



Speaker 1

Today is session number four of our.



Speaker 2

Development on creation Platform guided learning set of practical sessions that we do for.



Speaker 1

Developing different features and functionality that.



Speaker 2

Requires some programming on Creature platform. And previously we finished with building our.



Speaker 1

Own section named Realty and we managed.



Speaker 2

To set up List View, we managed to make a form page for it.



Speaker 1

We also added some default values and.



Speaker 2

We made some required fields and it.



Speaker 1

Was pretty much easy and we used.



Speaker 2

Only no code customization tools for this.



Speaker 1

Also we managed to make a button.



Speaker 2

Which had a custom handler. So we made a button push me button and this custom handler shows some console output. We can also display some pop up messages and also we can do any.



Speaker 1

Kind of JavaScript code behind this button. Today I will show you a bit.



Speaker 2

More complicated examples of how you can.



Speaker 1

Do some programming and coding and also we will discuss debugging.



Speaker 2

So you will see how it's possible.



Speaker 1

To stop execution of your code and.



Speaker 2

Make it executed line by line.



Speaker 1

By line and to see all the.



Speaker 2

Variables and to see all the conditions.



Speaker 1

So so to make something that you probably get used to do when you operate with any like modern version, modern.



Speaker 2

Development environment like Visual Studio or other so today question today's session I would.



Speaker 1

Like to warm up with Simple Question.



Speaker 2

Which is about organizing of your sections. It's probably not so obvious so I will tell you all apps it's like.



Speaker 1

Synthetic Workplace which includes all registered sections in one list.



Speaker 2

We have Studio out of the box workplace, we have customer360 because it's a.



Speaker 1

Result of loaded contacts and accounts.



Speaker 2

So our loaded customer360 app also caused creation of new workplace. Such workplaces also can be created, you can manage them and you can put your sections into it. You can also create data items for workplaces if you want to transport them between environments. I would like to show you something that I think will be useful. It's about organizing of Workplace for your users and for my developer purpose it will be quite often when we will need to switch between our created section and some system sections like Process library, process logs or lookups and system settings. So I plan simply to put my new Created Reality section into this Studio Workplace.



Speaker 1

That will be very easy, but I.



Speaker 2

Need to demonstrate it.



Speaker 1

To show how you can do this.



Speaker 2

Go to Settings then find Workplace Setup. Workplace Setup helps us to create new workplace or to manage existing workplaces. As you can see, some workplaces are present but not shown even if we are administrators. So that it's very interesting because it's one of not so many places where user permissions Are still matter when we.



Speaker 1

Run system under administrator privilege.



Speaker 2

So now you can see I see only four workplaces.

Speaker 1



But in total it looks like we.



Speaker 2

Have at least 5. And productivity workplace seems to not showing anything and not having any permission settings.



Speaker 1

So that's probably why we are not seeing it.



Speaker 2

Okay, let's go to studio workplace. We have set of sections for a workplace. Also it will be interesting for you to know that sections have positions.



Speaker 1

Let me show you columns set up for sections list. We can arrange and add the position column.



Speaker 2

Now you will understand why I display this position. Any section in a workplace has its position and position organizes order. So it is used to specify order of sections in a workplace. If we rearrange such items such sections position will be changed. And finally your sections will be displayed in a different order.



Speaker 1

Sometimes this order is not so consistent.



Speaker 2

You see UI management and message templates, they have the same position.



Speaker 1

And sometimes UI management will be on top.



Speaker 2

Sometimes message templates will be on top depending on how data will be loaded at a certain time.



Speaker 1

Because sorting by this position it makes some ambitious result. Okay, so what I plan to do.



Speaker 2

I plan to add one more section in the list system will show me only sections that are not listed here. And it's interesting to see here that we have couple of accounts section.



Speaker 1

It's very unusual.



Speaker 2

Couple of calls and couple of contacts. One of the possible explanation why we.



Speaker 1

Have two different account section is that.



Speaker 2

One of them is section for Classic.



Speaker 1

Ui, another is Freedom UI section. We can also display columns here which.



Speaker 2

Will let you understand what we are looking at.



Speaker 1

So we can just squeeze a bit title display e.g.



Speaker 2

Created on column save column settings.



Speaker 1

Now when we try to add you.



Speaker 2

Will see title, you will see created on and one of them is 19, another is 24. And it looks like first one is.



Speaker 1

Classic UI, second one which is younger.



Speaker 2

This is freedom UI.



Speaker 1

So that's how you can detect which one is necessary for you to add.



Speaker 2

In my case, I plan to find realty section created recently and we can see it at the end of this list. You see, its position is also not so consistent.



Speaker 1

But it guarantees that it will be at the end.



Speaker 2

But it's not so comfortable to see this item at the very end of this list. So possibly we would like to move it upper.



Speaker 1

So let's go to do this.



Speaker 2

You can move it even on the first top position. Unfortunately we cannot move it upper than home. And if you don't really like, we can suppress this home page for a workplace. You can see homepage you can clear.



Speaker 1

It if you want and realty will be position zero. So when we save it we can.



Speaker 2

Also reward this page. Probably we will see our reality section directly at Studio Workplace at zero position. But it's also important to say that other items were changed so they changed.



Speaker 1

Their position because reality shifted them.



Speaker 2


So if we want to transport such change, we must make a corresponding data item. Or we can use help of data binding tool. This data binding tool helps us to remember positions of 0 sections here and.




Speaker 1




We can just click Bind Workplace, specify.

 Speaker 2

Target package and click save. Then we can see what was created. It was three different data items. One of them is sysworkplace studio. It doesn't really necessary because this workplace is already present at our system.

 Speaker 1


And when we for example try to.

 Speaker 2

Actualize data and save it, we will see warning and this warning will tell.

 Speaker 1


Us that such Studio Workplace was already.

 Speaker 2

Registered somewhere in parent package.

 Speaker 1


And even more it was registered one more time in another parent package.

 Speaker 2

But it's not a big mistake. So it's not a mistake at all. This is warning that tells us that.

 Speaker 1

Such data is already present somewhere in parent packages data items. So maybe we are doing it. So something that is unnecessary, but let it be. You can save it this warning, but.

 Speaker 2

It's not a mistake. Another one is sys module in Workplace. This is a system table which keeps information about section which is called module and workplace.



Speaker 1

So you can see data and you can see all the sections in Workplace.



Speaker 2

Studio were listed here. And also it's important to mention that forced update option must be applied for.



Speaker 1

Position column because otherwise update or position.



Speaker 2

Will be not performed.



Speaker 1

You probably remember from our Tuesday session that when you create data items, it's.



Speaker 3

Possible that you will make data item that will perform update, not an insert.



Speaker 1

In case of update in case of.



Speaker 3

Target record was found.



Speaker 1

By the way, I prefer to make.



Speaker 2

It not by this key. I prefer to make it by this.



Speaker 1

Key and found by id.



Speaker 3

So if record was found by ID.



Speaker 1

And then it will update target database according to loaded data and in our case only position will be updated. Okay, we can save it.



Speaker 2

Now you can see that save was.



Speaker 1

Successful, but we have a lot of warnings related to parent data that was already registered in base product.



Speaker 2

And this is valid set of warnings.



Speaker 1

Because our change caused the change of.



Speaker 2

Position of all previously registered sections in Studio Workplace.



Speaker 1

So simply all of the registered sections had different position because we moved our reality to the top and we.



Speaker 2

Had a warning that tells us that you're trying to Change the data which was originally declared somewhere else.



Speaker 1

So maybe you're doing it wrong.



Speaker 2

So please take care. Here is your warning.



Speaker 1

But this warning is still so we can ignore this. And last one is admin unit in workplace.



Speaker 2

This is about access permissions. System administrators have full access to Studio.



Speaker 1

Workplace and probably this data is also.



Speaker 2

Present in our database.



Speaker 1

Yes, so maybe not so necessary to save it.



Speaker 2

So it's warning, not an error in case if you have an error. For example, you save the same data twice in the same package.



Speaker 1

In this case, save button will show you error message and save button will not disappear. If save button was disappeared, means your.



Speaker 2

Data item was normally saved.



Speaker 1

If save button did not disappear, it means an error. It's like serious mistake and the system.



Speaker 2

Will not allow you to save such data. It happens only when you save the.



Speaker 1

Same data twice in the same package. Okay, so it was set of client modules of sorry, set of data items.



Speaker 2

Automatically created by help of data binding tool.



Speaker 1

When we registered our reality section in a studio workplace, now we have comfort. Here is our new created section.



Speaker 2

Here is set of processes we will manage very soon. Here we have lookups which we also often look at.



Speaker 1

And we'll use it and some other.



Speaker 2

System sections that we may need. So we now have very comfortable conditions.



Speaker 1

And easy transitions between different sections. So it was just a simple example how you can organize your workplaces in.



Speaker 2

More complicated based products like sales, service and marketing. You will see more workplaces, more sections inside. And you also can create your own workplace with sections that you think will be necessary to use for your end.



Speaker 1

Users with particular roles.



Speaker 2

And you can provide permissions for such.



Speaker 1

Sections and for such workplaces.



Speaker 2

And what is important for you to understand that you can create many different.



Speaker 1

Workplaces and include the same section many times. So if you added some section to.



Speaker 2

Some workplace, it doesn't mean that you can't do it with another workplace.



Speaker 1

So one context section can be added.



Speaker 2

In different places with no limitations.



Speaker 1

In my case, I have my applications.



Speaker 2

Workplace with real T section and I also have.



Speaker 1

Just a second. So what I wanted to show you.



Speaker 2

We can use the same section in.



Speaker 1

Different workplaces and it's not a problem.



Speaker 2

If we specify the same section in different workplaces many times. So physically this is the same section.



Speaker 1

The same data shown in different places. Just a second. Okay, so what we will do today, it was a warm up example that.



