Introduction to Modern Application Development
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Module - P7
Lecture - 15
Practical: Interacting with a DBMS

Hi all. Welcome to Module - P7. And this module, we will be doing some basic Interactions with DBMS.

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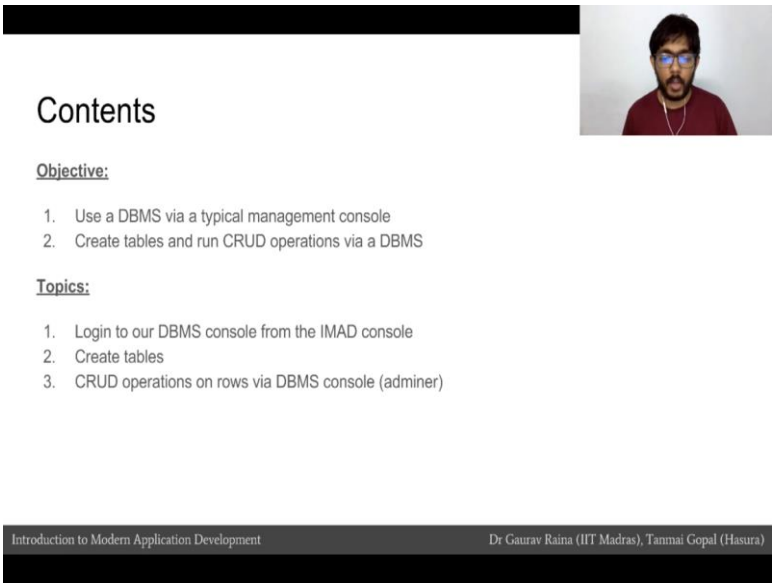

We will be using the DBMS via a typical management console or web base management console. In this case, the console is called Adminer, but similar consoles are PHP my admin, MySQL and say RockMongo for MongoDB. If we are going to create a few tables and run a few create, read, update, delete are also known as CRUD. And we are going to run some CRUD operations we are the DBMS on the on our database.

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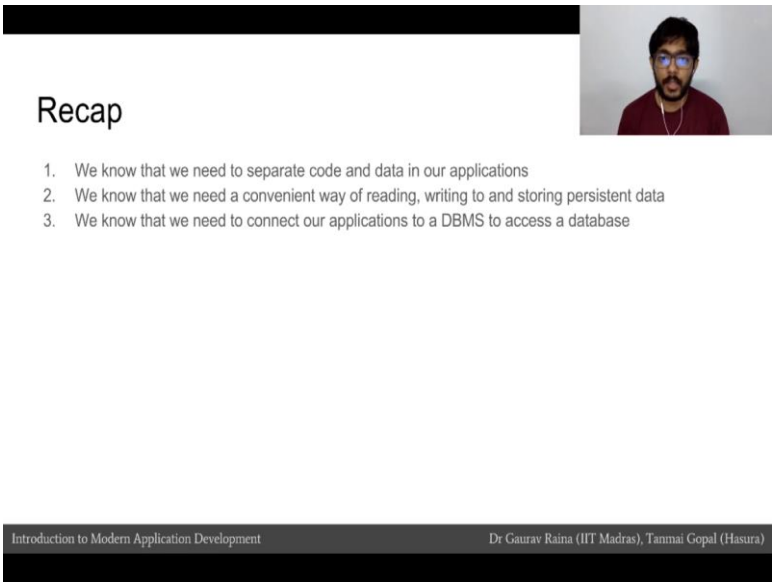

Quickly recap what we have learnt so far. We have learnt that we need to separate code and data in our applications. We also need we have also learnt that we need a convenient way of reading writing, writing to and storing persistent data into what we call a database. And applications that allow us to do this easily are called DBMSs.

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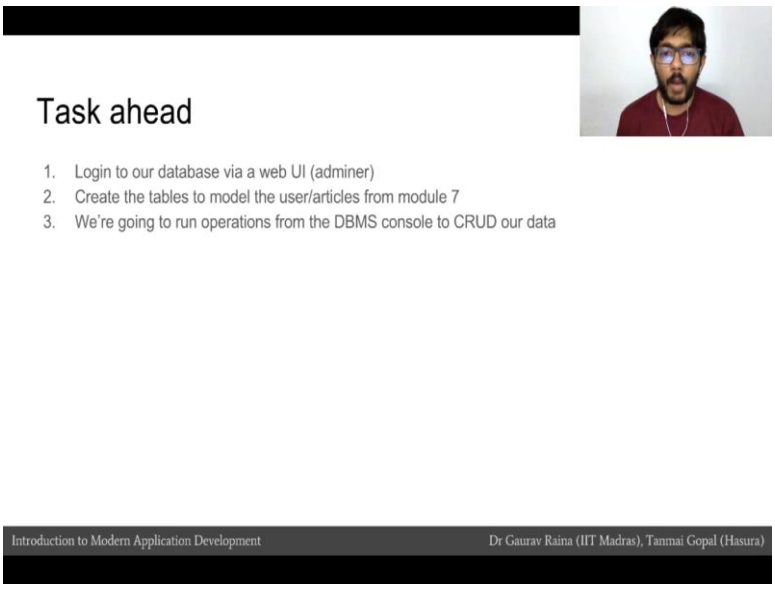

So, we are going to login our database via a web. And we have the management console app which is called Adminer. We are going to create the tables that model the user and

the articles from the last module. And then we are going to run some common operation on our data.

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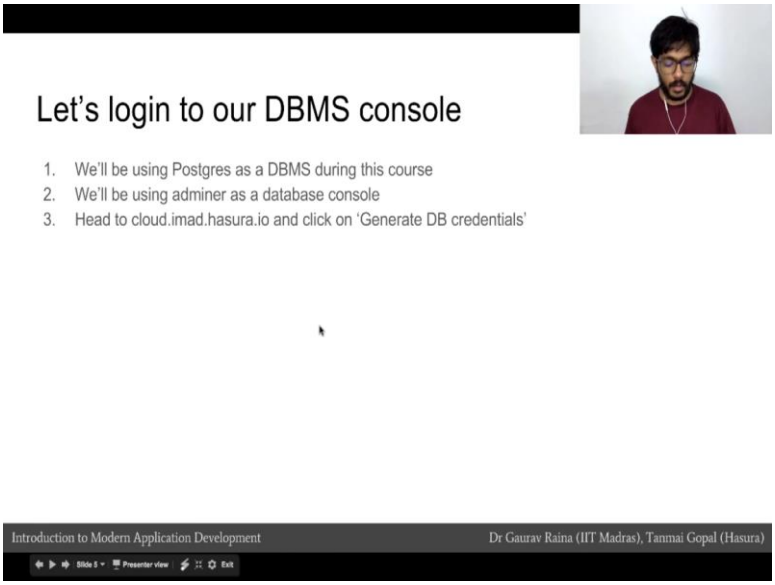

To generate your database credential head to the cloud.imad.hasura.io console.

