.1  PERSON 2 | We also need to have, three things, we also need to have every time when a traffic signal is put on, we need to have a validation of- for allowing it to avoid accidents. |
| 0:34:04.0  PERSON 1 | Yeah so that is part of the- |
| 0:34:04.9  PERSON 2 | I’m just raising it, I’m just raising it so we don’t forget. |
| 0:34:10.7  PERSON 1 | But traffic sensor will be on the traffic lights |
| 0:34:13.1  PERSON 2 | Yes |
| 0:34:14.1  PERSON 1 | Not on the sensor, because one light will monitor |
| 0:34:20.7  PERSON 2 | Actually, each section, it’s more of an intersection [inaudible], more than- because you would say, there’s one traffic light in the thing |
| 0:34:30.0  PERSON 1 | I think the sensors will be, maybe on the road |
| 0:34:34.8  PERSON 2 | No no, definitely not on the road. Cause it’s not a relevant entity to it. It’s either intersection or traffic light, but I feel more comfortable with the intersection than on traffic light. because you’re saying that the intersection is traffic sensor, that particular part. And then depending on the sensor, the traffic light will go green red or blue, it cannot be. |
| 0:34:56.9  PERSON 1 | Nah, the intersection will have one sensor, one to one, to four roads, is that what you’re saying, or one sensor per traffic light? so this is traffic light, I only sensor this part of the- |
| 0:35:11.3  PERSON 2 | It has to be a one to one relationship, I don’t think- |
| 0:35:14.1  PERSON 1 | To traffic lights? |
| 0:35:16.1  PERSON 2 | Sensor to a traffic light. |
| 0:35:18.7  PERSON 1 | So we’re putting the traffic lights with the traffic sensors. Yes |
| 0:35:23.6  PERSON 2 | So it can be yes or no. it either has- |
| 0:35:32.3  PERSON 1 | Traffic light has [inaudible] ok so options of the road |
| 0:36:05.3  PERSON 2 | How [inaudible] |
| 0:36:07.6  PERSON 1 | You mean, what the user can do about this road, do we need to specify that? |
| 0:36:16.9  PERSON 2 | I’m just starting to imagine how it’s actually going to work. Ok, we’ve got the road, we’ve got the intersection, we have the traffic lights. Ok. We’ve got all of this, so let’s- |
| 0:36:25.8  PERSON 1 | And now the user can stand and do the map |
| 0:36:28.0  PERSON 2 | yes |
| 0:36:28.2  PERSON 1 | With three elements, alright? |
| 0:36:30.0  PERSON 2 | So, but creating a map would be a function which would be a function of the system which would use these entities to create a map. |
| 0:36:39.4  PERSON 1 | Yeah |
| 0:36:40.2  PERSON 2 | So creation of map would basically have drag and drop. So say ok, let’s drag road, let’s make an intersection, and then traffic light |
| 0:36:51.2  PERSON 1 | Object [inaudible] |
| 0:36:56.9  PERSON 2 | Or entity |
| 0:37:07.9  PERSON 1 | And then the other one we’re gonna discuss is the functions. The functional requirements alright? FRS. Function requirements specification. Creation of the map. |
| 0:37:35.4  PERSON 2 | Creation of the map yeah. |
| 0:37:38.6  PERSON 1 | The user can drag and drop roads |
| 0:38:07.2  PERSON 2 | Road and intersection and- you know I’m finding it very difficult to imagine how it’s gonna work without actually, visually, kind of- cause when I see google maps right, I know your reference is to google maps, and I have seen google maps numerous sort of times. You see that there’s red green and stuff. But with this simulation I’m finding it difficult how we’re gonna have- what I’m imagining is that we’re gonna have like a box with [inaudible], 1 2 3 4, like the count of cars, then obviously that will, if it’s red it’s gonna go 1 2 3 4 5 and it’s gonna stop and then it becomes green and it’s gotta go 1 2- I mean 5 4 3 2 0, at the same time there’s cars coming from behind as well, as a car goes out, there’s a car coming in from underneath. I’m just finding it difficult to imagine how that’s gonna- if you’re doing with one number, how are you gonna reflect that. because for example car goes out, the car comes in, how are you reflecting that on the traffic signal. |
| 0:39:19.5  PERSON 1 | No we don’t need to look what the user- |
| 0:39:22.2  PERSON 2 | No I’m just asking what is your kind of- how do you envision it to work? Cause I’m having kind of a question in my mind, like how is it actually gonna look. If it was looking at it- |
| 0:39:32.6  PERSON 1 | You need to think from this way, what user need to know. From this map. When they look at map, what information are you trying to get |
| 0:39:40.6  PERSON 2 | Ok |
| 0:39:41.3  PERSON 1 | He’s trying to get one information, is it a- how busy is the road, affected by traffic lights. So then you need to design an indicator to show how busy is the road. By colour of by number, that is how fast is the road. That’s why I think, to see a car passing through is not really that important, is good to have, but |
| 0:40:03.9  PERSON 2 | No no no, I agree having cars passing through is a different question. Or having a- I’m just not able to- I’m not able to visualize how you’re going to kind of achieve that bit. I understand this bit, it looks like we’re going on the right track |
| 0:40:21.0  PERSON 1 | Yeah |
| 0:40:22.0  PERSON 2 | But we’re having an issue with visualizing the end product. As to how- |
| 0:40:28.6  PERSON 1 | Yeah that part we’ll be using the colour to indicate our busy road, also there’s a number showing on the road showing the actual speed of the traffic. Then the user will know this, by looking at the map and looking at the colours you will immediately know this traffic looks pretty good. Because our road is green. You know |
| 0:40:52.0  PERSON 2 | Ok |
| 0:40:54.1  PERSON 1 | You can say, oh this part, this road is quite busy right now. By applying this different scheme, like if they apply scheme one, start simulate, they can start to see some of the roads start to- |
| 0:41:07.4  PERSON 2 | Ok so simulation is starting and pumping cars into the back-end- |
| 0:41:11.3  PERSON 1 | Yeah sure in the back-end there’s the data running |
| 0:41:15.9  PERSON 2 | So this is kind of a start-up which keeps bang bang bang bang |
| 0:41:19.1  PERSON 1 | Yes yes |
| 0:41:19.3  PERSON 2 | Cars coming in in in in |
| 0:41:20.6  PERSON 1 | There’s a [inaudible] in the back-end which calculates, simulates the traffic. And they show the speed on the map. |
| 0:41:27.8  PERSON 2 | So each intersection have kind of various items saying, of course we have to say green red and blue, yellow or whatever. And- |
| 0:41:40.1  PERSON 1 | And each road will show a number like, the kind of speed |
| 0:41:43.0  PERSON 2 | Ok. So when you start up the simulation, this says you, that the simulation kicks in after a couple of seconds where, ok, right now there are 10 10 2 3 is what the car is. |
| 0:41:56.5  PERSON 1 | Yeah, and then the traffic start to build up because of the design of the traffic scheme |
| 0:41:59.8  PERSON 2 | Ok |
| 0:42:00.4  PERSON 1 | This road starts to become green, to yellow, and to red. |
| 0:42:05.1  PERSON 2 | Ok |
| 0:42:06.2  PERSON 1 | Yeah, and by, if you apply another traffic scheme we can, oh- |
| 0:42:09.8  PERSON 2 | So we will- |
| 0:42:10.1  PERSON 1 | By running 5 minutes the traffic still- |
| 0:42:13.3  PERSON 2 | Working fine, ok. |
| 0:42:15.4  PERSON 1 | That’s how they measure, visually, I think |
| 0:42:18.7  PERSON 2 | Ok. I think what when we put one to paper, I’ll be able to see what you’re trying to say. I’m kind of starting to get the idea for what you’re trying to do |
| 0:42:31.8  PERSON 1 | Yep |
| 0:42:32.3  PERSON 2 | Ok |
| 0:42:34.6  PERSON 1 | So the FRI’s, creation of the map, user can drag and drop roads, intersection and traffic lights. View the map, traffic map. |
| 0:42:52.1  PERSON 2 | Yeah, read the map. But that’s the function, that’s just the function. And then it will be configuring each component on the map, be it roads, intersections, traffic lights. |
| 0:43:08.2  PERSON 1 | Do we need to write it down for each one? |
| 0:43:10.0  PERSON 2 | Yes we have to |
| 0:43:11.2  PERSON 1 | User will- |
| 0:43:13.6  PERSON 2 | Because then this is- |
| 0:43:14.7  PERSON 1 | User can redefine the maps, lanes, roads- do you want to allow different handles, or you just want to parallel roads for- I think we restrict the user |
| 0:43:59.8  PERSON 2 | This one is anyways for [inaudible] all intersections are gonna be four ways |
| 0:44:02.1  PERSON 1 | For [inaudible]- just parallel [inaudible] |
| 0:44:06.6  PERSON 2 | Yeah so you will- quite likely the majority of places will end up like a [inaudible] |
| 0:44:11.6  PERSON 1 | Yes |
| 0:44:12.6  PERSON 2 | If you have 2 4 points [inaudible] |
| 0:44:14.2  PERSON 1 | So you do not allow user change the handle throughout this one |
| 0:44:20.9  PERSON 2 | So that’s the underlying assumption, that there is no car after all. |
| 0:44:24.6  PERSON 1 | No. no, cause one street road |
| 0:44:27.8  PERSON 2 | Ok so [inaudible] straight, so you can |
| 0:44:29.4  PERSON 1 | Like a break yeah |
| 0:44:30.4  PERSON 2 | You can tilt it, so it can be vertical, horizontal, so obviously you get |
| 0:44:34.6  PERSON 1 | Vertical or- |