Speaker 2

I think will be interesting for you to know. So let's do something more serious. Let's think of improvements of our future section of Our reality section. And now I want you to see how you can do some calculations, how.



Speaker 1

You can do some more serious programming.



Speaker 2

Inside of Creature client side page using.



Speaker 1

Some JavaScript and using creature tools and let's say data platform. First of all I will explain you some business ideas.



Speaker 2

So what we plan to do, my plan is to show you some recalculations and it could be a good example.





Speaker 1

If we for example create one more column, call it commission. So it will be our future profit from the deal. And this commission will be dependent on price. So it's normally and very typical for realty to have commission as some percent from price.



Speaker 2

And also we have to take care.



Speaker 1

About the type offer.



Speaker 2

So for sale we have one formula.



Speaker 1

And for rental we will have another formula.



Speaker 2

Okay, let's do it step by step. So first of all we need new column.



Speaker 1

New column can be added to this very easily. We can just go to modify our page. Then we can add new number column.



Speaker 2

Carefully dropping it here it will be named Commission. And as we have a price in.



Speaker 1

US dollars, so let it be a commission. Also in the same currency, the inner.



Speaker 2

Column name will be USR Commission.



Speaker 1

And we confirm such code for this column. The data format will be decimal with two digits.



Speaker 2

Okay, great.



Speaker 1

Decimal with two digits. And we want to make this commission calculated automatically so we don't allow users.



Speaker 2

To manually change it. That's why I will set read only.



Speaker 1

Option on I temporary hide place attachments tab. So my commission will be read only.



Speaker 3

And also just to make it easier.



Speaker 1

To find in div array, I will name its element code so we can type it as we wish Commission USD. Let it be our element code.



Speaker 3

This element code will be used in view config, div and also physically it.



Speaker 1

Will be used for building real page.



Speaker 3

HTML markup with set of divs inside.



Speaker 1

And this code will be used to name set of items and div.



Speaker 3

HTML tags inside of our page.



Speaker 1

So element code, it's about physical component.



Speaker 2

Representation on the page.



Speaker 1

Okay, you already know this and that's all I can just save System will.



Speaker 2

Automatically modify our object.



Speaker 1

It will save changes to our page code which we can find here if.



Speaker 2

We click open source code. So now let's just click save and.



Speaker 1

That's probably will be enough for the beginning. So this change will be made in objects and in our client module. Okay, finally it's saved.



Speaker 2

Okay, we can move on.



Speaker 1

And now we can close this page editor.



Speaker 2

Go to main page. As you can see, I did not even reload it.



Speaker 1

We can just open it again and.



Speaker 2

Probably we will immediately see our new column and it's read only.



Speaker 1

So you see this lock sign which.



Speaker 2

Tells us that column is read only. So now we need to think of.



Speaker 1

Implementing read calculation and it will be.



Speaker 3

Triggered by change of price.



Speaker 1

And also we want to make it dependent on offer type. So for the sales offer type it will be more or less okay if we make commission like 2% from list price from our price of realty shown here. So to be quite fair and good enough commission for our business and for sales it's totally okay. Now let's create some sample for house for rental. Our rental price will be 1200 bucks for some house in Miami.



Speaker 3

I'm not sure that can we find.



Speaker 1

So cheap houses in Miami for maybe it's not like not in a high season and some area. And as you can see, commission will be recalculated. And we need to make another formula for rentals.



Speaker 3

So for rentals probably it will be.



Speaker 1

Quite enough if we will ask for 50% from monthly payment price if this is a rental.

Speaker 3



So for rentals we will have another percentage. So for sales it will be 1% or 2% value.



Speaker 1

And for rental it will be 50% from price value. So when we will do some calculation we have to take care about it.



Speaker 3

But also you should be mentally ready.



Speaker 1

That in real life business it really often happens that such ratios, such formulas can be changed from time to time. And once we introduce hard coded value like 2% a month later our customer may call us and say, you know.



Speaker 3

Now conditions were changed so we need to modify this percent and now it will be 2.5.



Speaker 1

Could you please change it?



Speaker 3

And if we hard code it, of course it's not so good idea to.



Speaker 1

Go into code and change it. Then deliver changes to production. So it will be really expensive.



Speaker 3

To make such changes.



Speaker 1

And our customer will be not ready will be not really happy if we ask for example for half, maybe for a couple of hours of work to be paid. If we want to change just one number. Ideally customers should be able to change such ratios themselves.



Speaker 3

We have several options to do this. For example, we can make a separate.



Speaker 1

Table which will keep necessary percents.



Speaker 3

Or we can use some system settings for this.



Speaker 1

Or as you can see, our ratio is really stick to offer type. So probably we can add new column to offer type lookup in order to save one value in percent for sales.



Speaker 3

And another value in percent for rentals. I will show you how we can do this.



Speaker 1

Let's focus on objects Again, now we.



Speaker 3

Have offer type object, we can open it for edit. I prefer to work from configuration section. Maybe you would like to focus on application first.



Speaker 1

In this case you can do the same if you. Oh, I did not save it. Oh, sorry. Okay, my fault. Ruby House for rental Save it.



Speaker 3

Great. So if you prefer to focus on.



Speaker 1

Application, you can go to Application hub.



Speaker 3

You may find your realty app, you.



Speaker 1

Might check your data models and that's.



Speaker 3

How you can find corresponding object. Or you can switch to advanced settings.



Speaker 1

To see all the contents of your solution.



Speaker 3

So you may practically do almost the.



Speaker 1

Same as you can do it here. So I just get used to work.





Speaker 3

With this configuration section. Also it has some useful actions like.



Speaker 1

Save packages to file system. So that's why I stick to this.



Speaker 3

Approach and I feel more confident when.



Speaker 1

Work here because I have full available.



Speaker 3

Set of tools to manage my system set my system configuration setup.



Speaker 1

So we opened corresponding object, we have.



Speaker 3

Inheritance from base lookup and that's why we have eight inherited columns and we did not add any other own columns so far. So for each reality offer type for rental or sale, we can add one.



Speaker 1

More column to be number. Maybe we can do it with quite high precision. Okay, two digits after decimal point. We can call it something like commission percent. So we can even specify what is the available range of our data values.



Speaker 3

Here just to make it clear for.



Speaker 1

Any user what type of value should be put here. So if we specify from 0 to 100 it means from 0 to 100% and it will be clear how to.



Speaker 2

Put some value here if you want.



Speaker 3

To save for example 2%.



Speaker 1

One more column is not a big deal, so we can easily add it save and publish. But after we do this we may start to get some additional unexpected difficulties.



Speaker 3

Now I will show it.



Speaker 1

Probably sometimes I get it, sometimes not. But anyway I have to tell you about this.



Speaker 3

So we added new column to some.



Speaker 1

Object that was already present for today morning.



Speaker 3

So it was already created recently. That's why we can face some unexpected behavior.



Speaker 1

Let me show you what I'm talking about. Now you can see it's very close and easy to switch between our section and for example lookups. Let's go to reality offer type lookup and let's try to see its data.



Speaker 3

Now we have name and description.



Speaker 1

Okay, let's try to set up columns to display.



Speaker 3

Name is okay here description is also.



Speaker 1

Okay and we can try to display one more column. Commission percent looks good and we can save it. Okay, here this commission percent looks good. We need to Provide some initial data. Because we have to support our solution with some initial values for calculations.



Speaker 3

And we agreed that for a sale it will be enough for us to specify 2%.



Speaker 1

According to this helpful message, 2% will look like this 2.00, so it means just 2. And for rentals we expect to earn 50% but from monthly payment. So our price will represent monthly payment. That's why for rentals we will have significantly bigger value. So it looks like our data is okay here, but we changed columns and.

Speaker 3



We added some data.



Speaker 1

So possibly we have to look at data part and find corresponding object reality offer type object so not object data item for this. Let me find it. This one Offer type.



Speaker 3

It looks like it was created by data binding tool, so we could also.



Speaker 1

No, no. This is lookup registering. Now I need to find it here this one values.



Speaker 3

So now we have one more column here. We can update this data item with.



Speaker 1

The help of data binding tool.



Speaker 3

Or we can manually modify it by adding one more column. As you can see, originally this column was not present here because we created.



Speaker 1

Data item before adding new columns to the object.



Speaker 3

So now we have one more column.



Speaker 1

Here we have new data.



Speaker 3

2% for sale, 50% for rental.



Speaker 1

We have to save it. Everything is okay. So our new column, our new values are here in our data part.



Speaker 3

Great.



Speaker 1

It looks like we still did not need to do any additional steps related to adding new column into existing object. But some of you may start to feel some difficulties and such difficulties are.



Speaker 3

Connected with the way how server side system remembers information about objects. And unfortunately it may happen that your.



Speaker 1

Kind of difficulty which you will finally face will be inability to display data here or inability to use new column a bit later. In order to fix this, you may need maintenance tools for creation so which we already installed. Maintenance tools can help us to restart the app or clear regis if I need it.



Speaker 3

I will do this restart but a bit later.



Speaker 1

Now I will try to avoid this to show you what will happen if you did not perform a restart.



Speaker 3

So let's check will we be able.



Speaker 1

To make all the way all the settings as I plan to do this and will we need restart or not? So let's go. Now we have offer type which also has additional data. For sale value we have one additional.



Speaker 3

Data and for rental value we also.



Speaker 1

Have another additional data.



Speaker 3

And it's really lucky for us.



Speaker 1

That it's possible to get such additional data out from this lookup somewhere at the top where we can easily use such data columns. Now I plan to show you how to get data out from a lookup.



Speaker 3

We will use again page editor.



Speaker 1

Our task is to get decimal value from this offer type lookup and display it somewhere.



Speaker 3

The reason why we need to display.



