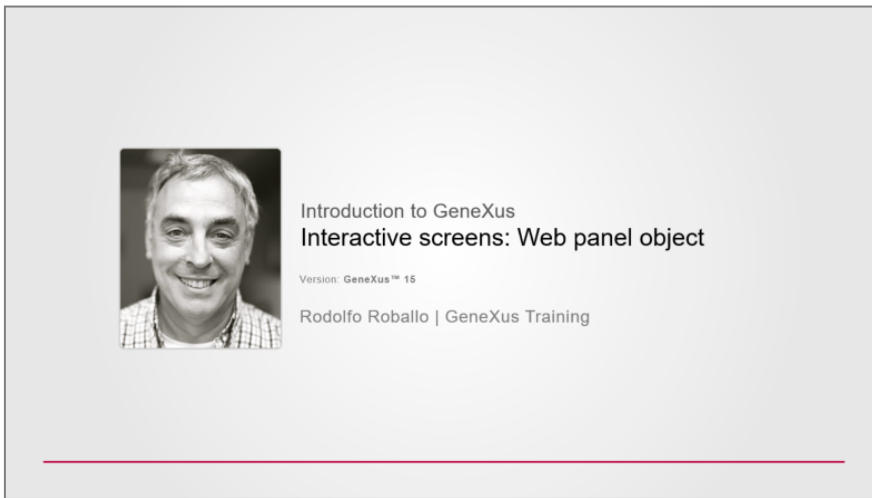


Interactive screens in a web environment: Web Panel Object



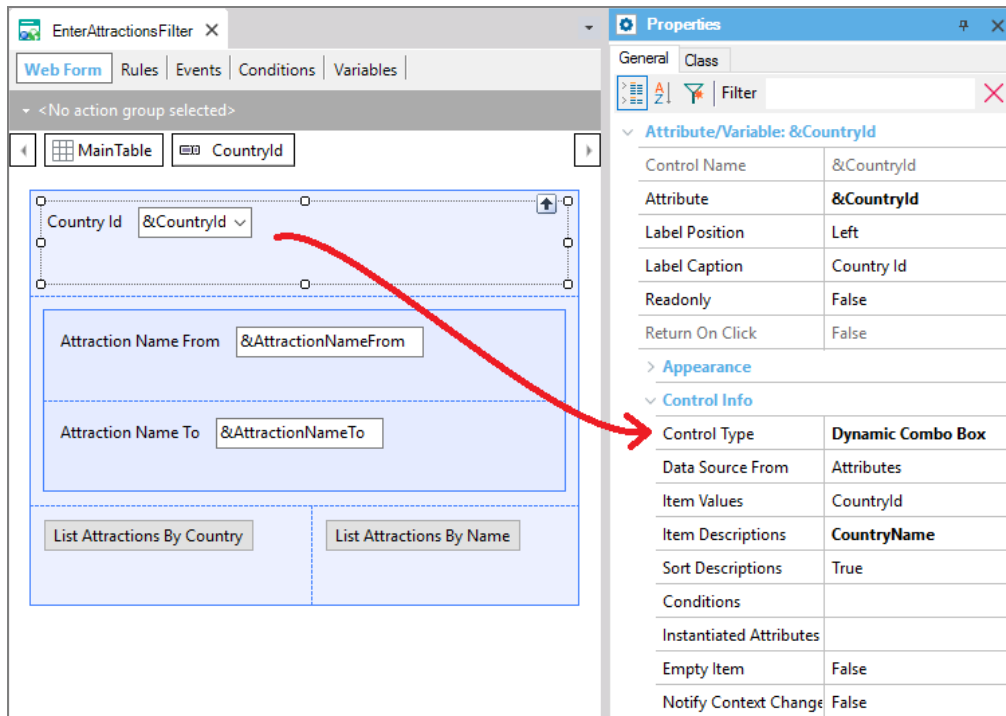
Web panels are the most versatile objects provided by GeneXus.

As we've seen in some examples, all web panels have a web form consisting of a web page that enables us to design and provide a variety of functionalities.

A screenshot of the GeneXus web form designer. The title bar says 'EnterAttractionsFilter'. Below it are tabs: 'Web Form' (highlighted with a red box), 'Rules', 'Events', 'Conditions', and 'Variables'. Below the tabs is a dropdown menu showing '< No action group selected >'. Below that is a 'MainTable' tab. The main area shows a web form layout with a 'Country Id' label and a dynamic combo box '&CountryId'. Below this is a section with 'Attraction Name From' and '&AttractionNameFrom', and 'Attraction Name To' and '&AttractionNameTo'. At the bottom are two buttons: 'List Attractions By Country' and 'List Attractions By Name'.

In the example we saw that the variables that we include in the web form are enabled for the user to assign values to them. This means that they are input controls; in other words, they are not read-only.