| 0:44:36.3  PERSON 2 | [inaudible] yeah. But that, your drag and drop will allow that to rotate |
| 0:44:41.3  PERSON 1 | Yes. [inaudible] |
| 0:45:02.4  Instructor | It’s now 45 minutes |
| 0:45:04.6  PERSON 1 | Yep |
| 0:45:06.4  PERSON 2 | Ok |
| 0:45:09.6  PERSON 1 | So are we supposed to do anything? At 45 minutes? |
| 0:45:12.3  Instructor | It’s the reflection period, so you’re supposed to use the cards. |
| 0:45:15.5  PERSON 1 | Ok |
| 0:45:16.7  PERSON 2 | Ok |
| 0:45:17.4  PERSON 1 | Use the card. So what are we doing now |
| 0:45:19.7  PERSON 2 | So, we’re kind of prepping the solution right now, of the problem at hand |
| 0:45:29.5  PERSON 1 | Yeah, the solution of the design |
| 0:45:34.1  PERSON 2 | We have made certain assumptions |
| 0:45:35.6  PERSON 1 | Yeah. And- |
| 0:45:38.3  PERSON 2 | And- |
| 0:45:39.8  PERSON 1 | Our constraints? |
| 0:45:42.0  PERSON 2 | No we haven’t put any |
| 0:45:43.6  PERSON 1 | Constraint is the vertical or horizontal draw, that’s kind of constraint. |
| 0:45:46.9  PERSON 2 | That is a kind of constraint yes, on the road. We have only risks and trade-offs, I think that’s what we’re doing. But, we constantly are referring to context and the problem. |
| 0:46:04.8  PERSON 1 | Yeah. Probably trade-off, we already covered that, or we already use the trade-off, because we discuss if we want to show the cars on the road or only show the colours. That’s a trade-off. |
| 0:46:16.8  PERSON 2 | That’s a simulation trade-off, it’s about how you’re going to simulate. But if you actually had not made that as a final call, I’m still kind of considering if we can give than that will give not only a very good visual que, but people like, actually help imagining people, you would not have actually what this numbers are when you can actually see, ok, there’s a gridlock there with 5 cars stuck there. As opposite to right now, what I’m saying is it’s gonna be, if you’re looking at the screen or let’s put it on a big projector. What the way you’re saying is gonna do it, if it’s gonna look like, there’s gonna be an intersection, there’s not gonna be anything but a straight line. And on the right hand side it’s gonna have numbers and colours and things indicating, as opposite to having- when you’re playing the simulation it should actually look like a simulation. Other than just numbers going up and down, up and down. Because you cannot really see number here and the number up there. As opposite to having actual things moving. Because for me a simulation is something which moves, if you just have numbers then 1 2 3 4, well that’s really sort of, showing the counter. But we can- we can also agree that- |
| 0:47:30.1  PERSON 1 | Good to have thing |
| 0:47:31.0  PERSON 2 | It’s a good to have thing. Once we get this, then we can have that part of [inaudible] |
| 0:47:36.8  PERSON 1 | [inaudible] simulator on the road yeah. User can- |
| 0:47:47.7  PERSON 2 | So by not complementing that, how would we [inaudible] that we are, if we end up with this. And [inaudible] that we do have a risk in the sense that the end user who’s actually looking at it, might not get the entire message. Or might not find it easy to interpret it. |
| 0:48:10.5  PERSON 1 | No, I think that the car thing is only really good to have |
| 0:48:13.6  PERSON 2 | Ok, that’s really your believe isn’t it |
| 0:48:16.5  PERSON 1 | Because [inaudible] |
| 0:48:17.6  PERSON 2 | Ok, let’s implement this, and see if we can plunk in the car, making sense with what’s happening. Because for me a traffic simulation without a car |
| 0:48:28.3  PERSON 1 | That’s not what the user wants, the user doesn’t want to see the car flow, the user only want to see- |
| 0:48:32.1  PERSON 2 | No, it doesn’t have to be car like a car, it can be a dot going up and down as well, but- |
| 0:48:35.8  PERSON 1 | That’s what I mean, the user doesn’t really need to see that. User really wants to see is the busy, the level in busy |
| 0:48:42.5  PERSON 2 | Ok ok |
| 0:48:43.8  PERSON 1 | [inaudible] it’s not [inaudible] |
| 0:48:46.0  PERSON 2 | [inaudible] it’s good to have |
| 0:48:49.0  PERSON 1 | Yeah, it’s good to have yeah |
| 0:48:50.7  PERSON 2 | Ok |
| 0:48:51.7  PERSON 1 | It’s not critical |
| 0:48:52.5  PERSON 2 | I’m not stuck on it, I am ok with what you’re doing. I just feel that it would be a very good add on |
| 0:48:59.3  PERSON 1 | Yeah |
| 0:49:00.7  PERSON 2 | If we can put it |
| 0:49:01.3  PERSON 1 | Yeah yeah. What was the other thing, roads, user can connect roads with intersections. |
| 0:49:12.4  PERSON 2 | Link the road [inaudible] for example. |
| 0:49:21.2  PERSON 1 | Yeah? |
| 0:49:22.1  PERSON 2 | Yes |
| 0:49:24.9  PERSON 1 | And the user can- |
|  | Second recording 9:53 |
| 0:00:03.6  PERSON 1 | Place traffic lights |
| 0:00:06.1  PERSON 2 | Place- so each one of those, yeah. |
| 0:00:12.9  PERSON 1 | Intersections. User can place traffic lights, and intersections and- |
| 0:00:32.4  PERSON 2 | Configure traffic lights, and configure intersections as well. Does it have to- configure traffic lights, you’re not reporting an intersections |
| 0:00:48.0  PERSON 1 | Yes. [inaudible]. So the user create a traffic scheme by configuring the traffic lights |
| 0:01:18.3  PERSON 2 | Yes |
| 0:01:19.5  PERSON 1 | That’s basically a traffic scheme |
| 0:01:21.6  PERSON 2 | I think the traffic light should also have parameter of a time [inaudible] you’re not. That we have not considered yet. |
| 0:01:30.4  PERSON 1 | That’s very important |
| 0:01:32.3  PERSON 2 | That both, and then you have to have, because you haven’t defined that every- if a timing [inaudible] between switch of signals is what value [inaudible], if the traffic sensor is yes or no, how it effects that |
| 0:01:49.3  PERSON 1 | Yeah, that’s right. Timing control is must have |
| 0:01:52.3  PERSON 2 | Yes |
| 0:01:53.1  PERSON 1 | That’s all about, ah yeah, the traffic scheme is all about time control |
| 0:01:58.2  PERSON 2 | Yes |
| 0:02:01.4  PERSON 1 | A critical thing, yes. |
| 0:02:04.4  PERSON 2 | [inaudible] just reading from the right time to, from the [inaudible] to come up, well that’s how we [inaudible]. How we let the cars pass or how we let the thing go from red to green |
| 0:02:17.0  PERSON 1 | Yeah. And then that’s it, this is the creation of the map, isn’t it? |
| 0:02:21.6  PERSON 2 | Yes, that’s the creation of the map yeah, ok. That is the set up |
| 0:02:24.7  PERSON 1 | And next very important- |
| 0:02:26.1  PERSON 2 | And then next is- |
| 0:02:30.0  PERSON 1 | Component of the system, there is a core component of the system, is the traffic simulation engine |
| 0:02:34.9  PERSON 2 | Yes. You have this, design the simulation engine, that’s really no input from the user, once the student has set up the map and pressed start, the simulation engine will be doing everything |
| 0:02:47.8  PERSON 1 | Yeah |
| 0:02:49.5  PERSON 2 | Then we have to see |
| 0:02:54.2  PERSON 1 | Yeah, probably there’s some third party library suite we can use, we use to do this. |
| 0:03:00.7  PERSON 2 | Yes |
| 0:03:01.3  PERSON 1 | That’s allowed |
| 0:03:02.0  PERSON 2 | Ok |
| 0:03:02.0  PERSON 1 | If we can get one that would be good. Ok, this part is really, yeah, needs a lot of knowledge to do. We can’t- |
| 0:03:12.3  PERSON 2 | Yeah ok [inaudible] |
| 0:03:12.7  PERSON 1 | [inaudible] you know outcome, algorithms, we probably don’t have this knowledge to design it |
| 0:03:20.8  PERSON 2 | Yeah one way is to go and, how we look is there something out there. But that always runs with a risk attached, you are taking on, you have to see what it’s about, I don’t know what it’s about, I mean market so- |
| 0:03:36.0  PERSON 1 | Let’s list the functions, this one will- |
| 0:03:37.8  PERSON 2 | Yes, regardless of that, we need to know what we are gonna look for |
| 0:03:42.3  PERSON 1 | Yeah |
| 0:03:43.4  PERSON 2 | So simulator is going to have what? Engine |
| 0:03:47.8  PERSON 1 | Will simulate traffic flow |
| 0:03:58.1  PERSON 2 | Yes |
| 0:03:59.6  PERSON 1 | And be able to show the current traffic speed, yeah. For each road |
| 0:04:19.5  PERSON 2 | For each intersection. |
| 0:04:22.2  PERSON 1 | No, for each road |
| 0:04:24.5  PERSON 2 | Ok, for each road |
| 0:04:30.2  PERSON 1 | And then we can- |
| 0:04:32.6  PERSON 2 | How do- how will we define that- I think this is one other thing we need to, [inaudible] go against creating the simulator [inaudible] current traffic status. |
| 0:04:46.1  PERSON 1 | Hm? |
| 0:04:48.0  PERSON 2 | [inaudible] traffic light status in a measurable format |
| 0:04:59.4  PERSON 1 | Yeah |
| 0:04:59.9  PERSON 2 | So what- |
| 0:05:01.0  PERSON 1 | This one will give you a number, like how many kilometres per hour this road, the traffic is, yeah, on this particular road. |
| 0:05:11.1  PERSON 2 | Ok |
| 0:05:11.6  PERSON 1 | So people can- |
| 0:05:13.0  PERSON 2 | You can either do it by that, or- |
| 0:05:15.4  PERSON 1 | Yeah, so once you get this data- |
| 0:05:16.6  PERSON 2 | Or by number of- |