Speaker 1

Is to make it visual and also to make it fully no code. So now you will see this trick how we can make data out from existing lookup. We have new fields here, but if you add any it will add new column to your object and it will add a new control to your page. So such columns I would like to.



Speaker 3

Call data fields and data fields represents.



Speaker 1

Connection between controls and real life data column of your main object that this page works with. But if you scroll down you will.



Speaker 3

Find interesting set of components called inputs.



Speaker 1

Inputs are designed to organize input only without direct connection with your main data object and without direct save of any data that you input into this call. Simply speaking, inputs are controls that you use for inputs but not intended to save data from them or at least.



Speaker 3

Not save into main primary object with the standard tools. So maybe you will save it somewhere somehow else.



Speaker 1

Let me show you how I can use this for our task. I need number control. So I will take number and carefully drag and drop it somewhere on my page. This is a just control just input field with no any connection to any kind of objects

and the data model. But we have additional function which will be really helpful for us. We can ask system to fill this number control from some column that we.



Speaker 3

Can take out from existing lookups or.



Speaker 1

Existing from existing fields.



Speaker 3

Let me show you how we can do this.



Speaker 1

We go to data source, click on this lookup button and then we will search.



Speaker 3

So select some data field that we will use to fill this control.



Speaker 1

Realty related objects.



Speaker 3

It will show us all existing lookup.



Speaker 1

Columns in our realty object and then we will find offer type extended and system will show us only suitable on the compatible field which will be you can be used within decimal number control.



Speaker 3



This is our commission percent so we.



Speaker 1

Will select it and here now you will see some changes.



Speaker 3

Title appeared the same as title of your column inside of your offer type.



Speaker 1

Lookup Code appeared and cannot be edited.



Speaker 3

This is read only and also you can unlock it.



Speaker 1

So this column will be constantly read only. Title position okay title on the page.



Speaker 3

And element code number input. So we can call it something like.



Speaker 1

Commission percent okay and save change of our element code. So simply speaking we made read only column that will be automatically loaded each.



Speaker 3

Time offer type is set and each.



Speaker 1

Time offer type changed or cleared.



Speaker 3

Let's save our changes and we will.



Speaker 1

See how it works.



Speaker 3

By the way, please confirm with plus in our chat if you follow me.



Speaker 1

Directly during the session. So I need to know, should I.



Speaker 3

Allow you some pause to do some steps after I demonstrate it?



Speaker 1

Marcel, thank you, Andre. Thank you. Okay, I will go. Not too fast. So you will have enough time.



Speaker 3

If something is not good and you.



Speaker 1

Would like me to stop for a while, tell me please. Okay, Monica, thank you again. Secret and Rakhi, thank you for mentioning.



Speaker 3

Great. So we saved our page.



Speaker 1

Then we can go to our page.



Speaker 3

Close, open it again. Now you see this commission percentage shown. Okay, Maybe we can reward the page.



Speaker 1

Just to suppress any possible issue with the browser cache. So let's open again. Apartment of New Orleans we have offer type sale.



Speaker 3

But you see this commission percent is not shown.



Speaker 1

Okay, let's try to select another one. Rental or I chose sale again. Okay, rental 50 sale 202. Okay, save it.



Speaker 3

Close. Such data will be not possible to see in list.



Speaker 1

So we have no reality column which will represent our commission percent. We can read it from the database.



Speaker 3

If we use related objects, if we.



Speaker 1

Use offer type and if we display.



Speaker 3

Commission percent and this commission percent will.



Speaker 1

Be obtained from corresponding record from our offer type. But you see, now we have some troubles.



Speaker 3

We have some troubles and system does.



Speaker 1

Not recognize commission percent column fully.



Speaker 3

Probably it also shows us some error messages, I believe. Let's try to reload it and see what happens.



Speaker 1

No, no error message. It just doesn't show us corresponding values. But they are definitely there. So we can go to lookups, we can find our offer type lookup.



Speaker 3

We can find columns there. So our commission percent is here.

Speaker 1



So what is happening and why we have such a trouble?



Speaker 3

And if you open the page, you.



Speaker 1

See no initial value here. But if you click there and back.



Speaker 3

To sale now you see this value.



Speaker 1

Is okay, save, close, open and still it doesn't work. So we still have some problem with this additional column. And this problem unfortunately cannot be solved.



Speaker 2

By logging out and logging in.



Speaker 1

So let me show you. I try to log out.



Speaker 2

Maybe thinking.



Speaker 1

There is something like a user session cache issue. Then I try to log in.



Speaker 2

When you work with client side, it's.



Speaker 1

Better to keep your browser console on.



Speaker 2

Probably you will see some interesting messages.



Speaker 1

There or a lot of red messages.



Speaker 2

In case of errors.



Speaker 1

So it's important to see it quick.



Speaker 2

Okay, opening our realty section, ignoring all.



Speaker 1

Warnings here, open it once again and you see no, it did not help us. So unfortunately logging out and logging in.



Speaker 3

Doesn'T help you and the only solution.



Speaker 1

Which we can do is restart our app or shut it down and start it again for example with the help of IIS Manager.



Speaker 3

But it will take more than minute.



Speaker 1

For us to normally shut down and start. So we have a quick solution. This is restart our app and we have a maintenance tools for this restart application. This is the only way to quickly fix this issue. Now you see we have some.



Speaker 2

Errors in browser console, but it looks.



Speaker 1

Like not very critical. So now restart is being performed. We can check what's happening with our memory and with our processes using task manager W3WP. Looks like we have the same worker.



Speaker 3

Process, but it has a comment to.



Speaker 1

Restart so possibly to reloads some of its assemblies.



Speaker 2

Okay, so we restarted our app.



Speaker 1

We go to reality section.



Speaker 2

Now we already will see the difference.



Speaker 1

Now you see that commission percent here.



Speaker 2

Was normally displayed in this list previously it was not normal. And if we open any record now, commission percent will be fully normally loaded.



Speaker 1

When we just open the page. So you see commission percent loaded correctly if you take any other value. Yes. If you go to rental. Yes, it's okay.



Speaker 2

So now we fixed it.



Speaker 1

And that's why I had to use this add on called maintenance tools for creature.



Speaker 2

Such add on helps me easily restart.



Speaker 1

The app with just waiting approximately 10 seconds. And it's much easier than restarting my.





Speaker 2

App by shutting down and starting again my worker process or recycling worker process.



Speaker 1

It's possible, so it will take significantly longer.



Speaker 2

Okay, so we fixed this question with.



Speaker 1

The commission percent and now our task.



Speaker 2

Is.



Speaker 1

To make actual calculation.



Speaker 2

So now we can think of how.



Speaker 1

To trace changes of price or commission percent.



Speaker 2

Luckily commission percent will be available for.



Speaker 1

Us the same as any attribute for a real column.



Speaker 2

So commission percent will be also an attribute for us.



Speaker 1

So if this value changes or if.



Speaker 2

This value changes, as you can see, it will be changed in case if.



Speaker 1

You clear in case if you set.



Speaker 3

Some offer type or if you change.



Speaker 2

To another offer type, commission percent is changed.



Speaker 1

So price or commission percent should trigger recalculation of commission.



Speaker 2

I will show you how we can do this. Let's go to our configuration section.



Speaker 1

Find client modules. We are working with form page. So when we look at this stuff you can see this is a real T form page. That's why I know where to open corresponding code.



Speaker 2

So you can also open the code.



Speaker 1

From page editor if you want. I just feel it's more comfortable to work here.



Speaker 2

So form page open source code.



Speaker 1

That's how we can go directly to the JavaScript part of it and See what's happening.



Speaker 2

Andrean is asking is it possible to use this add on in a cloud environment?



Speaker 1

Yes, all creation apps from Marketplace can.



Speaker 2

Be installed on cloud systems. Absolutely the same as you can install it locally. When you install any add on, you use only web interface. So it will work absolutely the same.



Speaker 1

Let me show you. So you go to Settings, you go.



Speaker 2

To Application management, Application Hub and then.



Speaker 1

You click Install or Add new application and you can select something from this list or you can select Marketplace Powered.



Speaker 2

And it will work absolutely the same.



Speaker 1

If you run it in cloud. Thank you Adrian for your interesting question. Let's move on with your code. So we found reality form page.



Speaker 2

We decided to open directly its source code.



Speaker 1

That's how we open this tab.



Speaker 2

We can try to find our commission diff part.



Speaker 1

You can see this our commission column. It was added by help of page editor.



Speaker 3

So practically we should not modify this.



Speaker 2

But it will be interesting to see how it will be connected with the.



Speaker 1

Data attribute PDS USR commission USR so.



Speaker 2

This is our attribute name.



Speaker 1

Okay, we can collapse temporary all such things.



Speaker 2

I will only show you.



Speaker 1

So price. Okay, we need price, we need commission so we can collapse all other new config div items till we will face view model config. So attributes of view model config represent.



Speaker 2

Set of variables that can be saved.



Speaker 1

On the page level.



Speaker 2

And we already started to work with.



Speaker 1

It yesterday I just tried to explain you such attributes and now we will work with them. So for the price column we see this attribute name. Okay?



Speaker 2

And for the percent here we have this attribute name and finally we will save our data into commission attribute which has this name. This is important.



Speaker 1

Okay, I will collapse anything else to make it clear and quite compact for you. So we are interested in price attribute.



Speaker 2

Percent attribute and commission attribute.



Speaker 1

Okay? Nothing else.



Speaker 2

Model config is not interesting. And then we will do something with handlers.



Speaker 1

I already have an example which will make it possible for us to do it quickly. So let me show you this example of the code examples reading UI and then we need calculated field example. So now I will use a special pre designed handler name.



Speaker 3

Probably we need to look at Academy.



