

Hi.  
  
In this video we are going to discuss a certain characteristic of relationships, the degree of a relationship.  
  
This will be important when we want to represent later on relationships with our tables.  
  
The degree of a relationship is basically one of the three.  
  
It's either a one to one relationship, a one to many relationship, and a many to many relationship.  
  
So what's a typical one to one relationship?  
  
Well, team could be one entity, like football team.  
  
And there are managers, which is another entity.  
  
And each one entity team has one manager and each manager manages one team.  
  
This is a one to one relationship.  
  
Because if you look at the relationship occurrence, then you will see that there will be for each entity on the one side, only one occurrence in the relationship and vice versa for each occurrence.  
  
Sorry, for each entity on the other side.  
  
So in this case, one side is team and the other one manager.  
  
For each manager there will be only one occurrence or at most one occurrence in this relationship.  
  
So this was one to one team manager.  
  
One to many would be.  
  
For example, we have matches on the one hand and we have goals on the other hand.  
  
So if you want to connect matches and the goals, then one match could be in the relationship with many goals.  
  
But a goal can be at most related to one match.  
  
A goal cannot be in two different matches.  
  
And then finally we have many to many relationship, for example, students and classes.  
  
So on the one hand we have the entity student, entity type student and the entity type classes.  
  
Now if you look at the occurrence, the relationship occurrence for a student, a student might be enrolled into several classes.  
  
So there might be several entries from for the same student.  
  
So it's definitely at least one too many.  
  
And on the other side the class has also.  
  
Each class can also have several occurrences because each class might have several students enrolled.  
  
So one student might be related to several classes and one class will be related to several students.  
  
So it's a many to many relationships.  
  
So to understand the degree of relationship better, what we use is what's called the occurrence diagram.  
  
The occurrence diagram works as follows.  
  
So suppose we have a relationship.  
  
We write the name of the relationship and we write the names of the entity types involved in this relationship.  
  
So we have in this case a relationship stores which is between warehouses and products.  
  
What we then do is we just list all the entities that are part of the entity type.  
  
So we have all the warehouses.  
  
In this case we have two warehouses, one in London and one in Paris.  
  
And then we list also all the products.  
  
And whenever there is an occurrence of the relationship between two entities, we just draw a line so we have here three lines from the warehouse in London to three different products.  
  
And we have two lines from the warehouse in Paris to two other products.  
  
But if you now look at this diagram, you will see that one warehouse might be related to several things to several products.  
  
But if you just look at the part that we see, it seems that a product will be only related to one warehouse.  
  
There's no line, there's no product which is related to two different warehouses.  
  
So what we see here is a one to many relationship.  
  
One warehouse might be related to many products, but each product is related to one warehouse.  
  
This is a occurrence diagram of a one to many relationship.  
  
And so similarly you can draw occurrence diagrams to any relationship you meet.  
  
And just to show you the different types that you will encounter.  
  
So let's start with the first one.  
  
So here you have like the dots on the one side correspond to the entities on the one side of the relationship.  
  
And on the other side, on the other side of the relationship.  
  
And again, the lines should indicate the occurrence of a relationship.  
  
And so now here you see just the dots from the left side are related to many on the other side and vice versa.  
  
There are some dots which are related on the right side to many on the left side.  
  
So they're basically both many to many relationship, because we have things on both sides which might be related to many on the other side.  
  
This is a typical many to many relationship occurrences occurrence diagram.  
  
Now the next one is something which we saw already.  
  
This is like on one hand we have things which are connected to only one thing on the other side.  
  
But then on the right hand side we have things that are connected to many on the other side.  
  
So this is like similar to the previous example, but now the one side is the other side, so to speak.  
  
So this is a many to one relationship.  
  
So it's always a bit tricky.  
  
There's one to many or many to one.  
  
We think of them in the same way.  
  
You just have to make sure that you write the many on the many side and the one on the one side.  
  
And then finally there's one more relationship.  
  
And here you see that one entity is connected to at most one on the other side in both ways.  
  
And so this is a typical one to one relationship.  
  
So here we have the three diagrams, one for many to many, one for many to one and one for one to one.  
  
One to many would be just the many to one, but flipped around.  
  
So this finishes the discussion of the degree of a relationship.  
  
Let's have a brief look at the example Again, so if we look back at the example, what were the relationships that we were talking about?  
  
We had the allocated to relationship between routes and buses.  
  
Now let's go back to the description.  
  
Each bus is allocated to a particular route, so each bus will be allocated to at most one route.  
  
But I think we can safely assume that a route might have several buses allocated, so it's a one to many relationship between routes and buses.  
  
One route might have several buses, but each bus is connected to one route.  
  
So now we have also the passes through relationship between routes and towns and stages and towns.  
  
And it should be clear, even without looking at the details of the description, that many towns, a route might be connected to many towns and vice versa, a town might have several bus routes through it.  
  
So that's a many to many relationship.  
  
So both of these passes through relationships are many to many relationships.  
  
Then we have drivers allocated to stages, and it said one or more drivers are allocated to each stage.  
  
That means that the relationship between stages and drivers is that one stage has several drivers, but a driver is allocated to a certain stage.  
  
So it's a one to many relationship between stages and drivers.  
  
And then finally we said that routes have stages.  
  
So this is again a one to many relationship, because one route will be possibly related to many stages, but a stage is the stage of a certain route.  
  
So somehow one has to think through these examples.  
  
And we're going to practise this after the video, but it's important later on if we turn our entities and relationships into actual tables.  
  
Thanks for listening, See you in the next video.