| 0:05:17.1  PERSON 1 | You need to visualize it, you can visualize the road as a green or yellow or red. You know, once you get this value, this engine will give you the data, like, how much traffic is currently on this road. Then you get the data and visualize it on the road, by colour. And show the number on the road |
| 0:05:37.0  PERSON 2 | Ok |
| 0:05:39.7  PERSON 1 | And then there’s a feedback, and this is the information that you want to see. |
| 0:05:52.5  PERSON 2 | For how, scroll up, scroll up scroll up |
| 0:05:57.5  PERSON 1 | I think this is pretty much it. Yeah |
| 0:05:59.9  PERSON 2 | Yeah but then if you give this to [name], he will not be able to write anything, he can only make- what are you doing. In reality I mean, we have- |
| 0:06:10.0  PERSON 1 | Yeah it- the developer has to implement this map thing, you know. |
| 0:06:17.6  PERSON 2 | So he does have, the UI guys, [name] can actually probably have- |
| 0:06:23.5  PERSON 1 | Draw something |
| 0:06:24.1  PERSON 2 | Yeah have the map components, have roads, ok, this is gonna be the roads, this is gonna be intersections, this is gonna be traffic light. that, but if someone was to call it- your assumption is that traffic engine, simulation engine, is really going to be able to do everything. Which we [inaudible] from a third party |
| 0:06:40.3  PERSON 1 | Yes I hope so, because we, as a designer don’t know how this [inaudible] |
| 0:06:45.2  PERSON 2 | But if that- my concern is that- what if it’s [inaudible] it’s about, there are actually three things. One is that it’s available on the market and we’re happy with what it’s doing. It suits our requirements ok. Second is something is available but out of the box does not really suit our requirements so we need to do modifications on it |
| 0:07:05.6  PERSON 1 | Yes |
| 0:07:06.2  PERSON 2 | Ok? |
| 0:07:06.4  PERSON 1 | Yeah we have the API and [inaudible] |
| 0:07:07.6  PERSON 2 | So that is a risk that we’re taking going with the third party one yeah. The third thing is, there’s absolutely nothing on the market and we need to do this. |
| 0:07:17.5  PERSON 1 | Yes |
| 0:07:19.0  PERSON 2 | So if that’s the case we need to kind of think how we’re gonna do it. |
| 0:07:27.8  PERSON 1 | This traffic engine? |
| 0:07:29.4  PERSON 2 | Yeah. [Instructor] is that an assumption that can be made, what [PERSON 1]’s come up with, like, because what he’s basically done from the way I’m looking at it is that we have got the same that a third party tool, and we’re hoping that that tool exists without doing any research. So my- as I’ve pointed out to [PERSON 1] there are possibly two things in there, or three things in there. One is that the tool does not exist, that means if we have a [inaudible] reading all of this and doing the exercises is absolutely futile, if you don’t have the engine. Second is there is- there’s something there, and it works to a certain degree which we can modify, we can take on and edit. And third is, the best case scenario where there is something that’s traffic light simulation |
| 0:08:14.9  Instructor | Yeah. Something like that is a very big assumption to make, I mean I’m not excluding, this is your project, you can do whatever you want with it. But at the end of it you’re going to have to explain to the developers how to do this. |
| 0:08:28.5  PERSON 2 | How to do it yes. |
| 0:08:29.5  Instructor | Exactly, and so- |
| 0:08:32.8  PERSON 2 | If we leave it at that [PERSON 1] that means the exercise is not done justice to it, because we’ve really not dealt with the actual problem of doing a simulation. We’ve said, the simulation is somebody else’s problem. |
| 0:08:45.9  Instructor | Yes |
| 0:08:46.9  PERSON 2 | So I think we should just go and say, ok, there is nobody else on the market, you and I need to design this. Let’s design it, I think that’s [inaudible] |
| 0:08:53.9  PERSON 1 | I need to get the knowledge [inaudible] |
| 0:08:57.3  PERSON 2 | I don’t think that having the knowledge, we don’t need to have the domain knowledge of it so |
| 0:09:02.2  PERSON 1 | This is not domain knowledge |
| 0:09:03.2  PERSON 2 | I mean |
| 0:09:03.8  PERSON 1 | You just have a problem visually |
| 0:09:05.5  PERSON 2 | Yeah |
| 0:09:06.2  PERSON 1 | But the algorithm is the key |
| 0:09:07.7  PERSON 2 | Yeah, we don’t have the [inaudible], so that’s something that we have to kind of [inaudible], to tell our guys to do it, or- |
| 0:09:17.0  PERSON 1 | Yeah |
| 0:09:17.8  PERSON 2 | You seem- I mean [Instructor] is kind of agreeing with what I’m saying is- |
| 0:09:21.5  Instructor | Look again at the desired outcomes [inaudible] |
| 0:09:25.5  PERSON 2 | That’s what I’m saying, when we went [inaudible], we are actually supposed to give them a system which does it, what we’re doing is we’re handing of and saying, let’s go for the third party tool which sounds [inaudible]. It’s a very nice way to do it and probably a lot of number of things can be done like that today, being- but it is assumed that this is a brand new problem, and no traffic lights exist on the planet. |
| 0:09:50.1  Instructor | Let’s take a small break otherwise, let’s have a small- |
|  | Third recording 47:56 |
| 0:00:02.4  PERSON 2 | Ok, so, you have just a very simple example of two intersections |
| 0:00:09.5  PERSON 1 | Yes yes |
| 0:00:10.7  PERSON 1 | So there are cars coming in to this intersection ok, and the cars will be told to go straight, this is a three lane road. Or let’s just, one lane for the time being, they’re going straight. One option is the car to go right, but we’ll leave the option, just going straight. So this signal has to go green, cars move up, the signal goes green, the cars which are in queue here will move up, ok? Our simulator should then come in cars, in his road, this intersection, on the start point. Should put in from the start point another car, at this point in time, if the signal is green, that will be a counter that is counting it to be green. Ok. If it is green, the car will pass through. Ok. At the same time the signal, depending on what this value is, is green red or yellow, it will- the car will stop here, or the vehicle will either stop here, or it will go further. Ok. Now if- once this goes red this car can, this simulation can only take X number of vehicles in here. So they can’t just keep popping here. So the simulator will actually have to wait, if the total number of vehicles which can grow from the start point to this point, is already full. If it’s not full, if there’s another place for two more vehicles then you put the two more vehicles in, and it will stop. So this queueing is just waiting in itself, to see if this one goes green. Though this is actually right now on red and is ticking down, ok. At the same time there’s a timer in here as well, so each signal will have its timer ok. And we have to have a component which is counting the total number of cars which are in there. So there are three things, one is a counter here, ok, there is a count queue here, or a counter here. One of the functions here is counting that. and there’s a function that is actually putting, which is actually computing which are- like how many cars are going through, or vehicles are going through. So this is what basically the [inaudible] – this is what it should do. Now the question of configuration is, if you configure this, this particular function which reduces the count of the signal to 5 seconds, that every 5 seconds it’s gonna go from this to this to that, then it will take this many cars out. Ok. So if you’re calculating, if this is the destination X, or let’s- for a straight line, you have to compute that if at 5 seconds intervals, how many cars will end up from point A to X. with this trafficking system. Correct? So that’s what basically we want to achieve, and those are the only pieces of components that we need to have. Again, for the same thing, if you are looking at this and also when going right, then this signal, straight, is not effected by going right. So you need to have [inaudible], and plus- but this has to, this is for one direction. We have to have this for four directions. Because there are cars going like this as well. There are cars which are going like this as well, because if you are letting right going signal that means these cars can actually not go. So at any point in time, for any traffic area, you have to have a [inaudible] route. First it will establish what is going to go. So if it’s a straight signal to go straight, this signal has gone off, this are going to go off. So, your queue is actually not just feeding cars from one side, it’s actually feeding cars from four sides. Or three sides. At any point. So again here- or four sides really, any sides, so you have to have a left queue, right queue and up and down queue. Which is feeding cars in, and what you’re looking at is, of course you’re looking at either X, Y or Z or P, just for example. How much time it is taking for vehicles to reach this destination, are going through, reaching here. |
| 0:04:28.0  PERSON 1 | Yeah |