Speaker 1

To explain all possible handler names. So let's go to Academy, let's go to guides development front end Freedom UI and somewhere we will see some client schema references handlers. Yes, this is an article explaining handlers and their definition. So we have some set of standard.



Speaker 3

Names for handlers and they represent some.



Speaker 1

Important steps of page life cycle. In our case, we are interested in the handler which is triggered each time when some data, some attribute data changed.



Speaker 3

At our page changes the attribute.



Speaker 1

So this handler is called handle view model attribute change request. Let me show you my example.



Speaker 3

Handle view model attribute change request.



Speaker 1

So simply speaking, this handler will be called each time when any column value changes at our user at our client side page in our browser. So this handler will be triggered quite often. We copy this code, we will also paste it for you and we will.



Speaker 3

Copy it and put it to our.



Speaker 1

Examples in our handlers area. So this is an array, we have.



Speaker 3

To keep syntax well.



Speaker 1

And that's why I try to paste it like this, keeping commas, brackets and so on.



Speaker 3

So now you see, this piece of.



Speaker 1

Code was just simply added.



Speaker 2

This piece of code was added and.



Speaker 1

Let's check what we can do with it. Of course we have to take care about attribute names because they are always unique. Each time you do the same example again, you will see different unique names.



Speaker 2



So how we can check it?



Speaker 1

This handler will be called quite often for each column change. And in order to make it efficient, we need to check if some column.



Speaker 2

That we are interested had changed or not. If yes, then we do our recalculation.



Speaker 1

If not, we should do nothing in.



Speaker 2

Order to save system resources. So we check request property here and.



Speaker 1

We have attribute name.



Speaker 2

And if this attribute name is our.



Speaker 1

Price, then this is logical or attribute name is our commission percent.



Speaker 2

Then we do some calculation, but we.



Speaker 1

Have to actualize our names so you.



Speaker 2

Can see our list of attributes for the price.



Speaker 1

Here is our attribute name. Let's copy it and carefully paste here. And also as we already have it in our clipboard here when we need.



Speaker 2

To read it, then the same for commission percent. Let's make sure this is our attribute name.



Speaker 1

Let me show you. Yes, it looks like it is already.



Speaker 2

The same because generated by system and.



Speaker 1

I usually do same examples. That's a bit strange shifts. Okay, Very unusual. Okay, we did this. So so now you see if price changed, if commission percent changes, then we take price value. We take commission value.



Speaker 2

So how we do this? I already showed you yesterday.



Speaker 1

We have to use operator await. Then request is our argument dollar context and then we have access to our certain attribute.



Speaker 2

So we have just a variable in.



Speaker 1

Our JavaScript code for price for percent. Then we do calculation of commission as result of multiplication and don't Forget to.



Speaker 2

Divide by 100 because commission percent represents.



Speaker 1

Percent, not just a decimal value. Okay, and then we will save our commission percent. We have to Provide correct value. Here is our commission attribute.



Speaker 2

If we do it incorrectly, we will fail.



Speaker 1

So this is important. Our commission value will be finally saved into this. Okay, now it's ready and we can check how it works by saving our code. I provided an example for you, so you can also check out your example. Just a second. Okay, saving was successful and we can move on with our checks. Let's go to realty section, open the page. Let's try to trigger change of price or change offer type, for example. Like this, nothing happens.



Speaker 2

Probably it's because of cache.



Speaker 1

So let's reload the page. Reloading helps to fight with browser cache effect. Open again, try to make changes.

Speaker 2



Now you can see that recalculation works well.



Speaker 1

So we have our price for rental of our apartment.



Speaker 2

And you see our commission is correctly.



Speaker 1

Recalculated and we can save our data.



Speaker 2

Commission will be also saved.



Speaker 1

We can see it here. Commission is our legal valid column, so it will be saved.



Speaker 2

Let's open some sale example.



Speaker 1

Now you can see.



Speaker 2

Okay, price was not changed.



Speaker 1

Commission is already calculated. Let's check if we switch from sale to rental.



Speaker 2

You see, commission was recalculated.



Speaker 1

If we switch back to sale, it's.



Speaker 2

Also quite well calculated.



Speaker 1

So now you see that our commission is quite fair for this amount of price for the house.



Speaker 2

So our recalculation also works well and it shows even when page is opened.



Speaker 1

It looks like when page is opened our data filled in client side. So it triggers recalculation even if we.



Speaker 2

Do not change anything.



Speaker 1

But just open the page. Yes, we'll see.



Speaker 2

So it looks like our calculation is.



Speaker 1

Already done and works quite well.



Speaker 2

And of course everything works quite smoothly.



Speaker 1

When we have a pre programmed examples where everything is correct.



Speaker 2

But in real life you will do.



Speaker 1

Your own examples where some errors or mistakes could happen. So you will need to know how to debug this code.



Speaker 2

I will show you how to make.



Speaker 1

Such debug and you will see that's not so difficult.



Speaker 2

One of the easiest ways to debug is to put a special debugger breakpoint into your code.



Speaker 1

Like this, the word debugger. If you provide such debugger statement, it means that you ask for debug session and you stop execution of your JavaScript code. And if your browser has opened browser developer console. So if browser developer console is on.



Speaker 2

Then your debugging will work for you.



Speaker 1

But this approach has also disadvantage.



Speaker 3

And when you finished your debugging, you.



Speaker 1

Should not forget to remove all your debugger lines.



Speaker 2

Save your changes again.



Speaker 1

And ideally you have to run your.



Speaker 2

Logic again just to make sure you did not accidentally damage anything. Because when you save, you have chance.



Speaker 1

That something will be incorrectly saved. Something will go not so well. Okay, so let me show you how we can do this type of debugging.



Speaker 2

I need to explain and I need to show you.



Speaker 1

We can go to this is easy.



Speaker 2

Way to put debugger word. I will show you a bit more professional way to debug. We can go to our section open page which we plan to debug.



Speaker 1

Then we enable browser developer console.



Speaker 2

You can do it by F12 or control shift I.



Speaker 1

And when you do this, you then.



Speaker 2

Go to Sources tab. You see, we already opened some set of scripts here. We don't need it now.



Speaker 1

Let's close everything and then we can.





Speaker 2

Just search and you see we have.



Speaker 1

A USR reality form page.



Speaker 2

Page part of the URL. So it's a page, it's a name of client module and we can try to find it. Control p Open file.



Speaker 1

Let's try Control p open file. Which one? Reality form page USR realty form page. We have two options here, probably because of browser cache.



Speaker 2

Okay, if you do not want to.



Speaker 1

Guess which one is correct, we can go back reload the page.



Speaker 2

So we will suppress any kind of.



Speaker 1

Cache and then we will open it again. And we have just one option, single option to select corresponding file Control P. Okay, open the page, then Control p open file and press Control P realty.



Speaker 2

And you see only one form page here.



Speaker 1

So no any cached, no any duplicates that will make you confused. And you probably may select Incorrect 1. So let's open the only one you.



Speaker 2

See set of equalizable strings here. But the most important of course is our code. And you will see our module text here.



Speaker 1

Big part with view config div some.



Speaker 2

Part view model config. And finally you will have your header handlers. Part we are interested in debugging somewhere here.



Speaker 1

For example, we can click on this.



Speaker 2

Line number which will make a breakpoint for us.



Speaker 1

So it's the same as debugger, but.



Speaker 2

It doesn't change the source of our client module.



Speaker 1

So we can use browser debugging tools for this.



Speaker 2

Click on the line number.



Speaker 1

That's how we activate breakpoint. So here we have one breakpoint that we just clicked here. Then when your browser developer console is.



Speaker 2

On and execution comes to this line, execution will be stopped.



Speaker 3

Let me show you.



Speaker 1

If you change for example offer type from rental to sale, you see these.



Speaker 2

Lines are executed and now code stops and we can go line by line.



Speaker 1

Now we have to use tools that.



Speaker 2

Will help us to proceed with this piece. The most popular, I think the Most.



Speaker 1

Efficient is F10 which is a step over running of a line without going into sub functions for it. So I will press F10. Now you see my price was taken from the column percent. Now you see new percent was taken when offer type changed.



Speaker 2

Then you can see commission was recalculated. Now you will see commission will be set here.



Speaker 1

So my commission is now 26, so.



Speaker 2

I expect it to be saved here. Yes, 26 and then we move on.



Speaker 1

So here we can use resume F8 hotkey to normally continue execution.



Speaker 2

That's how we can check this code. If we change the price.



Speaker 1

You will see the Same I press F10 I.



Speaker 2

Have another commission F8. Okay, we can make more serious price.



Speaker 1

For an apartment.



Speaker 2

And obviously we'll have more serious commission. So that's how you can debug your code.



Speaker 1

Also, if your code has something has some obvious mistakes and causes runtime errors.



Speaker 3

You will also see such runtime errors in your sources tab.



Speaker 1

You will also see your console which.



Speaker 3

Will be full of red messages. So in case if your code fails.



Speaker 1

In runtime of course you should take care about it and look at your console tab and check if everything works well or not.



Speaker 3

When you finished your debugging you should.



Speaker 1

Click on wine number again removing your breakpoint and then your code will run without stops.



Speaker 3

It's interesting to see what value we will see in case if we will clear ovrtype.



Speaker 1

Now let's check. You see that percent is empty so percent is null. Trying to multiply null on price results in zero.



Speaker 2

So that's how we will clear.



Speaker 1

Okay, when we have some valid percent, we can move on with F8 and you see setting is done.



Speaker 3

If you have any questions related to.



Speaker 1

This debugging, please tell me. As you can see, debugging can be.



Speaker 2

Really effective if your code is more.



Speaker 1

Complex, if you have sub functions, if.



Speaker 3

You are not sure what values you.



Speaker 1

Finally get from your code so you can check it out with the help of browser developer tools. Okay, probably we got an hour of.