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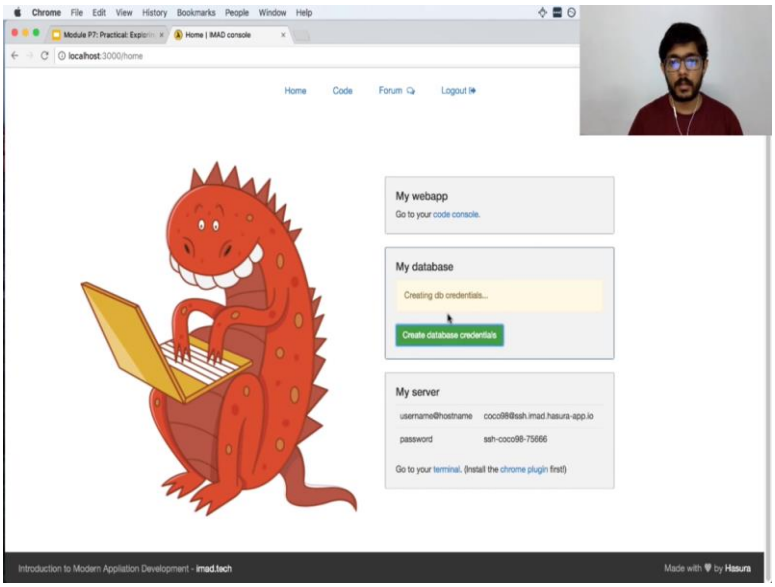

So I click on create database credentials.

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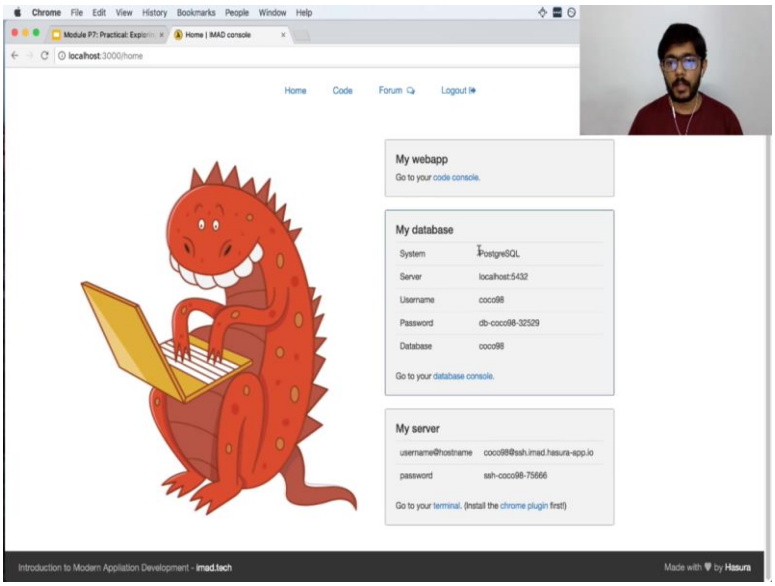

And I get the credentials to access my database.

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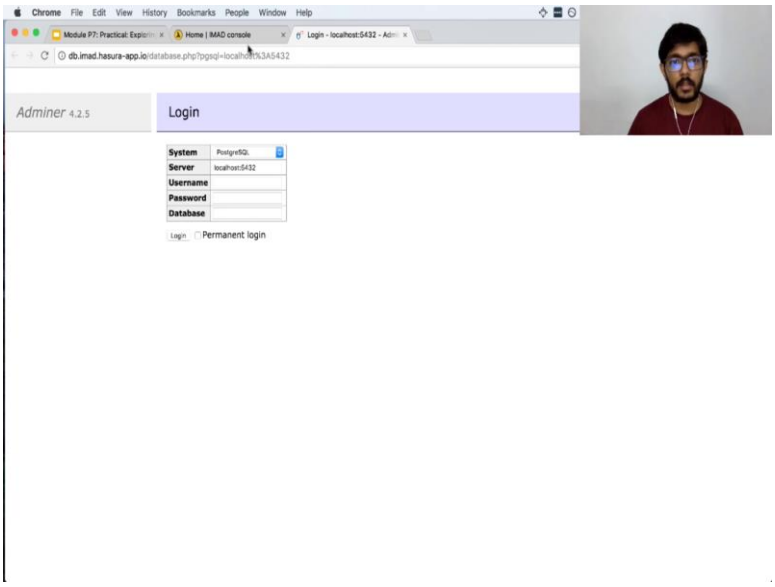

To head to the database console, click on this link. I have to copy my credentials here. Let us get the username, and let us get the password. The database that you have login into is the same as the username. So, we enter that as well I say I want to stay logged in and I click on login. I save the password.

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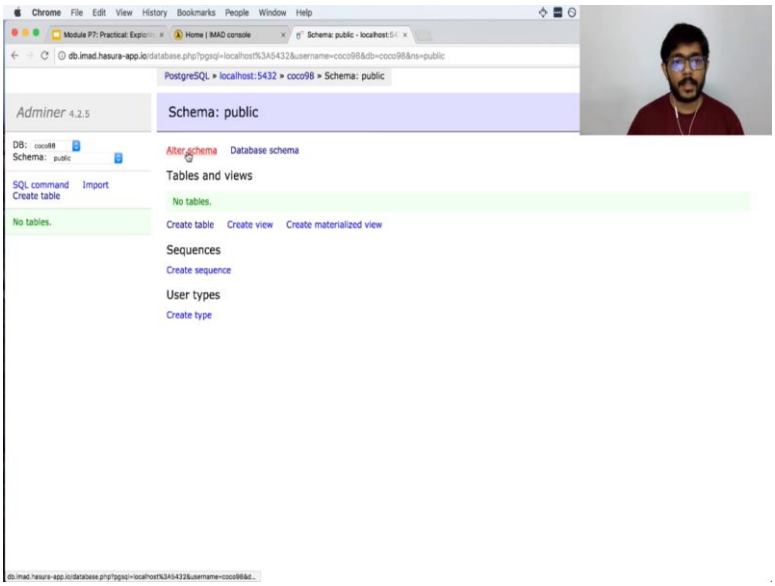

Now you can see that we have access to our database. So, we already have a database and a database is called my case coco 98.