| 0:04:30.9  PERSON 2 | I know, it’s a complicated [inaudible], I think the whole thing. But, in a sense, if we take one case and do it for only a straight road, effectively it is basically the same thing as turn it horizontal, when [inaudible] works for the other one as well. The question is that this, when this is happening, these cars are waiting, so you have to calculate that. if you’re looking at a particular area and saying, or two three traffic [inaudible]. You should be able to say the number of vehicles that passed nearly X number of time. Assuming that, let’s all say that we are travelling at the same speed. Let’s not add that variation into it. Let’s say everybody, as soon as you plunk a car in it goes from here to here, or the time difference between two- we’re not really assuming the time difference that a car takes form going from point A to point B, at an intersection. Or from one intersection to the other. Just say that the car- as soon as it goes from here it reaches the other intersection. If you do that, as an assumption, but then this [inaudible] will be easier, you can always put that as an add-on, or improvement, car speed. So let’s say average car is going to take, towards a 60k road, it’s gonna take, it can go maximum 30k before it reaches the other signal. So- ok. So what all things do we need if we had to do this, if we had to write the algorithm in a sense. So first is, we need to have a filling queue, which keeps filling, and this, every traffic light, every section of this is kind of a queue which is waiting. Or stack of vehicles which are really depending on the traffic signal. Also, we have to- and once the signal goes green, basically, the vehicles go out. But what we need to also consider is that even if the signal is green, and this one is red, then potentially no car can go in. |
| 0:06:43.8  PERSON 1 | Yeah |
| 0:06:44.8  PERSON 2 | That is the other thing that we need to do, but I think if it’s a kind of- for example, this goes green, this cannot go out unless [inaudible] is accepted by the next road, then that can be [inaudible], so the next one if it doesn’t accept then this is going to go slow. |
| 0:07:04.7  Instructor | You can also use the whiteboard, if you want. |
| 0:07:12.5  PERSON 2 | So you’re seeing what I’m- |
| 0:07:14.1  PERSON 1 | Yeah |
| 0:07:15.5  PERSON 2 | So you [inaudible], you want me to get the whiteboard in the centre? That’s perfect. So, what [inaudible], because of our assumption that there is nothing out there. For this to do, so we have to design |
| 0:07:39.6  PERSON 1 | Design all |
| 0:07:40.2  PERSON 2 | So let’s just take a very simple example from going from point A to point B, with signals. Ok. So let’s just pretend that this road is- so this is point B, point A, you want cars to go from point A to point B. there is two intersections, one is this, and the other is this. |
| 0:08:08.3  PERSON 1 | Yeah |
| 0:08:09.1  PERSON 2 | Ok so what we need to do is, that this is the start- car is going from here to here and this is the finish. Ok, just, this is a very simple case. So here you have got a traffic light, and here you have got another traffic light, let’s just pretend that this, this is the same. And the speed is exactly the same for all cars. So what we need here is something- a function which is putting cars into the queue to go in. here we need to evaluate whether the car can pass junction a or not. Ok but junction x and y, let’s name the junctions x and y. whether a particular vehicle can go past junction x towards junction y, that is in this direction. |
| 0:09:14.4  PERSON 1 | Yeah |
| 0:09:14.6  PERSON 2 | Yeah? We’re just [inaudible]. So we need to have- we need to compute it here. In real life how would we do it, if I was driving this car here, my vehicles here, I would wait here and say, ok, x is green, I’m gonna go to y. ok. But I would not go past this point if there is a vehicle here. Ok. So, the way I identify that is by looking at the traffic situation at that point and say, ok, there is no room for me to go further up. So we need to- for each road, each segment in between the road that you usually find in your design, has to [inaudible] a number of cars, vehicles which are in there, and what is the maximum capacity that it can have. We need to have that isn’t it, or else how will we know that- how will I know I can go from here to here. |
| 0:10:06.6  PERSON 1 | Yeah that’s right. So this road section will have a- |
| 0:10:07.3  PERSON 2 | So, just the road, so let’s call this road the R1 passage, R2 and- let’s not worry about these two sections. Ok we’re going from here to here so R1, R2, R1 needs to have- on a road needs to have capacity of, saying, 5 vehicles. Or R1 and R2, let’s say is, 10 vehicles, just for example. I can go- so, we need to have a function which will hang a vehicles over- from one intersection to the next road. And the next road can accept it only, if and only, if one of it has got space in it. Ok. If it has got a space in it it will just take the car, a vehicle in. so the vehicle goes up. Now, what that would do is that would increase the count of R2 to maximum 10, if the count was 10, then it’s not gonna take any car from there. It’s just gonna stop. And then from this point, as soon as this goes green R2, another function of R2 is constantly looking at y, to see that it has gone green or not. As soon as y goes green, as soon as this goes green, it’s gonna start pushing cars out, vehicles out. Now, if that is doing its function, at the same time R1, or x, is actually calling R2, to see, is there any room for me to put a new car in there now my signal is green. If it’s not green it’s not gonna do that call. It’s just gonna wait. Ok, so, we need to have a function here, and a function there, and in between the road, which would have a capacity. |
| 0:11:57.3  PERSON 1 | Yes yeah |
| 0:12:00.3  PERSON 2 | Correct? |
| 0:12:00.8  PERSON 1 | Yeah |
| 0:12:01.4  PERSON 2 | In a nutshell this is what we need to have, even if you twist it around, that’s basically the default that- this side. Or traffic going from here to there, basically the same thing. R3 and R4, we’ll also basically have the same situation. If R3 has got capacity and you have right signal which is going green, it will accept cars or it’s not gonna accept cars. Now what we need to do, when you’re setting up the traffic signals, we need to give the users the option of setting up timings for each x and y. and road values for these as well. So how many cars, or how much distance is there between the different cars. And then we can write kind of a function where we start from point A and start putting things- the first road is R1, so we have to have kind of a sequence or a route. I think we need to have a route. |
| 0:13:04.7  PERSON 1 | Yeah. So here we need to make an assumption or constraint. That the length of each car is fixed |
| 0:13:12.9  PERSON 2 | Yes. So the vehicle is of a fixed type, and fixed property, so each vehicle is exactly identical to each other. So that it definitely an assumption that we’re making. |
| 0:13:23.9  PERSON 1 | Like 4 meters long |
| 0:13:25.0  PERSON 2 | Yeah, whatever the thing. If you want to increase the complexity next stage I think we can take the distance in account. As [inaudible] the vehicle. What I want is to have a more simpler simulation where you just have a count of cars, of vehicles basically. Which can go, which a road can hold, and which can pass to one intersection. |
| 0:13:48.2  PERSON 1 | Yeah. Because the capacity depends on the length of the road and the length of the car. |
| 0:13:53.7  PERSON 2 | Yes |
| 0:13:55.4  PERSON 1 | We need to have- we only need to define the length of the road. But the length of car is assumption. |
| 0:14:00.7  PERSON 2 | Yes, length of car is an assumption. So basically- |
| 0:14:02.6  PERSON 1 | A fixed value like 4 meters |
| 0:14:04.9  PERSON 2 | So that is basically an assumption that we’re making, that the length of the car, let’s assume, is fixed for all the vehicles. Let’s just call it vehicle [inaudible], let the vehicles [inaudible] |
| 0:14:15.8  PERSON 1 | 200 meters long, your capacity would be 50 cars. [silence] |
| 0:14:42.9  PERSON 2 | I’m just writing down the steps. Yep. Point A, so there is a queue A, that’s to say with a key mechanism which pushes the car on, to car 1 ok. Car 1, gets capacity to add or reject, yeah? This is the only function that it’s gonna do. You see, they’re gonna take a car or it’s going to reject a car. Ok. So, this will happen, adding or rejection, we know this happens based on the count, on the value. Then x will push vehicle to R2. Now this is again if green or sensor says it’s ok. Is that- of x. x and the traffic light. see, we’ve completely the concept of intersection here. Intersection’s kind of not a part of anything. It’s a signal which is making a car really |
| 0:16:16.4  PERSON 1 | Mm, yep. |
| 0:16:18.1  PERSON 2 | So from x it’s going to R2, will accept or- again the same thing. Takes capacity to add or reject. And y does the same thing again. [silence] so in a nutshell, this thing has to work in a loop. And then partly go straight. Do you see a reason why a vehicle will not go past? Or how this will- of course the simulation part will configure x and y times. And that will decide whether y can push vehicles to B or not. Or x can push vehicles. So our timing factors, a timing would be here |