Speaker 3

Our session, so let's make a few.



Speaker 1

Five minutes break and then move on.



Speaker 3

With next topics related to programming. I also plan to show you some.



Speaker 1

Examples of programming of validation. So I plan to show you validation and.



Speaker 3

Different validators. So different clones will be used for universal validation.



Speaker 1

And also I plan to show you some examples of so we already displayed.



Speaker 3

Debugging but also you need to know a bit more about logging.



Speaker 1

Okay, so let's make a five minutes break foreign.



Speaker 2

So today I want you to see.



Speaker 1

Some more technical things about how client.



Speaker 2

Side works and how we can do.



Speaker 3

Some technical steps with it. So we already know how to debug our code.



Speaker 1

I would also like to you to see that we have quite developed logging. So I will show you login mechanisms.



Speaker 3

That are available on Creature Platform.



Speaker 1

Here is our installed app and this is our folder with installed application.



Speaker 3

We go to terrasoftware web and you.

Speaker 1





Already know that Creature uses analog libraries to provide the different logs and save them in Creature web server.



Speaker 3

The most important log file for us.



Speaker 1

Is invoke targets config because here we can change default file to save our all default folder to save all our logs.



Speaker 3

You may be interested in the way.



Speaker 1

How we can do some logging. So we have so called appenders and.



Speaker 3

Targets and probably have to start from appender first.



Speaker 1

So analog config I should use analog config first.



Speaker 3

And we have a lot of loggers.



Speaker 1

As well appender so they are synonym. Logger or appender they are synonyms.



Speaker 3

So you can see a lot of.



Speaker 1

Different loggers registered and appenders are settings that will collect log messages.



Speaker 3

And finally appenders will be connected with physical files. So you see we have more than.



Speaker 1

100 different loggers and logger is a logical thing that you can use in your program code. Appender is a place that is used to collect your data and save it. So we have a lot of loggers, a lot of targets. Sorry, targets. And you see we have so appenders it means it's a setting that represents physical file. Also targets are synonym and appenders shows us that we also have a lot.



Speaker 3

Of different logs that are saved here. And you can see different messages, different settings. So what do you need to know about this?



Speaker 1

So Croatia has a lot of default.



Speaker 3

Types of logs and all of them will be saved in a folder which.



Speaker 1

We specify when we install our application. So in Analog Targets config line number three we have setting to save our logs to. By default this folder is somewhere in temp Catalog Windows temp I decided to make it different so we can find logs and as you can see we have zero, which means main application logs.



Speaker 3

And log folder which. Which. Sorry, a log folder which means loader part. Loader part is not so interesting because.



Speaker 1

It has no customizable items that will.



Speaker 3

Be interested for us to. Interesting for us to see.



Speaker 1

So Loader is very technical and we have just several log files here, nothing very spectacular. And zero folder is what we really need because it's a log set of.



Speaker 3

Logs for our main application. And then we go inside, we see.



Speaker 1

Logs for each separate date. So you see for different days you.



Speaker 3

Have logs in different folder which makes it easy to find. And then you see different logs here. In total we have more than 50.



Speaker 1

Different files with logs saved here. So a lot of different logs, a lot of different files.



Speaker 3

And what is the most important for.



Speaker 1

You from the maintenance point of view? I think the most important is error log. Error log represents all exceptions and keeps information about all exceptions that happened in your system. So error log shows all errors and.



Speaker 3

Of course you should take care about.



Speaker 1

It because usually it is important and sometimes you may find some errors which are not related to your changes. So you may simply speaking find some errors from base product like this one.



Speaker 3

Error parent schema is now parent ID.



Speaker 1

Sets to empty and so on.



Speaker 3

But it looks like nothing very critical for our application. You see the same error many times.



Speaker 1

And it looks like not very important.



Speaker 3

But if you will get some error messages here related to your functionality and your users will start to complain about.



Speaker 1

Something is not working. Of course you cannot ignore this.



Speaker 3

You may ask me why we have.



Speaker 1

Some errors in a wait production release software. The answer is that Croatia is quite big and we have more than 200 libraries. We have millions of use cases that.



Speaker 3

Could be checked and used.



Speaker 1

So it's really hard to test everything and to polish any line of code, so it should show it so it could not fail in any way. So in real life, in any big system, some errors usually happen. But in our case it's not so.



Speaker 3

Critical so you can simply ignore.



Speaker 1

But if you will find another errors with some user complaints, of course you should take care of it. So from maintenance point of view, I think looking at such error log is quite important. And this is something that you should.



Speaker 3

Do regularly if you support some big creation implementation by your own. In cloud conditions, looking at such logs.



Speaker 1

Is complicated because you will not be.



Speaker 3

Able to directly go to cloud based file system to get it.



Speaker 1

So you only can ask for help at support team. By the way, you should know Support team lives here support creation.com so they work 24, 7. It means you can ask them any time, anytime you need, even on weekends.



Speaker 3

And if you ask for example for a yesterday logs for a searching website.



Speaker 1

They can give it for you. But it will be more efficient for.



Speaker 3

You if you can collect Logs by yourself. And that's why I plan to show.



Speaker 1

You some special tool which makes it.



Speaker 3

Easier if you need to collect logs.



Speaker 1

From cloud based environment. So I will show you Now I'm.



Speaker 3

Talking about telemetry log for creation. This is a special add on which.



Speaker 1

We can get from Application Hub New application Marketplace powered.



Speaker 3

Then we can just search for the.



Speaker 1

Word log and we will easily find this Hokku app or telemetry log for creation. So Hoku is a company physically this company is like founded by our creation employees. And this is something just so you should consider it made by creature and.



Speaker 3

You can install this telemetry log.



Speaker 1

This is for free. Agree.



Speaker 3

Confirm.



Speaker 1

You see it was just updated 2023 November.



Speaker 3

Okay. And install it.



Speaker 1

It takes just almost no time, maybe 20 seconds. And you will see that new app.



Speaker 3

Is installed to our system.



Speaker 1

So you'll be able to collect vlogs, but you'll be able to collect only runtime created logs.



Speaker 3

So it's like listener for logs.



Speaker 1

You will not be able to collect.



Speaker 3

Yesterday logs, but if you do some.



Speaker 1

Experiments and you need to see how logs look like when you do your experiments in cloud. So this app will be extremely helpful for you because it shows you all the messages all the log messages that.



Speaker 3

Are saved on disk.



Speaker 1

So you can listen to any logs saved on disk.





Speaker 3

Let's patiently wait for its installation.



Speaker 1

Surprisingly it takes a bit longer than I expected. But it's okay now it's not so critical.



Speaker 3

Maybe we can look at browser developer.



Speaker 1

Console here, but usually no trouble should be present. Okay, wait for a minute. And I'm also curious about what is happening at my website.



Speaker 3

Oh, dotnet exe was running so it looks like compilation was done.



Speaker 1

So system decided it needs to compile and that's why it was so slow. Okay, finally our compilation finished. We can download installation log to see what it took so long and what.



Speaker 3

Operation took so long to install.



Speaker 1

So now you will see results. Okay, great.



Speaker 3

Here's our installation logs.



Speaker 1

Started 26:58, so almost 27, finished 29.



Speaker 3

It looks like 2 minutes and 3.



Speaker 1

Seconds and yeah, it's a bit longer than usual.



Speaker 3

And 27:15, 28:56 so it looks like.



Speaker 1

Full configuration compilation was performed. That's why it took so long and okay, no problem, we can live with it.



Speaker 3

So now you will see one more app here in this list.



Speaker 1

Telemetry and you can reload this tab.



Speaker 3

Now you will see one more item at our settings page.



Speaker 1

Previously called System Designer. Currently it's called Settings.



Speaker 3

So I will show you how you.



Speaker 1

Can use this telemetry log here? Yes. Now let me show you. We can check. You probably remember we looked at our logger and appenders. So we have appenders, we have loggers here. So we can listen for a certain.



Speaker 3

Logs in order to get some error.



Speaker 1

Messages for the certain, let's say subject or certain area of functionality. And you can also listen everything like this, which will mean that you look and get every message. And I'll try to find a logger for SQL. Do we have anything? No, Let me find a corresponding logger.



Speaker 3

SQL.



Speaker 1

Oh, so it's called JSoft Core DB executor SQL log appender. Okay, will it be DB executor?



Speaker 3

And we're only interested in for example errors.



Speaker 1

So I plan to make example of listening of DB execution errors.



Speaker 3

And I especially will do some example which makes such an error. Let's go to customer360, find accounts and.



Speaker 1

Let's try to remove some account. Obviously we will not be able to do this because it has some connections with existing contacts. So I try to delete this account.



Speaker 3

Now you see no messages here. Try to do this. Of course I see error messages and.



Speaker 1

Here I expect to get.



Speaker 3

I expect to get error messages. Oh, I should subscribe. I should remember to subscribe.



Speaker 1

Okay, let's try to delete once again. Yes, error message appears logger pattern. Maybe you should use info subscribe. I will try to delete it once again. Yes, now you see, funny thing, but.



Speaker 3

It was not an error, it was just a warning.



Speaker 1

So like yellow color, which means this.



Speaker 3

Is not an error, just a warning.



Speaker 1

And okay, so I got some text message from our DB executor and you.



Speaker 3

See that my message has an error. So exception occurred, statement terminated.



Speaker 1

And you see that we get some.



Speaker 3

Text messages and logs. You can also get the same logs.



Speaker 1

If you go to your files, you.



Speaker 3

Will find SQL JSON. Here we will have similar information.



Speaker 1

So you see my delete statement failed, so it conflicted with foreign reference constraint.



Speaker 3

And it's interesting that for the SQL.



Speaker 1

Errors, system logs only queries that were failed. So only queries that failed to be.