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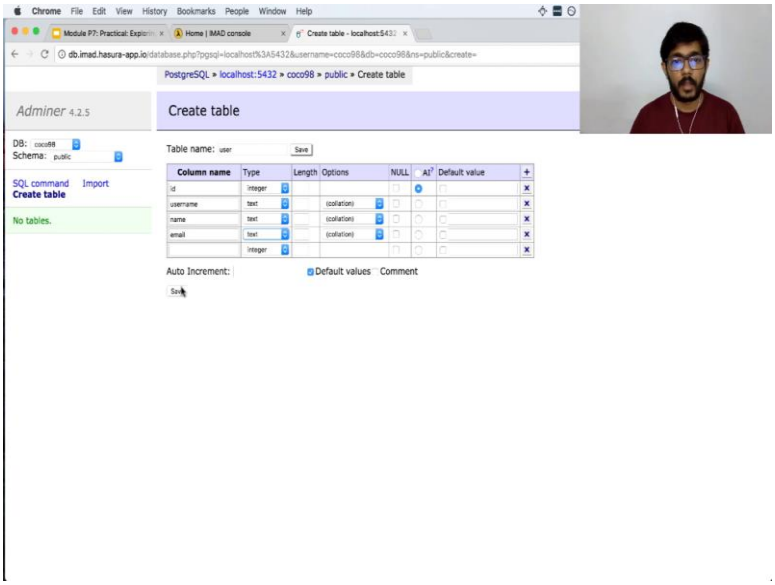

Let us create a new table. Let us start of by creating a user table, so table name is called user. The first column is an id and I let the id be an integer. Most databases especially relational databases have an option of making a column auto incrementing; and auto incrementing means that the value of id will keep increasing whenever a new row is inserted.

So, you will see and how that works in a bit. And then I have a user name which would be a text column, I will have a name; it should be also a text column. And I can add email also a text column I so let saved this.

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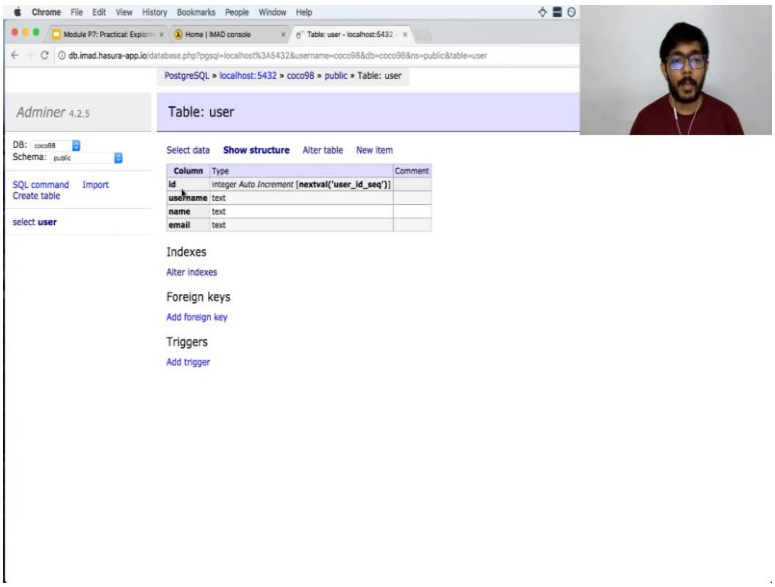

Now, let us create, so we can see that the structure of the table is that there is an id, username, name and email, these are the columns and you can see the types of the columns. Let us add a primary key and a primary key will allow us to identify a particular row in this table uniquely. Now people might have usernames that are the same or the names that are the same; and people might even have similar emails, but I want the id to be unique, so because the id is unique will create a primary key on the id column.

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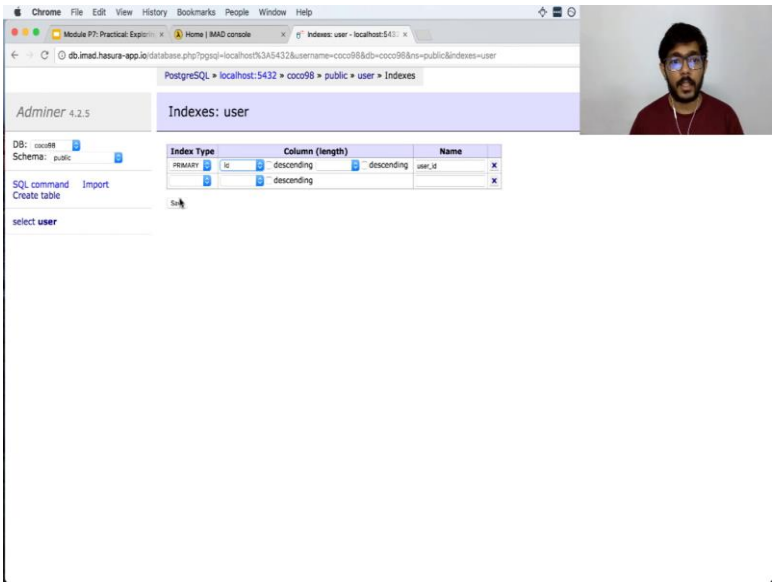

So I add an index and I say index type is primary, I set the column to id, and I will save it.

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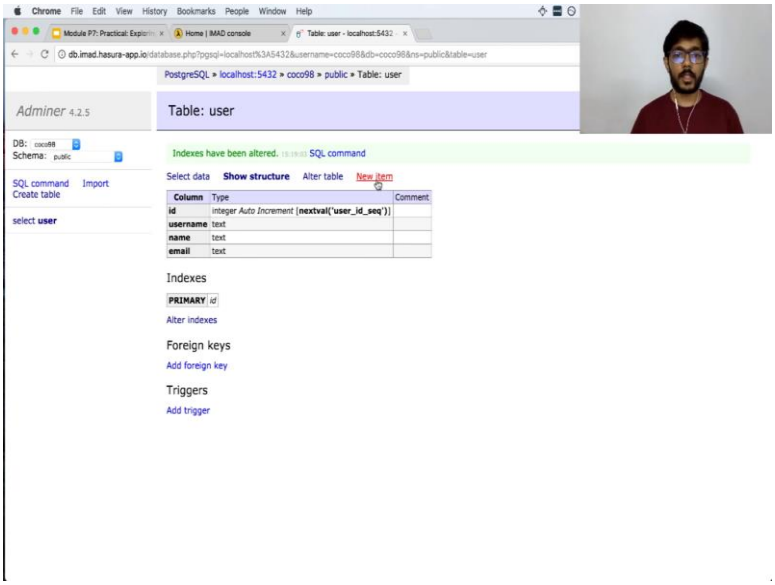

Now I have a primary key you can see that the indexes list, there is an index called primary key which is the id column.