| 0:17:44.7  PERSON 1 | Yep |
| 0:17:45.3  PERSON 2 | And here. So if you are setting up the system, you’re setting up the simulation, you take your starting row R1, put it in, you put an intersection x, control R2, control R3 which goes to n point. So you start our- so this is a straight part of the road with two intersections on it. Ok. So if- let’s assume there was no right turn side or anything, this would continue to work. In a fashion, if vehicles keep plonking in from underneath. And if, depending on the distance and body of configure there- |
| 0:18:32.1  PERSON 1 | Yep |
| 0:18:33.4  PERSON 2 | For the capacity you can see how many vehicles will go through. In certain amount of times, I think that the count has to be on vehicles to give you the stats to say if the frequency of this was 5 seconds. And frequency of this was 5 seconds, how many would pass in, and the time difference. Now the other thing we need to be able to establish or the user should be able to configure is, this [inaudible] cannot go green at the same time, because I these two go green at the same time that could mean that everything will just keep going. The red is red. So that is another thing that we have to give our timing [inaudible]. Between this one and that one, so both of them- they can start at the same point. If you want it to, but that means that if this goes green, vehicles are going on R2 at the same time as this is pulling. R is, y is actually pulling vehicles out. Actually y has got one more function |
| 0:19:32.2  PERSON 1 | Yeah |
| 0:19:33.4  PERSON 2 | No, correct, this is the only function that it’s got, it’s not actually pulling vehicles, pushing, it’s actually pulling vehicles to B. it’s actually going up. Not really coming in. cause R2 is pushing vehicles to y, intersection y. |
| 0:19:54.9  PERSON 1 | Yep |
| 0:19:55.4  PERSON 2 | Correct? So R1 is pulling from the queue, and pushing it to x. X is allowing them to go up. |
| 0:20:06.7  PERSON 1 | Yep |
| 0:20:07.7  PERSON 2 | Then y is pulling it to go up. |
| 0:20:14.1  PERSON 1 | So how do you measure the traffic status, if it’s green yellow or red. |
| 0:20:21.0  PERSON 2 | For the density of traffic? That’s a question that I haven’t answered, that’s what I’m thinking right now. This is how we do it, if we put in different time spans on- when this goes green, if it’s 10 seconds and this one is 5 seconds. We’ll have to see how many cars reach B in x- in say y amount of time, or x amount of time. |
| 0:20:56.1  PERSON 1 | No, not A to B, instead it has to be A to- |
| 0:20:58.7  PERSON 2 | A to B |
| 0:20:59.8  PERSON 1 | One intersection, that part. A to one intersection to x, that’s one traffic status. And the x to y, that’s another traffic status. You need to measure road by road. Because you cannot take the A to B as one [inaudible] |
| 0:21:15.5  PERSON 2 | Ok ok ok. Yeah ok, I see. Yes ok. You can have that then |
| 0:21:23.2  PERSON 1 | Because that’s how we define [inaudible] |
| 0:21:23.5  PERSON 2 | Then what we can do is, in every one minute you can say, x number of vehicles went from here to there. And in the same one minute, x number of vehicles went from point x to y. or from y to R. |
| 0:21:39.9  PERSON 1 | To make- [inaudible] |
| 0:21:42.3  PERSON 2 | So this is typically the crux of- this is how I see it working. |
| 0:21:49.4  PERSON 1 | Yeah that’s fine, the theory is fine. I’m just thinking about to measure the status you need to make assumption, right, and to be play another assumption card here. |
| 0:21:59.1  PERSON 2 | Ok |
| 0:21:59.5  PERSON 1 | Assumption that if the traffic is going right? |
| 0:22:03.0  PERSON 2 | Yes |
| 0:22:03.7  PERSON 1 | For one second, one car get out. |
| 0:22:07.0  PERSON 2 | Yes |
| 0:22:07.6  PERSON 1 | Yeah, let’s make that assumption. |
| 0:22:09.3  PERSON 2 | Yes |
| 0:22:09.6  PERSON 1 | So if I say this traffic light- |
| 0:22:11.6  PERSON 2 | Correct |
| 0:22:11.9  PERSON 1 | The green turn will be 10 seconds. 10 seconds green. |
| 0:22:15.4  PERSON 2 | So that means a lot of cars can pass through |
| 0:22:17.9  PERSON 1 | Yeah, it’s ideal if the status- how good, so 10 cars can get out. Yeah? |
| 0:22:22.7  PERSON 2 | Yes |
| 0:22:23.6  PERSON 1 | And while [inaudible] the situation, once the simulation starts, you can take away the real number of cars and disappear during this 10 seconds. Within 10 seconds for intersection x? for road 1. It only lost- you know, it only get rid of 2 cars. In 10 seconds. That means the traffic is bad. Because in this 10 seconds green light, there’s only 2 cars passed. Actually, in an ideal situation you have 10. |
| 0:22:56.0  PERSON 2 | You have the capacity of 10. |
| 0:22:57.3  PERSON 1 | Yeah [inaudible] |
| 0:22:59.6  PERSON 2 | Yes. I mean you can- you have a capacity of letting 10 cars pass, but just 2. How do you control putting 2 in there. |
| 0:23:07.2  PERSON 1 | How do you control- |
| 0:23:07.9  PERSON 2 | Say for example- yeah ok. |
| 0:23:12.3  PERSON 1 | This is the simulate- it pass on the condition of the road R2, you know, and this is how the whole simulation adds up. So if the x, the road 1, only get rid of 2 cars in this 10 seconds means, that means R1 is really busy. Yeah. If it lost 5 cars in 10 seconds, which means it’s a- |
| 0:23:35.4  PERSON 2 | But [PERSON 1], R1 is getting rid of cars, or pushing cars, or x pushing cars up. It really depends on R2. |
| 0:23:43.0  PERSON 1 | Yeah that’s what the whole simulation is about here- |
| 0:23:45.2  PERSON 2 | yes |
| 0:23:46.6  PERSON 1 | Try to loss one car depends on R2 condition. |
| 0:23:49.2  PERSON 2 | Yes |
| 0:23:50.0  PERSON 1 | yes |
| 0:23:50.2  PERSON 2 | So every time when a vehicle- |
| 0:23:51.7  PERSON 1 | That’s the real situation. |
| 0:23:52.9  PERSON 2 | yes |
| 0:23:53.4  PERSON 1 | The real simulation will know how many cars R1 can loose in 10 seconds. |
| 0:24:02.3  PERSON 2 | Okay |
| 0:24:05.1  PERSON 1 | So ideal you see if there’s no traffic on R2 and R3, all green. Yeah. And if x is green light. yes, then there’s 10 cars will be- |
| 0:24:15.7  PERSON 2 | Yes, so if x is green, 10 cars should go from here to there, if R2 has the capacity of holding 10 cars then ideally y should be able to push 10 cars out, if it’s green as well. |
| 0:24:26.5  PERSON 1 | Yeah. So the really, the status, traffic status depends on two factors. One is the traffic light intervals, the other one is the capacity of each road section |
| 0:24:39.5  PERSON 2 | Yes, capacity of each road section. |
| 0:24:41.3  PERSON 1 | Because capacity of the road section, of intersection if fixed, is design time fixed |
| 0:24:46.0  PERSON 2 | Yes |
| 0:24:46.8  PERSON 1 | When it is on the map it is already fixed |
| 0:24:48.2  PERSON 2 | Yes |
| 0:24:49.5  PERSON 1 | So the other factor that they can play with is the time intervals |
| 0:24:53.3  PERSON 2 | Yes, but that’s what they want to actually play with, they want to change the timing [inaudible], so if they say, this is gonna go every 8 seconds, this is gonna go every 20 seconds- |
| 0:25:01.3  PERSON 1 | Yes, that’ll make a difference. |
| 0:25:03.2  PERSON 2 | Then that will make a difference. And of course then, they bring on the capacity of each road, so if they have 2 roads, R2 and R1, together, that would be 15 vehicle capacity. Then- |
| 0:25:17.9  PERSON 1 | Normally the basic design rule, if this road has a bigger capacity, the traffic lights would be determined to be longer |
| 0:25:24.5  PERSON 2 | Should be longer, yes. In theory it should be longer that’s correct |
| 0:25:28.1  PERSON 1 | So if they design a very- if they want to do this experiment, they can change the traffic light turnout, very short. For very long road. That will stuff up the traffic. Ok? |
| 0:25:49.0  PERSON 2 | Yes. So if we can [inaudible] 30 seconds- |
| 0:25:51.9  PERSON 1 | Like this type of- 100 cars capacity |
| 0:25:52.5  PERSON 2 | And it will actually [inaudible] yes. |
| 0:25:55.7  PERSON 1 | And green only 2 seconds. On this road it will become, you know- |
| 0:26:02.7  PERSON 2 | Busy very quickly. It actually will depend on the thing signal behind it as well. |
| 0:26:07.9  PERSON 1 | This road will be congested, and then the road after this, there will be congestions as well. |
| 0:26:16.2  PERSON 2 | The classic example is [inaudible] road, where I go- a traffic signal that I always take. But it’s almost 9 [inaudible] in the morning, because [inaudible] signal is only 3 seconds. |
| 0:26:31.3  PERSON 1 | Yeah |