Specifically, this variable, of the dynamic combo type,

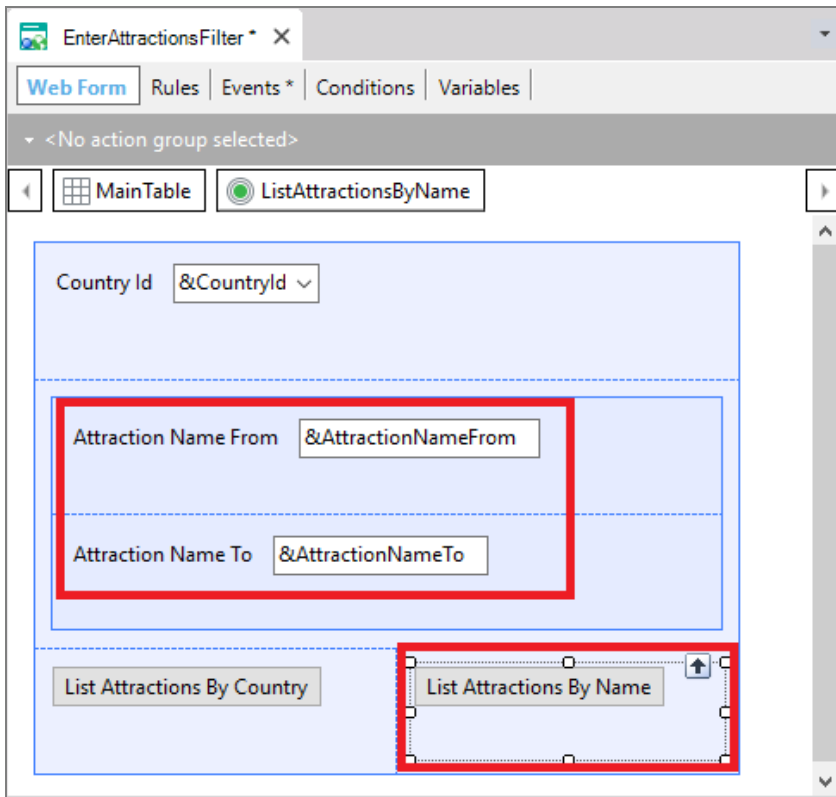


expected the user to select one country from those loaded in the combo. After pressing the button “List Attractions By Country”, the associated event would be executed...

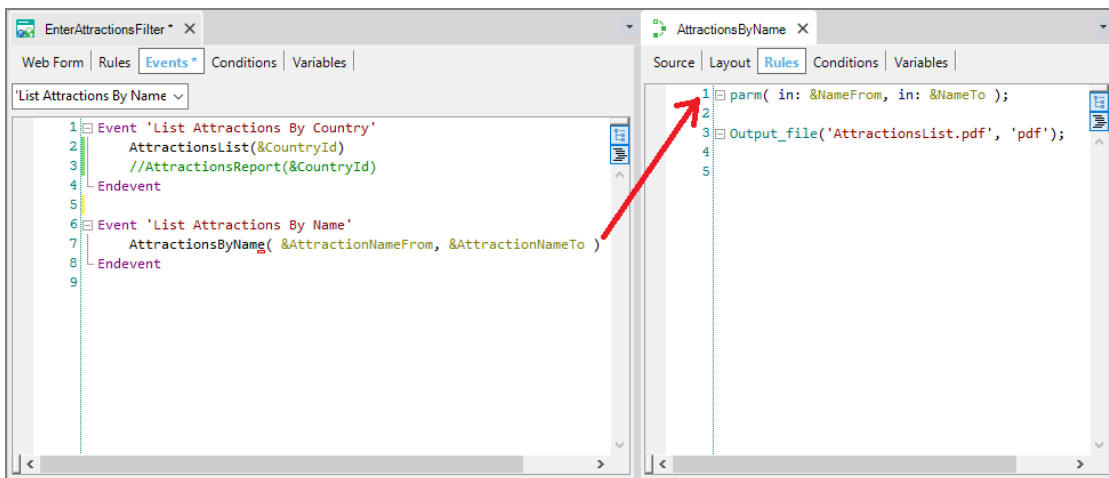


...invoking the PDF file containing a list of attractions in that country.