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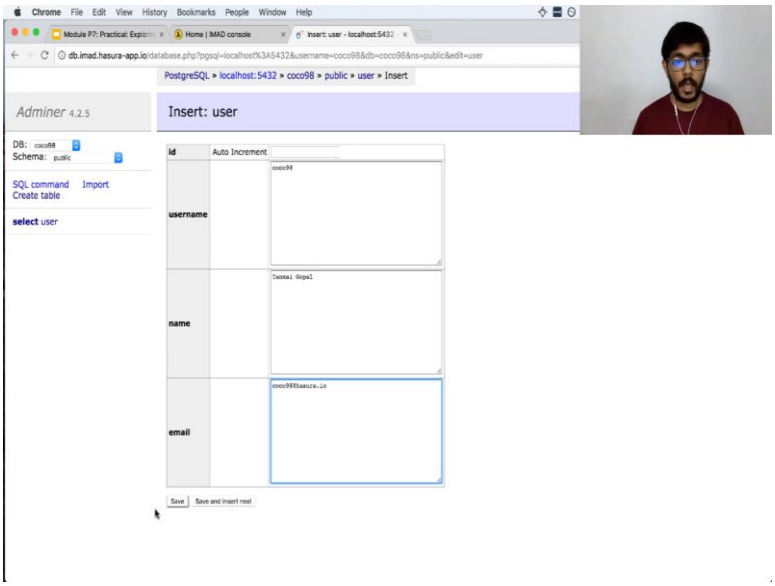

Let us try to insert some data. I would not insert anything in the id type; and because the by default, it will increase automatically. And I will set the username to coco 98 and I save this.

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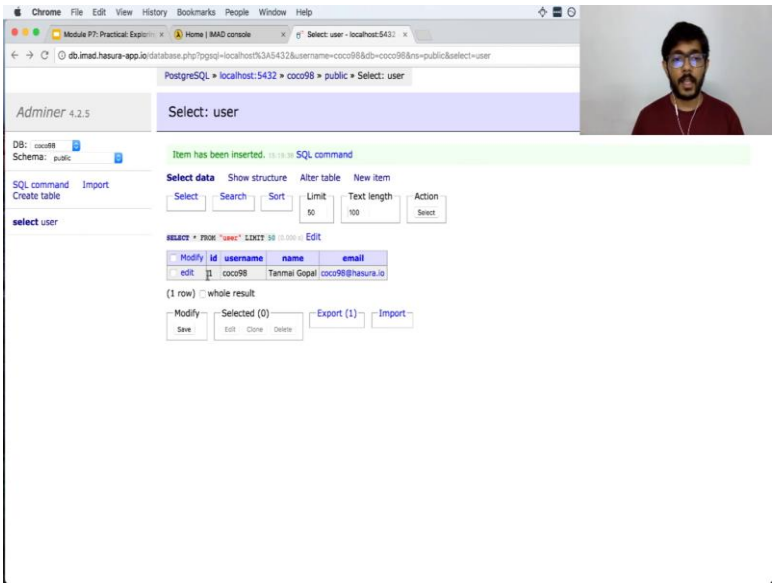

You can see that a row has been added and the id is set to 1 automatically.

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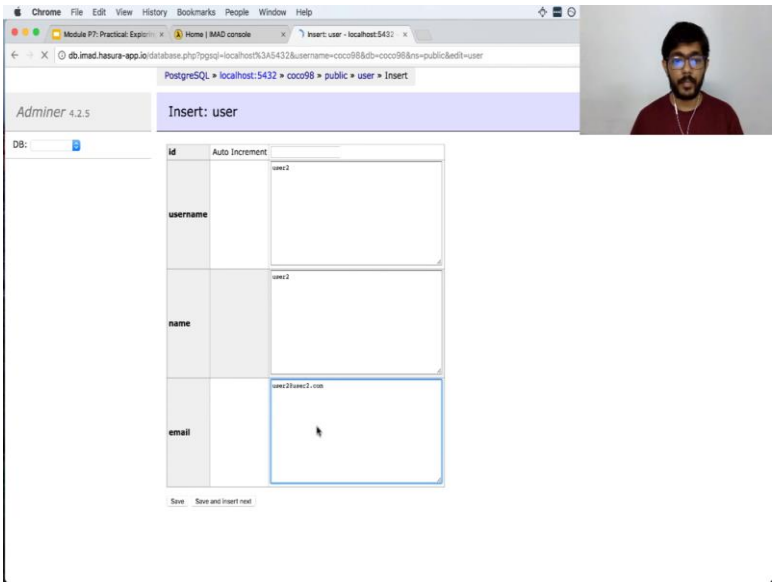

Let us create a new item and let say user 2; user2@user2.com and save this.

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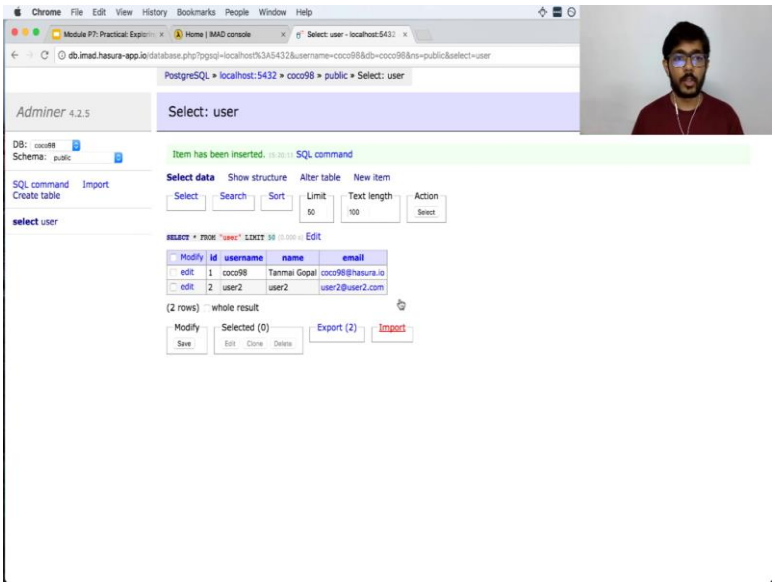

Once you save this, you will see if the id is automatically set to 2. So this is because it is auto incrementing. So we added two rows in this.