| 0:26:32.7  PERSON 2 | So for my Toyota, which runs on gas, before I’m out of the intersection it’s significantly on red, so whoever is behind it is very stuck. If I go with the [inaudible] and just fly of, and within one second I’m on the other side. Letting other people go in, but always, if the first car is slow or someone who is riding really slowly, only 1 car can go, or 2 cars can go. Ok. So, in a sense that is what the [inaudible] needs to have. So it should be able to let traffic pass through, so at every point- one other thing we need to, which we haven’t considered up until now, we need to look at, is going left, right as well. We need to write this thing down so that we can kind of, as one set of vehicles going straight. So this is, if vehicles are going right, again you have to have the capacity of R3, there, plus what that would mean is that it actually would effect- let’s just take a case in where vehicles are coming into x. And taking a right from R3, taking a right on R2. Letting vehicle go out, let’s [inaudible] come in, that would be easier to look at. So vehicle is coming from- into here, and the signal is [inaudible], because the signal is not just actually one direction [PERSON 1]. Here the signal is red green and yellow, and also it’s got a signal to go right. Ok. The same, the signal here is red green yellow, and it’s got an option of going right or left. Both of them, cause this signal is ideally a signal which is like this. So you’ve got one, two, three roads. Never actually [inaudible]. So this would be your green, yellow and red. And then this is- they go to right, and this is to go to right. And this one again is, this individual one is also green red and yellow. This one as well. So this is really how the signal here is, so if you have [inaudible] in here. Actually, we haven’t considered about different lanes. So we have just said, ok, one lane, go left or right. So, if we are to give three, go to the left, we at least have to have two lanes, left and right. Else if you want to go- not necessary, you can have just one road and go left and right as well. [telephone ringing] let me check, who’s that. [telephone conversation] So that is the thing that we haven’t considered here, so our, so basically we need to have functions for intersections, and functions for a road. So each- going by the time and the status of the signal. |
| 0:30:36.6  PERSON 1 | Mm yeah that’s right. So each road can push cars in three directions |
| 0:30:42.9  PERSON 2 | Yes. So the calculation in any point in time, when they are in the simulation is, each intersection is actually kind of running a calculation to say, ok, intersection x is, right now what is the state of x ok. The state of x is, it’s a green signal to go straight, and it’s red red for left and right. So, basically it’s just gonna, ok if that’s the situation then it’s gonna do- push the cars to the next road, depending on whether R2 is willing to take those cars along. So if R2 is willing to accept a car, or vehicle, then it will that in and remove it form its own queue. |
| 0:31:23.3  PERSON 1 | Yeah |
| 0:31:24.1  PERSON 2 | So, one will be added to R2, and one will be reduced form x. again for the next vehicle, before it sends through, it’s gonna check, ok, is my signal still green. And does R2 have the capacity to put it up. Now as soon as this goes red, it’s no more checking R2, it’s just gonna not do pushing anything, it will stop. Next immediately, every traffic intersection will have a sequence of events, so, that we need to design and to say, ok, it’s gonna go green, yellow- green, yellow, red, then it’s gonna go right, and then it’s gonna go left. We need to have that sequence correct as well. So we need to design- ok, so, there’s three things, and every step it is going to follow a certain set of actions. |
| 0:32:17.8  PERSON 1 | Yeah |
| 0:32:18.2  PERSON 2 | So each intersection in each direction will loop the same thing. |
| 0:32:25.5  PERSON 1 | Yeah that’s right. We can make another assumption, we don’t need the yellow light. yellow light doesn’t make much difference in terms of design. Because the status only pass or not pass. |
| 0:32:36.8  PERSON 2 | Ok, so let’s just say we don’t have yellow. Green and red. |
| 0:32:42.7  PERSON 1 | There’s another assumption we have to make, it’s [inaudible] system design, and also we need to make assumption for the traffic you know, in one road traffic, how much pass one to go to left. How many percent cars want to go to right. |
| 0:32:59.3  PERSON 2 | I think we- for that assumption we should just have, whatever the speed we can go through. Say if the speeds got 10, you can go 10 cars on the right hand side. You can go 10 cars on the left |
| 0:33:10.5  PERSON 1 | No no no, why don’t we- how many cars want to go left. You know one, one road you know, it is- the light is green right? So then you have decide I want to push this car to R2, or I want to push this car to R1, or R3. So this is the assumption we have to make. |
| 0:33:30.8  PERSON 2 | Yes |
| 0:33:31.0  PERSON 1 | It is a probability. By pushing one car out [inaudible], what percentage of- |
| 0:33:39.1  PERSON 2 | I [inaudible] I did think- |
| 0:33:42.8  PERSON 1 | That’s another assumption we have to make |
| 0:33:43.1  PERSON 2 | So I think what we need to do is, in terms of that assumptions, what we should say is from here, from start point every intersection will- yeah but you cannot have maximum in there right say. Let’s just say heaviest traffic conditions, so everything- there are vehicles in the queue. So if 10 vehicles can go right, 10 vehicles will go right. |
| 0:34:07.1  PERSON 1 | No, what I mean is you have to make assumption, you know, if this one car is going to R1- |
| 0:34:14.5  PERSON 2 | For each vehicle going on R1 you have to make a call whether it’s going to go- |
| 0:34:17.2  PERSON 1 | All of R1- yes |
| 0:34:19.7  PERSON 2 | Whether it’s going to go this, this or that |
| 0:34:20.9  PERSON 1 | We want to push the car to R3 or we want to push it to the left or- |
| 0:34:23.8  PERSON 2 | R4- yeah yeah yeah |
| 0:34:25.9  PERSON 1 | Push the cars straight, that’s the probability. Probability you can make 10% want to go left, 8% want to go straight and another 10% want to go right. |
| 0:34:34.6  PERSON 2 | Ok, so that is something that for each intersection, we’ll have to give the user the simulator |
| 0:34:40.3  PERSON 1 | Control, control |
| 0:34:42.1  PERSON 2 | It [inaudible]. Each road? |
| 0:34:45.1  PERSON 1 | Yeah each road |
| 0:34:45.4  PERSON 2 | Each road? Ok, each road will have that option |
| 0:34:45.6  PERSON 1 | This road now, this road want to push a car out, you know, we want to push straight, push left or push right. |
| 0:34:52.9  PERSON 2 | In terms of percentage? |
| 0:34:53.8  PERSON 1 | Yeah. So that’s a probability, you need to use a random number to generate this probability |
| 0:34:59.4  PERSON 2 | Ok, yep. |
| 0:35:00.7  PERSON 1 | And then- |
| 0:35:00.8  PERSON 2 | But instead of random number to generate probability we can get the user to say, ok, these are the three options of vehicle going- |
| 0:35:08.7  PERSON 1 | Yeah, you assign- |
| 0:35:09.7  PERSON 2 | You assign the percentage. So if- because certain intersections going right is the most popular route, not going straight and left. |
| 0:35:16.2  PERSON 1 | So in effect you can allocate- |
| 0:35:17.1  PERSON 2 | So we- you can allocate, so it’s going to be 70, 15, 15. So depending on that, so if you have N cars which come in that means only, 1.5 means, two cars potentially can go on this side, or two cars can go on that side. Rest remaining, 60% of cars are gonna go straight. So that is one other thing, that is a parameter that needs to be there for each road. |
| 0:35:43.3  PERSON 1 | Yep |
| 0:35:44.1  PERSON 2 | Not on each side. So when a car gets pushed into a road, we need to have that as well. I think you need to add that to your road thing |
| 0:35:53.2  PERSON 1 | Yes [inaudible] ok |
| 0:35:58.4  PERSON 2 | Yes |
| 0:35:58.8  PERSON 1 | I think that’s pretty much it really, the basic philosophies of the traffic- |
| 0:36:03.1  PERSON 2 | Yes. So basically what we need to do is to write it from one direction, and then that function needs to keep looping, cause as soon as this signal goes red, for this direction, this direction is basically shut out. |
| 0:36:20.4  PERSON 1 | Yeah |
| 0:36:21.4  PERSON 2 | Then the next immediate direction is, everything goes in clockwise, so this one starts, so if this is red then this direction is green. So vehicles can go in and out, one of the thing that we have marked discusses- we have just going in one direction right now, we should also look at going in other directions. |
| 0:36:46.3  PERSON 1 | No, [inaudible] directions the same thing, so we just need to define one direction |
| 0:36:50.0  PERSON 2 | Ok |
| 0:36:50.6  PERSON 1 | And the other direction is not required. Because there is two line you know, going down and going up is two directions. So while we decide the traffic status, one direction will have its own status. You know what I mean? |
| 0:37:07.9  PERSON 2 | Yes yes |
| 0:37:08.2  PERSON 1 | Ok, one road is two, actually two traffic status. |
| 0:37:11.3  PERSON 2 | Correct. So it’s- |
| 0:37:12.7  PERSON 1 | Up and down |
| 0:37:13.3  PERSON 2 | It’s going up and going down, so going down is different, going up is different |
| 0:37:16.6  PERSON 1 | Two traffic status for each road. |