Speaker 3

Executed at the database. In my case, I intentionally made an.



Speaker 1

Error for the database level and showed you how you can handle it and how you can track it. You can also use all existing loggers for all messages subscribe. You will have plenty of different messages here.



Speaker 3

Just when you go to any part.



Speaker 1

Of your system, when you open any.



Speaker 3

Section, you will start to get more and more logs.



Speaker 1

Because system usually writes something to logs and it has quite verbose logging. So you will have more and more data. You see more messages appeared, some of them are useless for you and so.



Speaker 3

You have to play a bit with it. But finally you will be able to.



Speaker 1

Do the same as you can do with log files.



Speaker 3

So this telemetry log for creation will.



Speaker 1

Be extremely helpful in case if you.



Speaker 3

Need to make some experiments and get.



Speaker 1

Logs directly in online mode from your cloud environments, including even production systems. So this can be really helpful for you. Please remember about this telemetry log and we have some buttons here. What is this?



Speaker 3

As you can see we have some help message explaining how to use this.



Speaker 1

Some button which shows or it runs and stops a listening of logs. So green means run, red means stopped and that's how you can also use it.



Speaker 3

So listening all of the logs will.



Speaker 1

Provide you a lot of verbose noisy messages.



Speaker 3

It's up to you.



Speaker 1

So maybe this will be interesting for you. So just remember the name of the tool is Telemetry for Creatio. You can easily install it from Marketplace. Okay, so what else you need to know about client site? We will work with details soon and.



Speaker 3

Before we doing this I need to explain you how to do validation. As you can see my previous program.



Speaker 1

Was a bit more oriented on classic ui. So sometimes I jump from topics topics and that's why we are not following directly from this schedule. So I plan to provide you material like step by step slightly improving complexity of topics. So I think it's not so hard, not so difficult for you to study this material this way.



Speaker 3

So let's move on validation. What it is about and this is.



Speaker 1

Check of data before it will be.



Speaker 3

Saved at server side. Let's return back to our reality section and let's look at our data value.



Speaker 1

So when we add new values it may happen that user may save some very incorrect values. For example, we can try to save negative price. As you can see as a result we have negative commission.



Speaker 3



It's also possible to save negative area and also system does not prevent us from doing such things.



Speaker 1

So we can save it.



Speaker 3

And as you can see from system.



Speaker 1

Point of view there is no troubles, no errors.



Speaker 3

But of course we have trouble from.



Speaker 1

Business point of view because we can't.



Speaker 3

Normally summarize values, we can't normally calculate commission.



Speaker 1

So we have to make some kind of protection for our data input. And luckily we have this on the platform level as existing validation tools. Let me show you how to use it.



Speaker 3

We also need to Program this.

Speaker 1



Unfortunately validation is only available when you do programming, so it's not a no code setting.



Speaker 3

But we are not afraid of this.



Speaker 1

Let's go to our configuration section, find our form page again, open its source code again.



Speaker 3

And I need to show.



Speaker 1

You some examples at our Academy documentation.



Speaker 3

Which will really help you.



Speaker 1

So we have some architectural SDK things.



Speaker 3

At front end documentation, but we have.



Speaker 1

A lot of useful examples in platform customization area of our academy. And we have examples for Freedom UI for fields examples and we have examples of population of fields. So it's example of calculations that we already discussed.



Speaker 3

And we have example of validation of.



Speaker 2

Field which we are interested right now.



Speaker 1

So I will share useful links for such articles. I recommend you to read it or just maybe look at it.



Speaker 3

So let me explain how we plan to move on.



Speaker 1

We have special area in our code named validators. Let me show you.



Speaker 3

So we have handlers and we have validators.



Speaker 1

So it's a special designed place for.



Speaker 2

Us to program special functions that will.



Speaker 1

Be used for checks of data during input. And luckily we have examples at Academy.



Speaker 2

Which will help us to make it.



Speaker 1

Smoothly without spending too much time. So validators is a collection, this is not an array.



Speaker 2

Now you see, this is a collection.



Speaker 3

Each collection item should include its name.



Speaker 1

And implementation and validation.



Speaker 2

Implementation includes validator property which is a.



Speaker 1

Function that finally should return something set of parameters and async property. Then when we finish with this part, we will connect our created validator with set of columns. So we may use one validator for many different columns by connecting them to our page attributes. So let me show you how we.



Speaker 2

Can do this and I already have.



Speaker 1

An example, we will not spend too.



Speaker 2

Much time on it.



Speaker 1

So now you will see how we can do this validation.



Speaker 2

First of all we go to validators area and we will provide some code here.



Speaker 1

I already have example, no difficulties. So Freedom UI validation example and I need to provide this example of code.



Speaker 2

Okay, let me copy and paste for you.



Speaker 1

This is example of our validation. Okay, no need to use cameras to show. Okay, so this is example of code.



Speaker 2

And I will also implement it.



Speaker 1

It's my own validators area. So copy and paste.



Speaker 2

What do you see here? So we register my validator with a specific name.



Speaker 1

So this is a kind of type or maybe validator type, let's call it so. And we can declare different numbers or unlimited number of different validators. This validator includes three major properties, whether it validator, function parameters and async property.



Speaker 2

So probably we have to start with parameters first, because parameters are values that we can provide for each validated column.



Speaker 1

And for different columns, we can provide different parameter values.



Speaker 2

Here we have to declare what parameters we will have.



Speaker 3

In my case there are two parameters.



Speaker 1

Min value and message parameter.



Speaker 2

Validator function has a bit complex structure. This is one function, it returns another.

Speaker 1



Function and first function requests config, Another function requests control inside of control. Unfortunately we only have value so it makes it difficult for us to analyze several values from different columns on our page.



Speaker 2

But it makes it universal.



Speaker 1

If we have value, we don't know exact column. So we can use the same validator for many different columns or different columns and it will be universal for us. So we can take value and from.



Speaker 2

The config we know what parameters to expect. So we have min value parameter and we have message parameter.



Speaker 1

Our check is quite simple.



Speaker 2

We get value and then compare with min value. And in case if our value is.



Speaker 1

Greater or equal than min value then.



Speaker 2

We think that data is correct and.



Speaker 1

Our returned result will be null which.



Speaker 2

Means no warnings, no messages, everything is okay. But in case that value is not.



Speaker 1

Correct we have to return special type.



Speaker 2

Of result which is a JavaScript object with a specific name, the property inside and with the message property inside of this property.



Speaker 1

So it's kind of nested JavaScript object.



Speaker 2

And our message here will be text.



Speaker 1

It should be displayed nearby problem control.



Speaker 3

And also this message will be explained.



Speaker 1

Displayed when we will try to save our page. So we will say try to save data system will check all the validators and it will find that some columns.



Speaker 2



Are not correct and it will not.



Speaker 1

Allow to save it.



Speaker 2

So this is our example of a.



Speaker 3

Validation, but it's not applied yet. So we have to set up some.



Speaker 1

Columns which will work with this validator.



Speaker 3

Otherwise our validator is useless because no.



Speaker 1

Column expect checks with it.



Speaker 2

So I do not need to change anything here. This code is universal as you can see. No any hard coded column names.



Speaker 1

Only one hard coded thing is a validator type name. Next step is connection of validator with.



Speaker 2

Certain columns or it's better to say with attributes.



Speaker 1

So I will show you examples.



Speaker 2

How we can connect.



Speaker 1

Maybe I should do it here. How we can connect validators to columns. I will put example so I have to find my price attribute. Let's go to my view model config div area. Here we have attributes. Here is my price attribute inside of its structure.



Speaker 2

After module config I have to provide.



Speaker 1

Validators setting so I should carefully copy.



Speaker 2

This.



Speaker 1

And paste it here.



Speaker 2

And that's.



Speaker 1

How I will put it.



Speaker 2

So here's my price attribute.



Speaker 1

Here is my validator. The type of validator should be matched.



Speaker 2

With what we created and parameter.



Speaker 1

So the minimum value for the price.



Speaker 2

I think it will be 50.



Speaker 3

So we will not allow to save.



Speaker 2

Any reality object with the price less than 50 bucks.



Speaker 1

Okay, and also we can use message, not just a plain string constant which.



Speaker 2

Is also supported, but also we can use localizable string. Here is an example of a macro that you can use for localizable strings. And localizable strings are saved separately and can provide translations into other languages.



Speaker 1

So let me show you what localizable strings I plan to use. I will put it for you. And first, localizable string about price. So my localizable string is named price cannot be less.



Speaker 2

I go to localizable strings. Probably we can save it before modifications.



Speaker 1

But now I will modify non localizable.



Speaker 2

Strings.



Speaker 1

Take significantly longer than usual. As you can see, my worker process consumed quite a lot of ram. It's more than usual.



Speaker 2

Okay, we can try to create localizable.



Speaker 1

String with the code price can't be less and the value is price cannot be less than something. Okay, try to add and then I expect some troubles here.



Speaker 2

That's why I will try to save now.



Speaker 1

If it saves correctly, okay, no problem.



Speaker 2

But in previous versions I experienced some.



Speaker 1

Troubles with localizable strings here and it turned out to save it. So when I added once, it physically.



Speaker 2

Added it twice and then denied to.



Speaker 1

Save because it tells that such localizable string already exists. In case, if you face this kind.



Speaker 2

Of issue when you add localizable string.



Speaker 1

Try to save and then get error message about duplicated localizable strings. You can just remove that visible one that you created.



Speaker 2

Another one which is invisible will be still saved.



Speaker 1

So that's how you can bypass this bug.



Speaker 2

As you can see, Creature also as.



Speaker 1

Any software, it has its own bugs. Sometimes bugs are detected, fixed new bugs appeared.



Speaker 2

So it's normal, more or less normal for any software. Another localizable string that we will need is about area. So localizable string for area. And for its.