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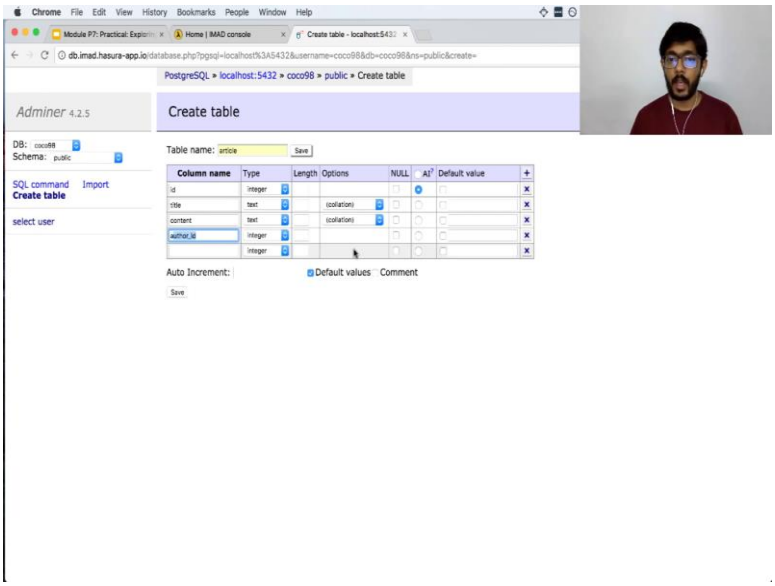

Now let us create a new table called the article table. So, I go back here and click on create table, and the create table called the article table. And let say id which is again auto incrementing. Let us set the title of the article, which is a text.

And content of the article which is again text. Let us say that the article is an author, which will use the id which is an integer type. This is the author of the article and they should really come from the user table. Let us save this.

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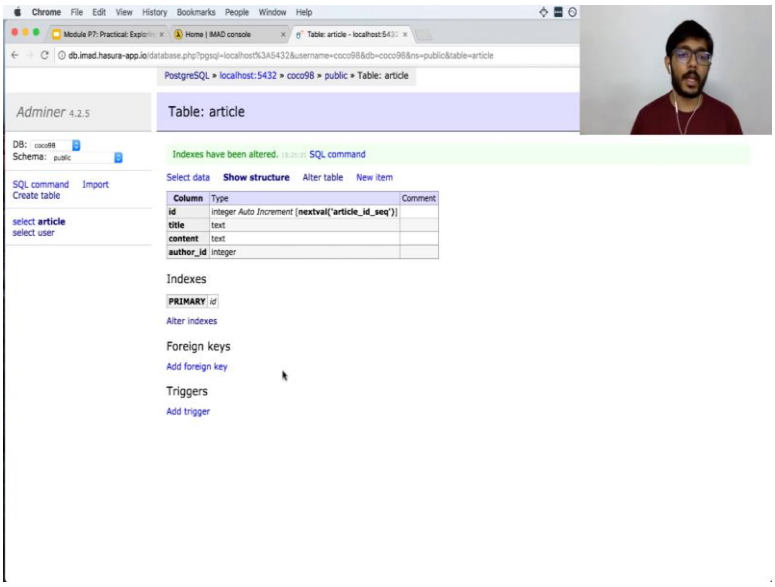

Let us make id the primary key of this table too. So, now we have these 4 columns and the primary key set to id.

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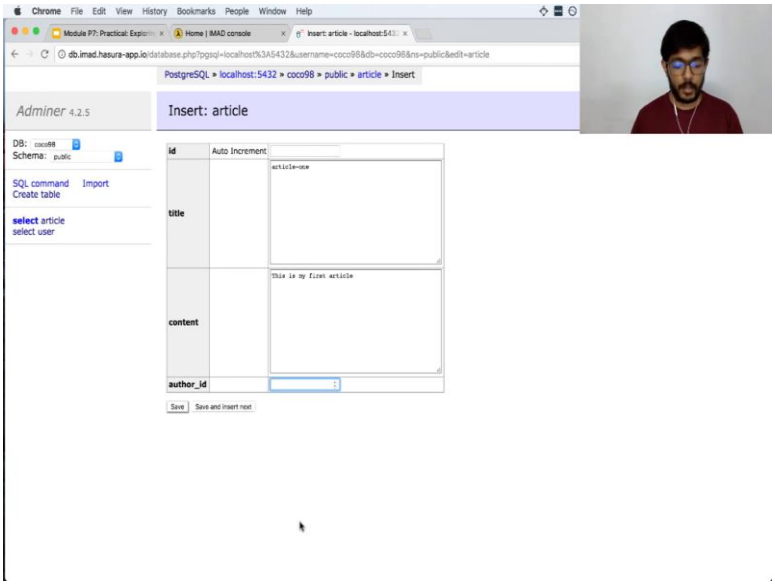

Let us insert some values. So, I go and check id for the article, let say this is article 1, this is my first article. And let say the authors' id is 1, and I save this.

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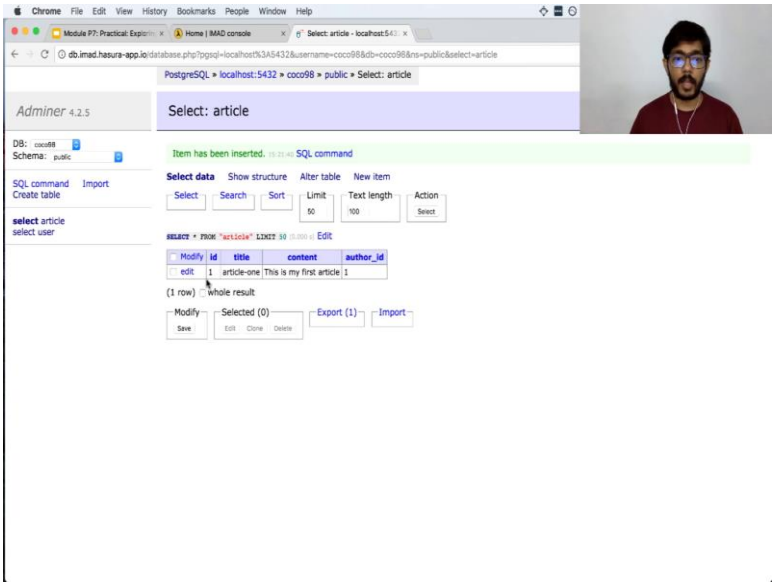

So, I have element in the article table; I have a row in the article table.

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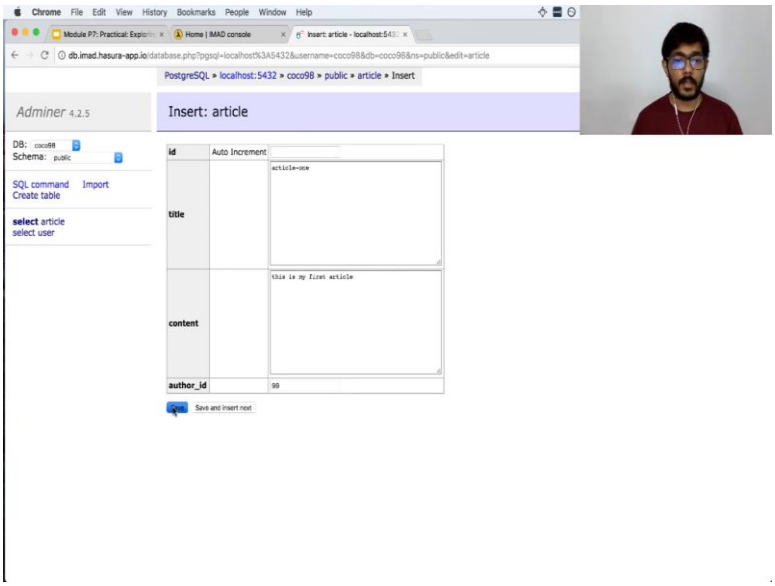

(Refer Time: 05:11) another item, so let us insert another article, this is also called article 1. And this is my first article by a different user, and let say this author id is 99. And I save it.