| 0:37:19.2  PERSON 2 | Each road, ok. So then we have to define the percentage for both the sides as well. Going up direction, this is the percentage of cars going left, right and centre. Down you have to define left, right and centre. Yeah |
| 0:37:35.3  PERSON 1 | Yes |
| 0:37:40.2  PERSON 2 | So |
| 0:37:43.3  PERSON 1 | Ok, I think that’s pretty much covered it |
| 0:37:47.8  PERSON 2 | We have not looked at one thing, that is the sensor. The green sensor, say for example, a vehicle-if this is just- |
| 0:38:01.2  PERSON 1 | Yeah the sensor is- |
| 0:38:02.4  PERSON 2 | And yeah, that’s a thing that we’re doing, and why- that’s a thing, why directional traffic and we also have to consider [inaudible] |
| 0:38:14.2  PERSON 1 | Yeah sensor is good, because you can have sensor, then the sensor will be intelligent and then they control the colours of the light. yeah? |
| 0:38:24.9  PERSON 2 | Yes. So basically what it would say is, the sequence of red green, left and right, would be controlled by the sensor in that point. See sensor is on for a particular traffic signal, ok. If it’s on, it’s on for all the directions, it’s not on for only one, that’s an assumption that we can make. |
| 0:38:51.7  PERSON 1 | Yes |
| 0:38:52.3  PERSON 2 | So if that’s the case then before going right, after green, after red, it needs to check if the sensor is on. If the sensor is on, so there is a sensor, and there is a car. In its queue, to accept for going to the right. |
| 0:39:12.2  PERSON 1 | Yes |
| 0:39:13.0  PERSON 2 | So I think each one of these will have three buckets here, one bucket for vehicles going right, one looking for vehicles going straight, one bucket for vehicles going left. Here, if it’s green, then the green will empty only the centre bucket, which will say, ok so, if we were to do a bucket presentation that would be three buckets here, one say, and 30% distribution. So say 3 3 3, so if it goes green then this three will go empty, as long as this has got the capacity for three. |
| 0:39:47.5  PERSON 1 | Yes |
| 0:39:48.2  PERSON 2 | Ok? And then the countdown is just going, unless this puts amount of three in there and then- it’s still green. And this has got capacity so it’s gonna go up |
| 0:39:58.5  PERSON 1 | Yes |
| 0:39:59.0  PERSON 2 | Now once that green goes red, what- if the sensor is on, it’s gonna check, is there a car, is there a- if there is a car then it’s gonna go green. But if there is no car, and there’s a sensor, it’s not gonna wait for that stipulation, because the green supposed to go for 10 seconds, it’s not gonna go green, it’s just directly gonna go right. |
| 0:40:26.7  PERSON 1 | Yeah, the sensor will check the traffic status R1 and R3, if R1 and R3, there’s no traffic at all, there’s no cars there, and then- |
| 0:40:36.0  PERSON 2 | There’s not gonna be a green light to go to right, it’s just gonna go to the next sequence of action |
| 0:40:40.0  PERSON 1 | A green to right, yeah. |
| 0:40:48.5  PERSON 2 | So that’s another thing that we have to say, like, the directions, all of these will go in one direction. It’s gonna go clockwise, so green, red, right, left. Same thing for this intersection here as well. We just- I don’t know how we’re gonna calculate whether something’s gonna have an accident or not, or have we create- caused an accident. That’s something that we need to- |
| 0:41:14.1  PERSON 1 | We could [inaudible] the engine to ensure, while you configure everything, the traffic lights, the engine should tell you, will this cause an accident |
| 0:41:21.4  PERSON 2 | If the engine does not allow, the engine should not allow changing the seconds if we consider that, because the thing is if, for example, if it’s to go right at this point in time, then if the road, if R1, traffic is going right, which of the road is accepting the traffic? Should not be allowed to plunk traffic in. into an intersection, so only at any intersection traffic will go out. Not come in. so if you’re going from road R1 and you’re taking a right, you’re going to R3, so that’s you destination. R3 will not turn anything in to x. everything will just keep going out. If you stop that, then it’s going to solve the problem by itself. So, only right traffic will go. I know in theory left can go here, and this can go right, or rather we can say, only in the same direction. So if I’m going from this direction, no traffic can come into this direction in here, it can go in like this but in the opposite direction. That’s how normal roads are right? You have a right turn on this road, but if you’re a car here you’re on a left road. Or leaving as the cars can go from R3, R4, but R1 is going R3. So if it’s clockwise, it’s not going to have a problem because when the signal is here. This one goes green, this one will be red. |
| 0:42:50.7  PERSON 1 | Yes, yeah. |
| 0:42:54.5  PERSON 2 | This is really interesting to try. I mean, [inaudible] because in India what we do is, it is a- there’s actually a timer, this is something that I’m sort of right now. What it does is, every intersection has actually got a counter, it keeps counting to the number when it’s going to go red, or when it’s going to go red or when it’s going to go green |
| 0:43:23.0  PERSON 1 | Yes, some traffic light have that here, some of them do |
| 0:43:25.5  PERSON 2 | Yes. So what happens then in that case is like, kind of people know, the light’s gonna go. |
| 0:43:31.1  PERSON 1 | Yeah so the green in two seconds |
| 0:43:47.5  PERSON 2 | [telephone ringing] [name] is calling [inaudible] hm? |
| 0:43:58.8  PERSON 1 | Yeah, I think that’s pretty much- |
| 0:44:00.7  PERSON 2 | Pretty much it? |
| 0:44:01.5  PERSON 1 | Yeah |
| 0:44:05.7  PERSON 2 | In terms of [Instructor]- in terms of our output, what is expected. It’s kind of, I’ve got how I’m gonna do it, I just have to write down for each step. |
| 0:44:14.6  Instructor | Well you, after this you have to explain in 10 minutes exactly to the software developers what they have to design. |
| 0:44:24.6  PERSON 1 | Ok. I think we’re pretty much there, we have the- |
| 0:44:28.7  Instructor | It’s in the desired outcomes, so you can read it again |
| 0:44:30.7  PERSON 2 | Ok |
| 0:44:31.3  PERSON 1 | Yeah, we already have the requirement for the map creation tool, and the second one is this |
| 0:44:38.4  PERSON 2 | Yes [telephone ringing] |
| 0:44:41.4  PERSON 1 | Ah, traffic simulator |
| 0:44:43.7  PERSON 2 | Yes |
| 0:44:45.2  PERSON 1 | So we’re gonna do a presentation? What that means? |
| 0:44:47.8  Instructor | Well it’s almost time actually for the third reflective period, maybe you want to do that? |
| 0:44:53.1  PERSON 2 | Yes, what was the third period? |
| 0:44:56.2  Instructor | It’s using the cards |
| 0:44:57.7  PERSON 2 | Oh ok. Using the cards. Large parts of our design sessions are like this, where I and [PERSON 1] sit down and we just write stuff. Ok. So, we did a number of assumptions in this step. |
| 0:45:24.3  PERSON 1 | Yeah we made quite a few assumptions for the simulator, traffic simulator. |
| 0:45:30.4  PERSON 2 | Yes, for the traffic simulator. Especially for the vehicles, so if the- one of the other options was if a signal allows x number of seconds, 1 second will allow 1 vehicle to pass through. As a consistent measure right across the system. So if the capacity is for 5 seconds, if the signal is gonna be on green for 5 seconds, 5 vehicles will pass through. Provided the adjoining road has the capacity to take, absorb 5 vehicles. |
| 0:46:05.5  PERSON 1 | And otherwise the length of the vehicle is fixed, like 4 meters, is that 4 meters? Yeah. |
| 0:46:15.4  PERSON 2 | Length of the road? |
| 0:46:16.6  PERSON 1 | Length of the vehicle |
| 0:46:17.8  PERSON 2 | Length of the vehicle. Do we need to have that assumption? |
| 0:46:20.9  PERSON 1 | Yes. That depends on the- that will decide the road capacity. |
| 0:46:28.1  PERSON 2 | Ok |
| 0:46:29.2  PERSON 1 | I design the road to 500 meters, or 200 meters, so then the capacity will be 50 cars. |
| 0:46:38.1  PERSON 2 | Ok |
| 0:46:39.2  PERSON 1 | That is an assumption we make |
| 0:46:41.0  PERSON 2 | Ok |
| 0:46:41.7  PERSON 1 | Yep. And, yeah, this assumption. Any constraints? |
| 0:46:55.7  PERSON 2 | A constraint is with the one that we put in that if- that’s certainly a constraint |
| 0:47:02.2  PERSON 1 | Constraint, and we- |
| 0:47:04.6  PERSON 2 | That’s certainly a constraint |
| 0:47:05.6  PERSON 1 | Constraint and assumption is pretty much the same isn’t it? |
| 0:47:09.2  PERSON 2 | No not really, constraint and assumptions are not the same, assumption is something that you’re assuming, constraint is something that- |
| 0:47:14.4  PERSON 1 | You cannot do |
| 0:47:16.5  PERSON 2 | Constraint is what- |
| 0:47:28.7  PERSON 1 | Constraint is- [inaudible] |
| 0:47:36.4  PERSON 2 | I think that there’s somebody else in the meeting room. Sorry |
| 0:47:39.3  PERSON 1 | Yes |
| 0:47:40.2  PERSON 2 | We might have to- |
| 0:47:41.9  PERSON 1 | Break it up? |
| 0:47:42.4  PERSON 2 | Wrap it up. Sorry, can you give us 2 minutes? [inaudible] and we’re in, so we might- [Instructor] we might take a screengrab |