Speaker 1

Value here, save it.



Speaker 2

Area can't be less. Let's try to save.



Speaker 1

And my intention when I save each time I add the localizable string is to check do I have any bugs with localizable string.



Speaker 2

It looks like in this version this bug was finally fixed.



Speaker 1

That's nice. So for the price we already set.



Speaker 2

Settings, now we do the same for area. So let me show you what we.



Speaker 1

Do for area we will set validators setting for one column. We can use multiple validators so it's possible to make checks with different criterias.



Speaker 2

And in my case for the area.



Speaker 1

I will use the same validator but.



Speaker 2

Minimum value will be 100 square feet.



Speaker 1

So it's close to 10 square meters.



Speaker 3

We think that we will not input.



Speaker 1

Any kind of realty less than 10.



Speaker 3

Square meters or 100 square feet.



Speaker 1

And that's our limitation here.



Speaker 2

And we will use localizable string that.



Speaker 1

We already successfully saved. Okay, now we have this example, save.



Speaker 2

It and then it's our turn to.



Speaker 1

Test and check out how our data were saved. How well it looks, we can close.



Speaker 2

Our editor, go to main app probably.



Speaker 3

Let'S reward it just to fight with.



Speaker 1



Any potential impact of browser cache issue. Then let's open any record and specially intentionally open the record which has incorrect stuff here.



Speaker 2

Now you see that once we finished.



Speaker 1

And moved focus out of control, you see we have some checks and this checks displays error message.



Speaker 3

Price can't be less than 50 bucks.



Speaker 1

Area can't be less than 100 square feet. If we try to save such data, system will reject it tells us we.



Speaker 3

Have problems and we have to fix them.



Speaker 1

Okay, let's fix only price try to save.



Speaker 3

We still have trouble with area.



Speaker 1

When we fix area then our troubles are over and system saves it normally.



Speaker 3

Please note that if you do something.



Speaker 1

Like this and try to save your.



Speaker 3

Data Validation works at client side so it doesn't send any messages to server side.



Speaker 1

Now you see nothing appeared in network tab until we will fully fix our rental price. In this case you see update query executed. So physical data was sent to server.



Speaker 3

Side only in case of successful client validation.



Speaker 1

So this validation may help you to improve your logic to make it more protected to get rid of like silly.



Speaker 3

Mistakes made by end users.



Speaker 1

And I think that this is something that will be quite important in your future projects and implementation.



Speaker 2

Now I plan to show you some.



Speaker 1

Simple topic and it's simple but it's very important because such topic will be.



Speaker 2

Quite often faced in your projects. It will be not really directly connected with programming, but it's something that you definitely should know about.



Speaker 1

I'm talking about typical settings of columns.



Speaker 2

That you need according to some conditions.



Speaker 1

For example, some column must be visible.



Speaker 2

Only in case of a certain condition and otherwise should be hidden or another.



Speaker 1

Column must be required according to some conditions and otherwise should be optional. And also you may need some like talk about visibility, about required settings, or about read only columns.



Speaker 2

So such typical Settings for columns are.



Speaker 1

Frequently faced in requirements from business owners.



Speaker 3

And that's why such functionality was decided to implement as a no code Tools.



Speaker 1

And developers code such functionality. Business rules Let me show you how you can manage such business rules and I will show you a couple of examples. We can go to modify our page so edit page then we go to special button business rules Please note we have two types of business rules.



Speaker 2

Page business rules mainly used for controls.



Speaker 1

Visibility, maybe required property, read only property and also we have object business rules. Here it's called realty business rules but.



Speaker 2

You should understand this is about object. Object business rules also offer us possibility.



Speaker 1

To make some filtering and depending on the type of business row, it will be physically saved into metadata of a.



Speaker 2

Page or into metadata of an object.



Speaker 1

So let me show you.



Speaker 2

Let's imagine our task is quite simple.



Speaker 1

To show comment only in case of type is not empty.



Speaker 2

So when we add new data, type.



Speaker 1

Could be not specified. In this case, comment should be hidden. Let me show you how we can do this.



Speaker 2

We can use page level business rules.



Speaker 1

Because it's about column visibility add new rule.



Speaker 2

This rule will have automatically generated title.



Speaker 1

To be applied to the page and it has triggering condition, page is open or some condition changed.



Speaker 2

So we have if scenario and then action. Okay, let's start with if and now we will think of something like.



Speaker 1

I should do it a bit better with initial status. Okay, so if our type is not empty, then comment should be visible.



Speaker 2

Let's try to do this attribute or.



Speaker 1

Data field really and our type okay, if type is not empty so we can use condition is filled in. If this condition is true, then we will use action show elements on the.



Speaker 2

Page and we can decide what element.



Speaker 1

Will be shown to be. Input column of a comment Text comment Okay, so if type is filled in comment will be visible. Otherwise comment will be hidden. So let's try to test how it works. We can save it.



Speaker 3

Save our page.



Speaker 1

Now and let's check how it will be physically working for us.



Speaker 2

As you can see, each time you.



Speaker 1

Develop something, this is very important to immediately test it when it's ready and.



Speaker 2

When you make many different changes you.



Speaker 1

May think of okay, I will do many changes, then I will test them in total.



Speaker 2

I do not recommend you to follow this approach, so it's much better and more safer. If you will do some small step, then you go to your system and.



Speaker 1

Start to test it.



Speaker 2

Then you do another small step, then you do another test.



Speaker 1

The reason is that creature client side sometimes could bring you Surprises and it will be not so clear according to.



Speaker 2

The error message text in your browser console to understand what exact part is gave you such a surprise.



Speaker 1

So it's better to make small steps and to test it frequently. So once you get and start to.



Speaker 2

Get some error messages and you will.

 Speaker 1

Easily understand that it was caused probably the most latest recent changes and you.

 Speaker 2

Should take care about it and maybe.

 Speaker 1

Revert them maybe to look carefully and.

 Speaker 2

You will find some errors. So small steps and frequent testing. This is what I recommend to you.

 Speaker 1

So let's open any record type is set, Comment is visible. It's clear the type.

 Speaker 2

Now you see it's a bit uncertain.

 Speaker 1

So it's not cleared and let's set it again. Okay, if you clear it doesn't work.

 Speaker 2

I think that we have a problem because of initial state of the square column. Let me show you how we can fix it.

 Speaker 1



Initial state should be aligned with our business rule and in case if we check some condition and turn this column on. So make it visible. So by default this comment should be hidden. Let's select comment, let's set its visibility default visibility not visible and then save our changes. So by default comment will be hidden.



Speaker 3

And according to the business rule, it.



Speaker 1

Will be enabled if type changed and became not empty. Let's check it out.



Speaker 3

We need to reload.



Speaker 1

Fighting with browser cache Clear. Now you see our comment disappeared. If we set some type, it appeared again.



Speaker 3

If we change type, it appears again.



Speaker 1

If you clear, it hides. Hides? Yes.



Speaker 3

So that's how you can manage visibility and such setting. As you can see, it's a no code setting.



Speaker 1

So you can make all the settings with your mouse. It doesn't require any programming.



Speaker 3

I would like you to see another example.



Speaker 1

So you can also see visibility, editability and required property.



Speaker 3

And one more thing which is interesting.



Speaker 1

I think is about selecting values in lookups.



Speaker 3

Now we have selection of manager from contact. We can display additional columns here.



Speaker 1

For example, contact type. Okay, I'm too lazy to scroll. I will type this.



Speaker 3

Now you see some contexts have customer type, some contexts have employee type, and so on.



Speaker 1

Finally, my contacts list will include many.



Speaker 3

Different persons and only some of them.



Speaker 1

Will represent my company employees.



Speaker 3

When I want to specify manager here, I definitely want to specify someone who.



Speaker 1

Is company employee and not just a random contact.



Speaker 3

So I want to make some simple.



Speaker 1

Filter here which will help me to select only context with a certain type. And we can do such filtering with.



Speaker 3

The help of business rules.



Speaker 1

So let's go back to our page, go to business rules Now I plan to use object level business rules. So here you see real to business rules which means really object business rules.



Speaker 3

Here was page. Now here is object level.



Speaker 1

Okay and first of all I will check available action here.



Speaker 3

And in comparison with page level we.



Speaker 1

Have more options here and I plan to use simple static filter Business rule Static filter will not require any as you can see, static filter will not.



Speaker 3

Require any special conditions I mean for.



Speaker 1

Triggering so it will be applied always. That's why it's called static.



Speaker 3

And I will have a column which.



Speaker 1

Column I plan to use for filtering. This will be manager column and what.



Speaker 3

Filter I plan to use I have.



Speaker 1

To specify it with additional condition. Please note here those of you who use Windows Home probably you may experience difficulties because it was found that users with Windows Home experienced troubles opening this tab and it was simply not possible if you use Home Edition. So please be careful when you use this home version and just know about this. So this will be temporary not available for you.

Speaker 3



I can make condition here. Contact.



Speaker 1

Type equals to a constant employee. So if this filter will be constantly applied on my lookup, save it and then save it again. Now I save page and I will reload my main tab and you will see how this manager filter will work for us. Go back. Okay, let's save changes. Close reload this reloading is necessary only to work with browser cache. Let's check.



Speaker 3

Now let's try to select values.



Speaker 1

Here you select data. Now you see only context with employee type.



Speaker 2

Okay, let's make more examples, better examples.



Speaker 1

And let's go to customer 360 add more contacts to make it representative and let's make a contact name something like James Bond and type will be customer. Okay, one more Bruce Lee will be our employee.



Speaker 2

And Bruce Willis will be also our employee. So you will see we have some.



Speaker 1

Different contexts, different types and let's go back to our realty, try to select manager system only shows us only context with a certain type.

Speaker 2



This is very simple filtering tool.