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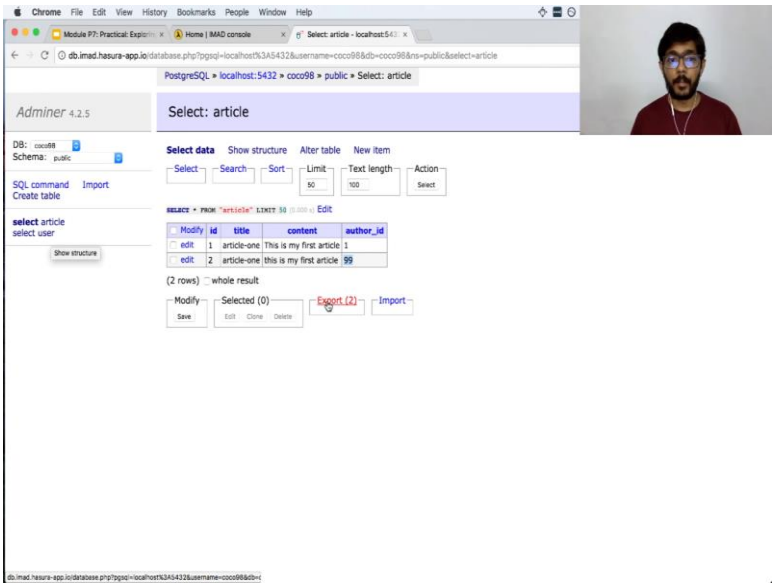

So, I have two articles and I have two users right, but obviously, the problem is that I have an article and this articles author does not actually exist in the author table. So, the author, there are only two authors 1 and 2, but there is no author for there is no author called 99. And so how do we ensure that we can actually constrain these values two

values that are in the author that are in the user table, so the way to do that is to create something called a foreign key constraint.

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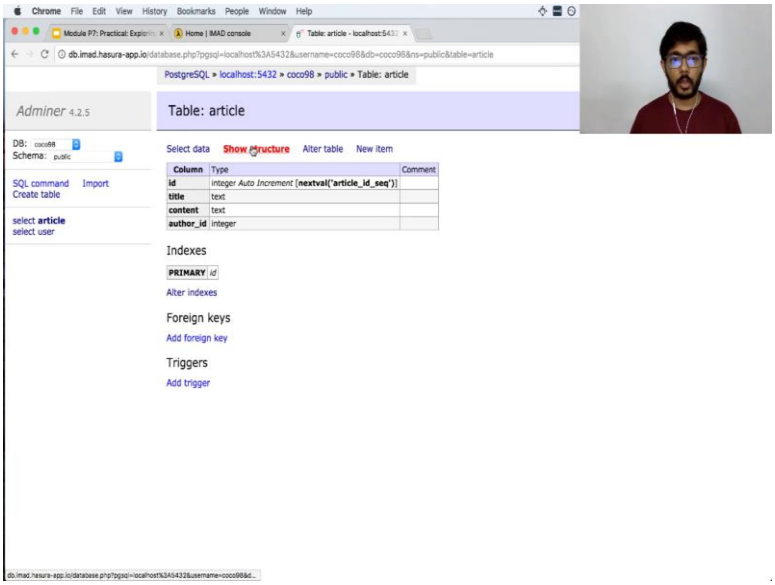

Let us create a foreign key constraint so that the author id is always a value from the users id call. So go to the show structure, you see a heading called foreign keys. Click on add foreign key.

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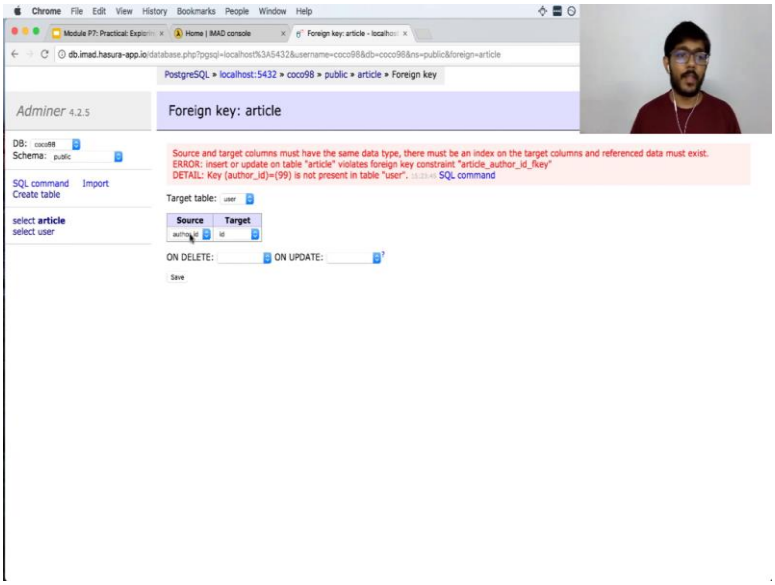

Set the target table to the user table. You can set that the source as the author id and the target is id. And you can click on save. So as soon this happen, you can see that we got

an error. And now let us read this error right. So, this error says that key author id equal to 99 is not present in table user, because we already have inconsistent data; we are not able to add the foreign key.

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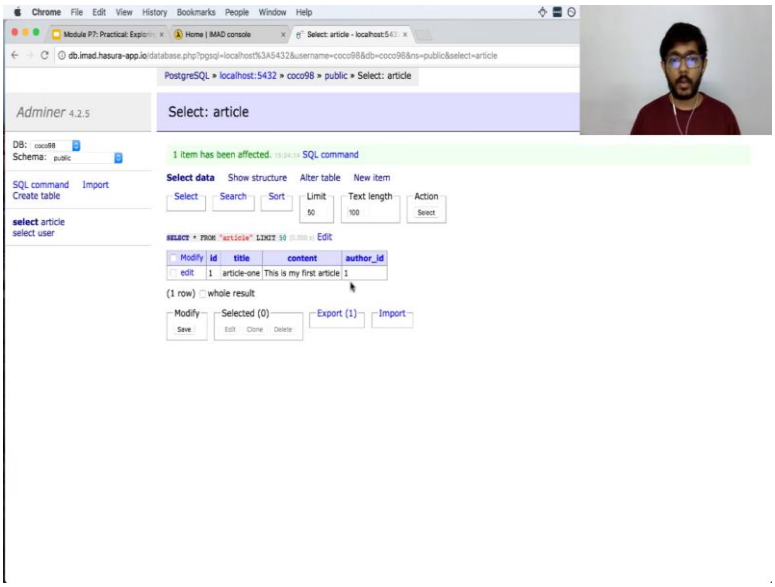

Let us go and remove that inconsistent element. So, I select that element and I click on delete right and that row is gone. Let us try to add the foreign key again; my author id is the user id, you can save.