| 0:47:54.5  Instructor | Yes alright |
|  | Fourth recording 13:17 |
| 0:00:06.1  PERSON 2 | The constraint. |
| 0:00:11.2  PERSON 1 | Yeah, we’re talking about the length of the cars, that is one of the- oh that’s an assumption |
| 0:00:15.7  PERSON 2 | Yes that’s an assumption that- not that- [inaudible] assumption, yeah ok. That’s an assumption. [inaudible]. I think the [inaudible] part we were discussing was, we need to- if we are to do to the next part, as giving instructions to the dev team. Then we need to have, we need instructions for each item kind of. Like, for the road, for the intersection and the queue which will keep pushing things to the- |
| 0:01:11.8  PERSON 1 | Yeah |
| 0:01:13.1  PERSON 2 | Which will keep feeding continuous information to the simulator. |
| 0:01:23.5  PERSON 1 | So [inaudible] the traffic simulator |
| 0:01:26.4  PERSON 2 | Yes |
| 0:01:27.0  PERSON 1 | Yeah |
| 0:01:28.8  PERSON 2 | So, and that would be for each direction, isn’t it. Because a road will have, each will have two directions. So when you’re setting up you’re setting up for each direction, or you’re setting up with the same for both directions. |
| 0:01:46.3  PERSON 1 | The same for both directions, that’s one road isn’t it |
| 0:01:51.3  PERSON 2 | No because, what- how you set it up will actually affect the capacities and everything for each direction, will affect how the traffic will flow. So as such, a road is separated into two sections, road going direction 1 and road going direction, or up and down. And each of them will have their own capacity [PERSON 1], they cannot be exactly the same and- they can be exactly the same as- |
| 0:02:17.8  PERSON 1 | [inaudible] exactly the same, unless a road is fixed- |
| 0:02:22.1  PERSON 2 | If length of road is fixed- |
| 0:02:23.9  PERSON 1 | The capacity is fixed |
| 0:02:25.0  PERSON 2 | Capacity is fixed, that’s why I’m saying, so, like people will drive in the down direction, might only be one or two |
| 0:02:31.9  PERSON 1 | Yeah that- |
| 0:02:33.5  PERSON 2 | But traffic- |
| 0:02:33.3  PERSON 1 | The traffic is different |
| 0:02:34.8  PERSON 2 | So that is something that we need to allow for the road, for each direction. |
| 0:02:40.2  PERSON 1 | Yeah for each direction, the left, straight and right allocation will be, can be different |
| 0:02:44.9  PERSON 2 | Yes |
| 0:02:45.3  PERSON 1 | Yes |
| 0:02:46.1  PERSON 2 | Each direction, so the direction is associated with the road |
| 0:02:50.3  PERSON 1 | Yeah |
| 0:02:50.6  PERSON 2 | So a road has got two directions. Up and down, let’s just make it easy. Up and down |
| 0:02:56.1  PERSON 1 | Yeah |
| 0:03:00.2  PERSON 2 | So, the road needs to be a [inaudible] entity, or road needs to be a [inaudible] for these. |
| 0:03:09.6  PERSON 1 | Directions right? |
| 0:03:10.3  PERSON 2 | Yeah, direction. Actually, each intersection [inaudible] |
| 0:03:26.0  PERSON 1 | Yeah, or we just make an assumption, there’s only one lane, we don’t need to have two or three lanes. |
| 0:03:33.3  PERSON 2 | No, let’s not worry about the lanes, we’ll just remove the lane part of it. Because this one road will have left, right and- |
| 0:03:40.8  PERSON 1 | Direction, sometimes for each direction they will have a traffic flow allocations |
| 0:03:48.7  PERSON 2 | Yes, traffic flow allocation. |
| 0:03:54.8  PERSON 1 | allocation |
| 0:03:56.1  PERSON 2 | Yes. [inaudible] |
| 0:04:02.3  PERSON 1 | Left- |
| 0:04:05.6  PERSON 2 | Straight and right, that’s straight and right. |
| 0:04:08.7  PERSON 1 | [inaudible] |
| 0:04:10.5  PERSON 2 | Yeah |
| 0:04:18.4  PERSON 1 | Ok, so that’s the road property |
| 0:04:21.3  PERSON 2 | What I- what I might envision is, if I was cutting code for it, if I’d [inaudible] a vehicle goes from one- from the start point onto road 1 for example. So basically road 1 accepts vehicles till its maximum capacity. And for each incoming vehicle it looks at the traffic intersection that it is on, so every vehicle also will need to have a direction [PERSON 1], or else how will you know. So each vehicle will go in a particular direction. So a vehicle heading, for example, say going up, or let’s say going north. That intersection, what is happening, at that point in time. Is it- so, the functions for the road- |
| 0:05:21.3  PERSON 1 | The road capacity will have- is for directions as well so one- |
| 0:05:24.4  PERSON 2 | Yes road capacity has- |
| 0:05:25.5  PERSON 1 | No no no, not capacity, the queue |
| 0:05:28.1  PERSON 2 | Queue? Queue will be for directions. So, the- |
| 0:05:34.5  PERSON 1 | Car queue, traffic queue. Yeah, so one road, two directions? For each direction we’ll have its own traffic queue |
| 0:05:51.8  PERSON 2 | Yes, will have its own traffic queue. |
| 0:05:53.4  PERSON 1 | Yes |
| 0:05:54.8  PERSON 2 | And then intersection will have the traffic lights, and each traffic light will have its own counter, to count time. For time interval, so you have to have a counter and a time interval. |
| 0:06:10.5  PERSON 1 | Yeah |
| 0:06:10.7  PERSON 2 | Between states, so each traffic light will have its states, isn’t it? |
| 0:06:16.0  PERSON 1 | Mm. [inaudible] the roads between- |
| 0:06:23.0  PERSON 2 | States |
| 0:06:25.8  PERSON 1 | States. [inaudible] |
| 0:06:36.7  PERSON 2 | Intersection [inaudible] [silence] |
| 0:06:56.5  PERSON 1 | Yeah? |
| 0:07:01.4  PERSON 2 | Traffic lights, I’m thinking of how the program’s gonna work. [inaudible] will have to have- [silence] |
| 0:07:27.4  PERSON 1 | So what are you thinking, what are you trying to- |
| 0:07:29.2  PERSON 2 | Oh, I’m trying to- because we need to turn some [inaudible] , so we have to tell them how to design the program for them to implement it. |
| 0:07:43.4  PERSON 1 | I think the implementation, they will, the developer will have a [inaudible] |
| 0:07:49.1  PERSON 2 | Ok |
| 0:07:49.9  PERSON 1 | Yeah, they will decide what data structure they need to sue |
| 0:07:53.1  PERSON 2 | No no, the sequence of events. That’s what I have to tell- that we need to tell them right? To understand, so that again they can write the code for it. So |
| 0:08:01.4  Instructor | You have 5 minutes left. |
| 0:08:03.1  PERSON 2 | In the whole process? For the whole process? |
| 0:08:05.2  Instructor | No, for the design session |
| 0:08:07.2  PERSON 1 | The design session |
| 0:08:08.2  PERSON 2 | Design session ok. I think we’ve covered those, that part of things and then- |
| 0:08:14.5  PERSON 1 | I think we have most up there, in the first run of design you know. This may change during the process of implementation. The first run |
| 0:08:28.6  PERSON 2 | Yeah first run |
| 0:08:29.2  PERSON 1 | This good enough for now |
| 0:08:31.7  PERSON 2 | Ok |
| 0:08:32.7  PERSON 1 | Let’s say the process will be [inaudible], like design implement, get feedback from the developers, then we just maybe modify our designs in a second stage of the iteration until we are finished here. [inaudible] |
| 0:08:51.1  PERSON 2 | Yes |
| 0:08:55.7  PERSON 1 | As far as to- [inaudible] so, [inaudible] |
| 0:09:28.4  PERSON 2 | So how have we- [telephone ringing] |
| 0:09:41.1  PERSON 1 | So how the measurement will be looked at? |
| 0:09:44.9  PERSON 2 | Hm? |
| 0:09:45.4  PERSON 1 | The measurement. [telephone conversation] |
| 0:11:01.0  PERSON 2 | For the [inaudible] we have to do road, intersection, road. I think that’s how you should do it. I think that- |
| 0:11:10.3  PERSON 1 | What do you mean, [inaudible] model? |
| 0:11:13.2  PERSON 2 | So, the way we had drawn it right, going from- |
| 0:11:22.3  PERSON 1 | The way we used the- |
| 0:11:24.1  PERSON 2 | [inaudible] |
| 0:11:40.4  PERSON 1 | [inaudible] |
| 0:11:45.8  PERSON 2 | Yes |
| 0:11:50.8  Instructor | You have 1 minute left with the design session |
| 0:12:00.0  PERSON 2 | This one was [inaudible] road, x, intersection, road. And that has to be a loop for each direction and the whole thing needs to keep running as a sequence. So basically, when one direction is done and this becomes red. Immediately counter clockwise the next road has to be selected. So when the map is created, the road needs to know which is the counter clockwise the road for it. Because it needs to call that road’s next [inaudible]. |
| 0:12:32.6  PERSON 1 | Yeah |
| 0:12:33.5  PERSON 2 | And then that road’s counter clockwise road will be called. So that is how- one of the things that we are doing is unidirectional. If- that’s the thing, I you’re running it bidirectional, you have to assume that it’s going up and down |
| 0:12:51.3  Instructor | Alright, it’s 2 hours. Are you finished? |
| 0:12:57.4  PERSON 2 | We’re nearly there |
| 0:12:58.2  PERSON 1 | Yeah [inaudible] |
| 0:12:59.3  PERSON 2 | We’re nearly there, I think |
| 0:13:01.0  PERSON 1 | Yes. And we can present it to [inaudible] |
| 0:13:09.3  Instructor | Do you want to continue? Or do you want to present? |
| 0:13:13.6  PERSON 2 | Is it? |
| 0:13:14.2  PERSON 1 | Yeah we can present |
| 0:13:15.9  Instructor | Alright, I’ll stop this then. |