Speaker 1

As you can see we just used only mouse to set up this type of customization.



Speaker 2

But it's very efficient and that's why I think it's important for you to know about it. Because even if it doesn't require programming, but if you did not attend our.



Speaker 1

Customization course, you still need to know.



Speaker 2

That such type of filtering is supported. Also I can quickly show you another filtering of connected fields like filtering cities by countries.



Speaker 1

So or maybe if we focus on us only. For example we can filter cities by States. But maybe for countries it will be more clear and understandable.



Speaker 2

So let's go again to our page. In order to filter something by something.



Speaker 1

Of course we need to have connected lookups.



Speaker 2

Luckily in base product cities and countries are already connected.



Speaker 1

Each city has corresponding country reference. Let me show you cities lookup already has connections with country. Let me select fields to display. We have names. I don't need time zone at all. But I want you to see country. Okay, save it. Now you see a lot of different cities from different countries and it looks like data lookups. Data in our lookups is already well, so let's do such settings. I will add two drop down columns to my page and it will be.



Speaker 2

Probably we have to start from country.



Speaker 1

Because we plan to input data starting from country providing country value and then USR country copy and lookup. We will use standard lookup. Country that is already present will be drop down list. Okay. And here element code will be also country related. So that's how I add new lookup. Now I will show you CT's lookup. So it will be city confirm lookup.



Speaker 3

That will be based on.



Speaker 1

It's also CT drop down list.



Speaker 2

And here we can name something like city.



Speaker 1

It will be enough. The most important is uniqueness of this column. But city is good enough.



Speaker 2

Good unique value for us.



Speaker 1

Okay. Is it okay? Should be. I don't like. Yeah, probably There are limitations about the length of this. Okay, so what we have here is country and city and we need to.



Speaker 2

Save it first in order to apply.



Speaker 3

Changes to the object level.



Speaker 1

And so to fully modify our data model properly to take maybe less than a minute our time it okay, saved. Well, now we go to business rules. So I will show you how we can make a object level business rule for connected lookups. Let's add one more lookup. Action will be apply filter.



Speaker 3

This is a special type of filter.



Speaker 1

Which is I think originally designed for connected lookups.



Speaker 2

And we can specify what column to filter.



Speaker 1

Obviously we will filter cities by what another column by country.





Speaker 2

And this editor will automatically detect connections between cities and countries. So it will show us where city.



Speaker 1

Country which means country value inside of city Lookup equals to value of country.



Speaker 2

Provided in our realty page and also automatic settings for clearing when country changed.



Speaker 1

Clearing cities when country changed or automatically.



Speaker 2

Set country if city was set and.



Speaker 1

For example country was empty. So you can do this also then.



Speaker 2

Country will be automatically populated. So this rule will work good for us.



Speaker 1

But what I need to add here is triggering condition.



Speaker 2

We need to Change such filter each time.



Speaker 1

When country changes so page is opened or some changes and when country. Okay, we can select here is filled in. Then we have to apply this filter. So if country changes and becomes filled in, then filter should be applied. Otherwise you may face some glitches in.



Speaker 2

Working with this filter.



Speaker 1

Sometimes it will work, sometimes not.



Speaker 2

So you should not forget about this condition. Let's save it.



Speaker 1

Save page and then we will test it. You will see how it works. Great. You see, data was successfully saved, page saved.



Speaker 2

Okay, let's test. We need to reward it. And now let's check it out.



Speaker 1

So let's say Miami and you see.



Speaker 2

Country, you see city.



Speaker 1

Okay, Country, States, United States.



Speaker 2

Cities. As you may see, cities are filtered by country. You only see cities.



Speaker 1

Oh, Hartford, Frankfort.



Speaker 2

Looks like only.



Speaker 1

US Cities I think. Okay, so now you see it looks.



Speaker 3

Looks like.



Speaker 2

Well, okay, let's take another example.



Speaker 1

No country, you see all cities from different country. Ararat Astrakhan, Baghdad, you see Bishkek, you see Bratislava.



Speaker 2

So from different countries from.



Speaker 1

Okay, so if you set some city.



Speaker 2

Country will be populated automatically in this case.



Speaker 1

But if you clear country, city was cleared automatically. So if we provide some country like Bangladesh, you will see only filtered cities. Here if you change country to something else like Egypt, you will see only Egypt city. So filtering works well.



Speaker 2

Let's go to our states.



Speaker 1

Now we have to search for Seattle.



Speaker 2

Yes, you see it finds and filter works well. So this type of filtering can be.



Speaker 1

Done not only for citizen countries. For example, you can make two connected hookups. One is type of document and second one is for example subtype.



Speaker 3

And subtype should have a lookup column.



Speaker 1

Referencing to corresponding type.



Speaker 3

And in this case when user specifies.



Speaker 1

Type, it will be technically possible to filter subtypes according to selected type. But this canonic example with countries and cities, I think it's the easiest to.



Speaker 2

Understand examples so you can also use it.



Speaker 1

Don't forget about business rules triggering by changing country. So save it. Probably that's enough for today and we.



Speaker 2

Have one more session tomorrow that will be dedicated to our client side. I plan to show you how to make details and also probably answer your questions if appear.



Speaker 1

If you ask something about some cases with programming inside of our pages in.



Speaker 2

Freedom UI later we probably will also.



Speaker 1

Invest a bit of time into classic.



Speaker 2

UI examples and I think you'll be.



Speaker 1

Interested in migration from Classic UI to Freedom ui. It will be only client side, so objects will be the same. I will show you how you can do such migration. Thank you very much for Your time.



Speaker 2

Today, our session is over. In case. If you have any questions with your.



Speaker 1

Environments, with your homework, tell me please.



Speaker 2

It's important for me to know.



Speaker 1

Do you have any troubles or other notes, any questions?



Speaker 4

I have one. Did we go over. I could have just missed this now. It could have just been me. Did we go over the overriding. I think it was on the list of the. The kind of schedule for each day we had parent overriding. Overriding a parent method. Did we go over that and I just. Or is that something we have to go back to?



Speaker 1

You probably asked about something that you.



Speaker 2

Already saw in Classic UI with overriding of methods or this is something else. So can you explain the business example?



Speaker 4

No, sorry, I just saw it on the list on. So you know you have the list of the breakdown of each day. It was an. It's kind of what you open up with this. With the start of each day.



Speaker 1

Oh, you mean this one?



Speaker 2

This is.



Speaker 1

Yeah, yeah.



Speaker 2

So this schedule is a bit outdated unfortunately.



Speaker 1

Okay, try to find some time and yes, there are some topics that are not so applicable to Freedom UI and.



Speaker 2

You may find something like. Like alternative JavaScript editors.



Speaker 1

Okay, I can explain you something and overriding of methods.



Speaker 4

That's it.



Speaker 1

It was possible in Classic ui, but it looks like fully not supported and not practical in Freedom ui. In Classic UI you could rewrite or.



Speaker 2

Interfere into some life cycle stages of.



Speaker 1

Page by replacing its like critically important methods. In Freedom UI you can write your.



Speaker 2

Own methods, but system does not allow.



Speaker 1

You to significantly change this life cycle. So it looks like I tried and.



Speaker 2

It looks like when you have for.



Speaker 1

Example some handler and you already know that there is a base product handler which is declared somewhere in parent.



Speaker 2



Templates, you cannot replace it with your own rejecting execution of all parent implementation. So in Freedom UI you can write.



Speaker 1

Your own part and it will be.



Speaker 2

Just part of all the steps executed.



Speaker 1

In total and you can't break the way how pages code and what handlers are called there until you will write your own control I think so in Freedom UI we have different conditions for programming. I plan to update this program for.



Speaker 2

Our sessions and it's a bit outdated.



Speaker 1

Here, but I try to provide you the latest useful material and in the order which looks like the most, let's say natural. So when you do simple settings then.



Speaker 2

You do a bit more.



Speaker 1

More complex and so our flow of real topics that we study, I think it's quite optimal for current version.



Speaker 4

Thanks Mario.



Speaker 1

Thank you Paddy for questions and any.



Speaker 2

Any, any difficulties with your homework, when you do examples, when you make.



Speaker 1

Your sections, maybe you have something to say. It happens that most of our participants watch videos like you now and then.



Speaker 3

They decided to process video files much.



Speaker 1

Later than finishing of the sessions.



Speaker 3

So I recommend you to invest some time between the sessions to watch videos and practice.



Speaker 1

Because in this case you will easier.



Speaker 3

Understand our next topics.



Speaker 1

You will get more experience at that topics and think it will be in.



Speaker 3

General faster for you.



Speaker 1

So it will be faster boarding faster, let's say getting necessary expertise for you as developers. So at the end of the sessions.



Speaker 3

You'll be able to pass an exam.



Speaker 1

We call it Fast Track certification, which.



Speaker 3

Includes homework very similar to what we do here and test. This test will require some time for you to prepare. So at the end of the sessions next week, I will explain you some.



Speaker 1

Details how we will prepare for the exam, how it will be organized and.



Speaker 3

This is optional thing.



Speaker 1

So if you feel confident, you may apply for it. If not, you may use Academy website and apply for certification much later.



Speaker 3

So if interested in preparation for the.



Speaker 1

Exam, also keep it in your mind.



Speaker 3

And if you have some questions, feel free to ask. Also maybe you will want to write me some messages.



Speaker 1

Here is my email. I will be happy to answer you and support you during your practicing with.



Speaker 3

Examples in our sessions.



Speaker 1

Thank you for your time today.



Speaker 3

See you tomorrow as usual.



Speaker 1

And as usual, you will receive videos of today's session very soon, maybe 40 or 50 minutes to get this video.



Speaker 3

Thank you and goodbye.



Speaker 1

See you tomorrow. Bye.



Speaker 2

It.