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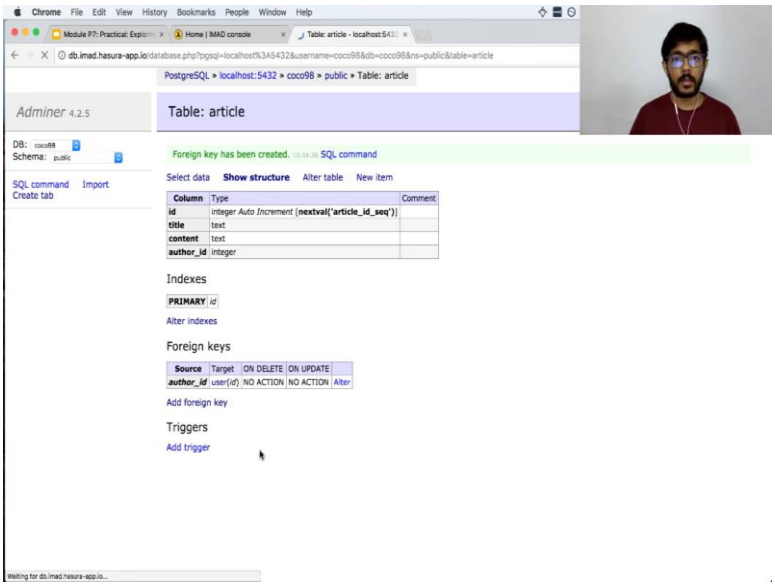

And you can see this, the foreign key is been created.

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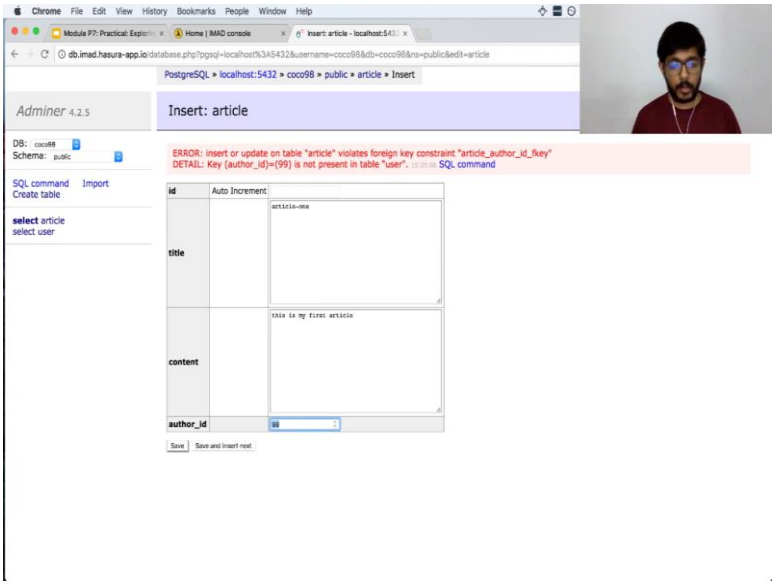

Now if you try to insert another article, and insert a random author id, let say a 99. And you try to save it, you will get an error. And the error says insert or update on table article violates the foreign key constraint, article author id foreign key, which is the name of the constraint whether the database is given to your foreign key constraint. If you change this to something that exist like two, and save it, the (Refer Time: 07:20) go through. So, this is our basic modeling done.

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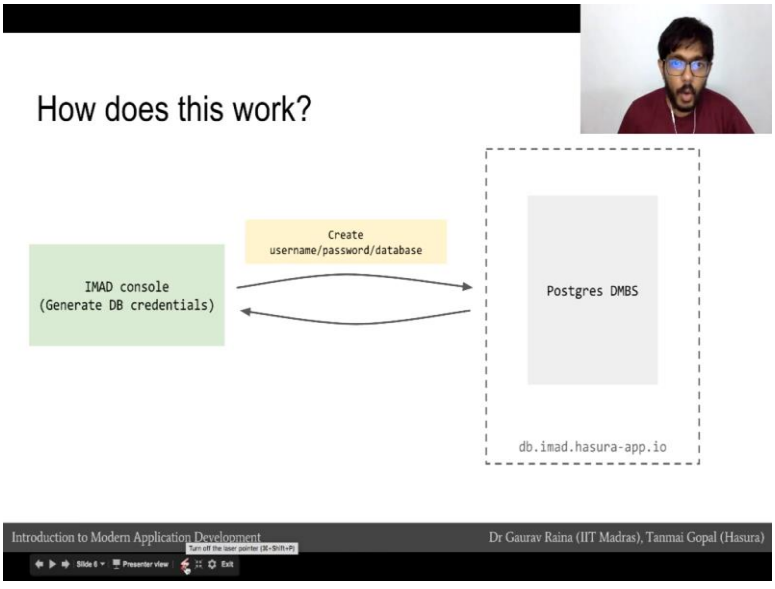

Let us try to understand how all of got we did works. So when we went into the IMAD console and clicked on clicked on the buttons that are generate DB credentials, what actually happened is that there was a database or DBMS that was sitting on the db.imad.hassuraapp.io server. And on this machine there was a Postgres DBMS; the IMAD console contacting this DBMS, and run operations to create the username, the password and the database. Once these are successfully created, this data was taken aback by the IMAD console and display to us on the UI.

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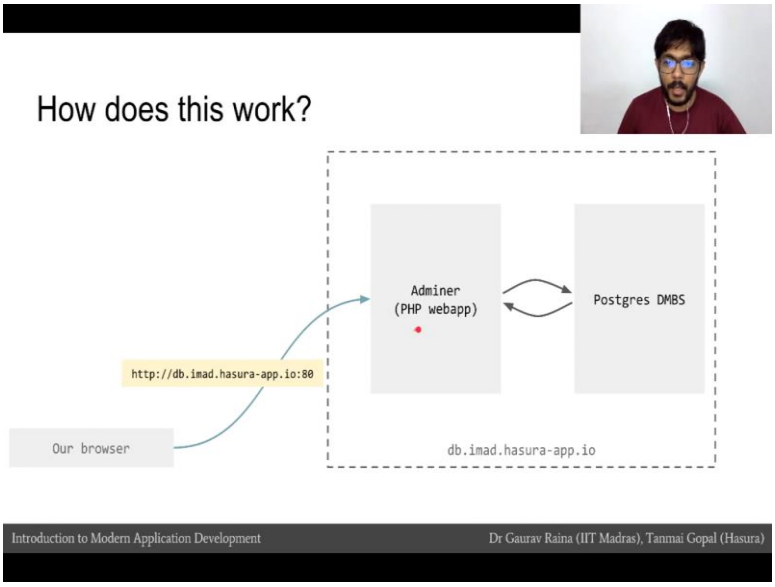

Once we went to the link db.imad.hassuraapp.io, which is the link that we got when we clicked on generating credentials, our browser opened up another web app and this is the Adminer web app which was which is PHP web app and this is what I call the DBMS console which can also be say PHP my Adminer or RockMongo. And when we logged into the DBMS and when we create a tables, when we create a rows, whenever we did these things what was happening was that we will giving commands to the web app, we have the UI and by clicking on buttons and by entering data, and the web app was actually taking the information and running commands on the DBMS.

So, we are not actually running commands directly on the Postgres DBMS, we were running commands on the Adminer web app, and this was taken and executed on the DBMS. So this is this is what was really happening right; and the Adminer web app or the PHP web app and the Postgres DBMS who are all about sitting together on the

db.imad.hassuraapp.io machine. So, on this machine, we have two servers now the web server which listens to our commands and the DBMS server.

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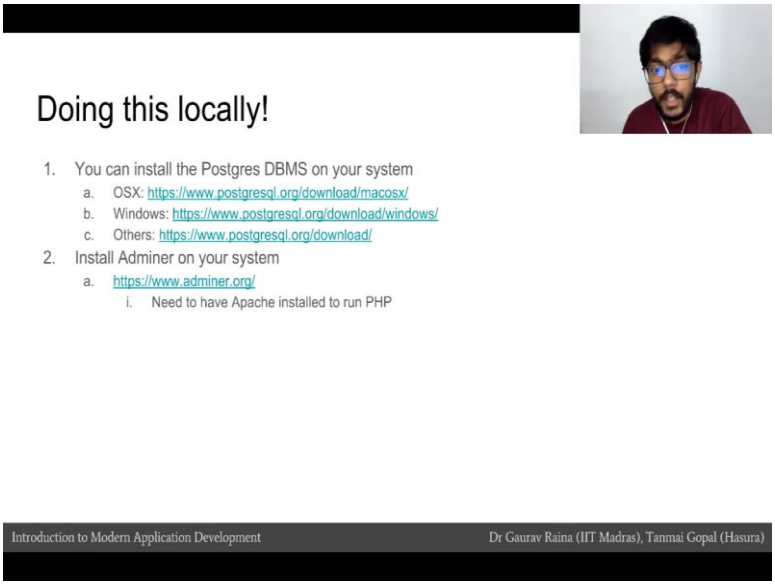

You can also run this entire system locally by installing the Postgres DBMS on your system and by installing Adminer, which is the DBMS console on your system. There are various installation guides; I have provided links of the official guides for installing on windows, Mac and Linux.

You will also then have to install Adminer; Adminer is a very simple PHP application. So to install Adminer or a rather to run Adminer, you will need to install PHP and apache on your system. Just Google for how to install apache and PHP on Windows or Linux or Mac, and you will find several useful guides to getting this running on your system.

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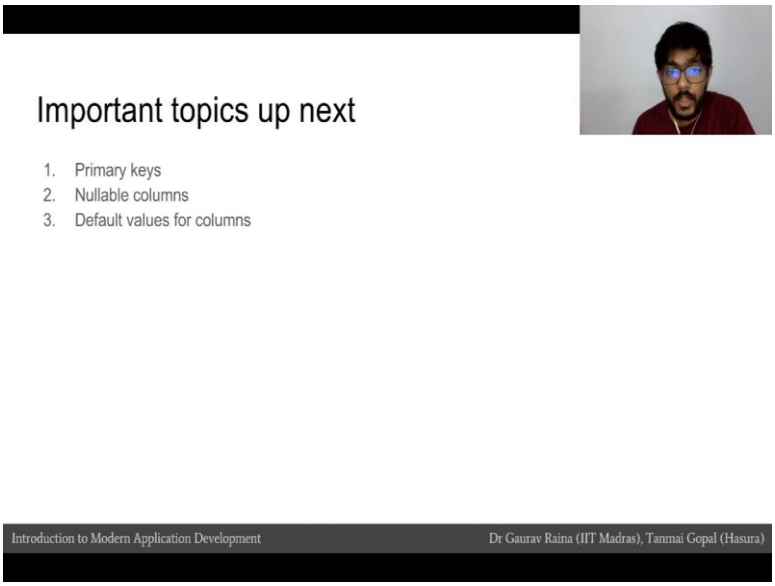

A few important topics that which we just briefly touched upon about which we will get into more detail later are primary keys, Nullable columns and default values for columns. So, we go into more detail about each of these things in the next module.

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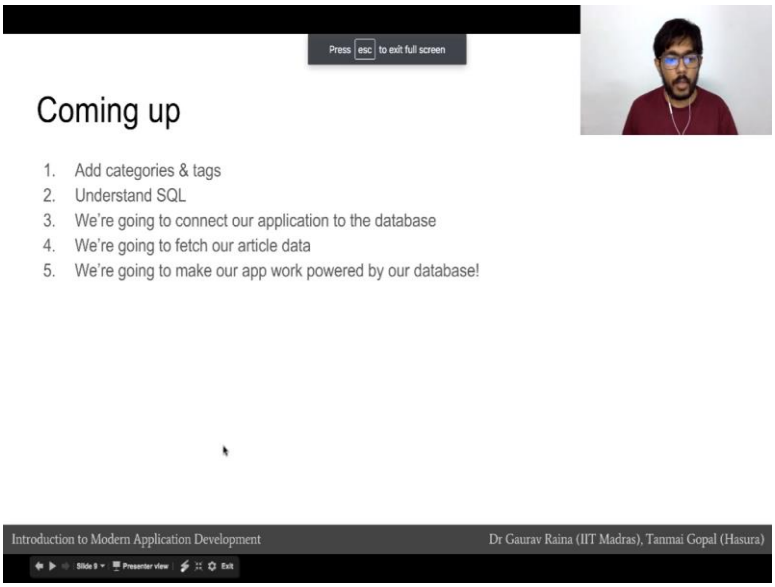

In the next module, we are going to add categories and tags and then we are going to look at what SQL is. After that we are going to connect our application to the database that we have made. And we are going to fetch our article data of our web app from this database.