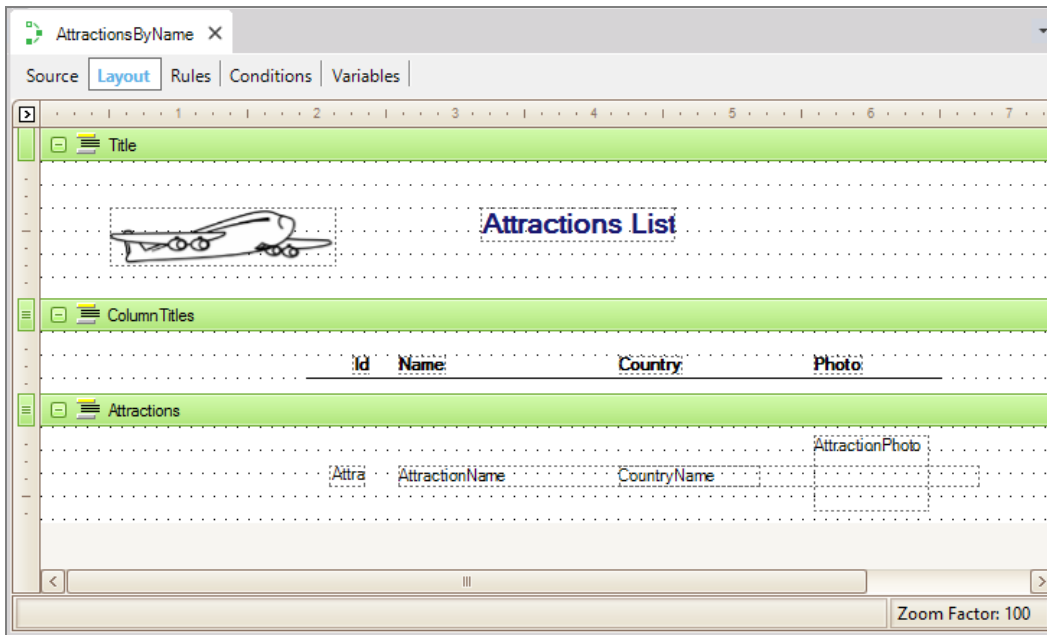
In these other variables, the user would enter a range of attraction names so that when this other button is pressed



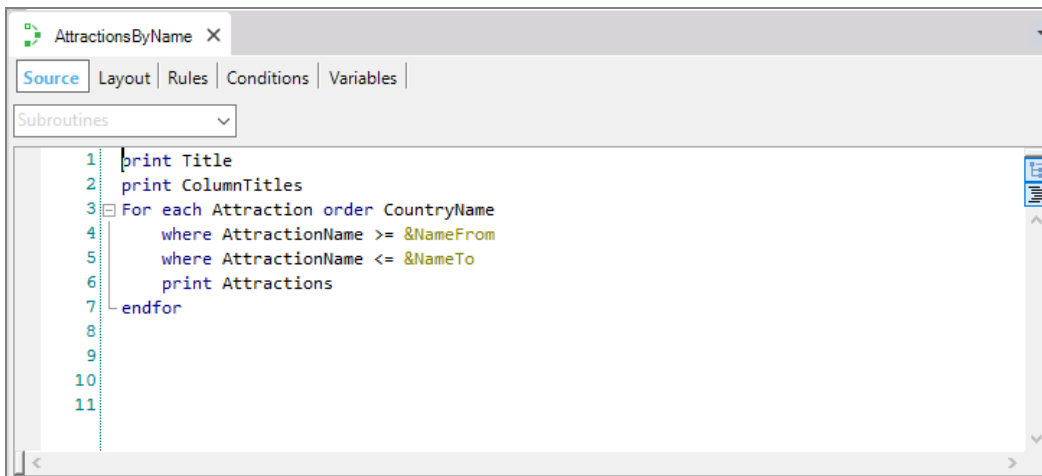
...the PDF list showing the attractions within the range received by parameter would be invoked.



Remember the layout:

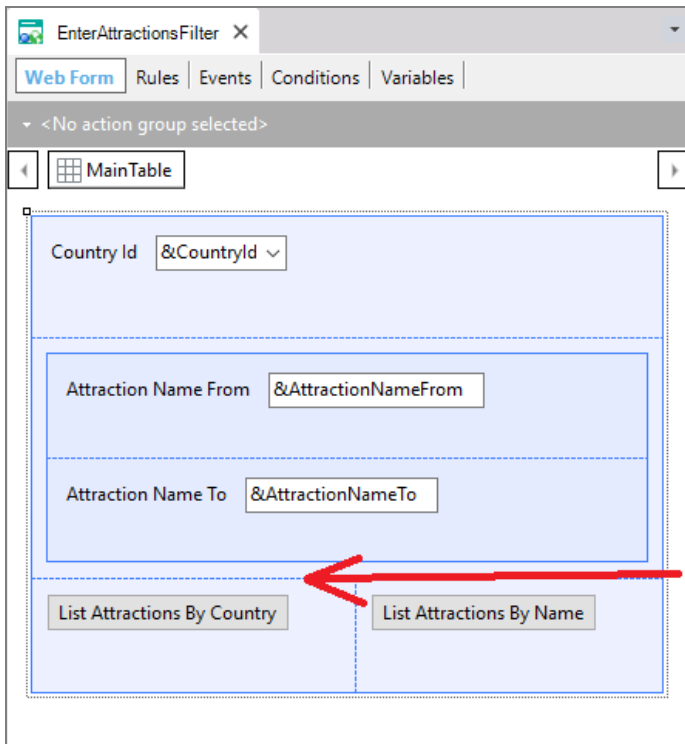


... and, in the Source, we programmed the database query with the For Each, filtering by name:



But, why do we define these queries through PDF listings instead of doing it directly on the screen where the user is required to enter data for the filters?

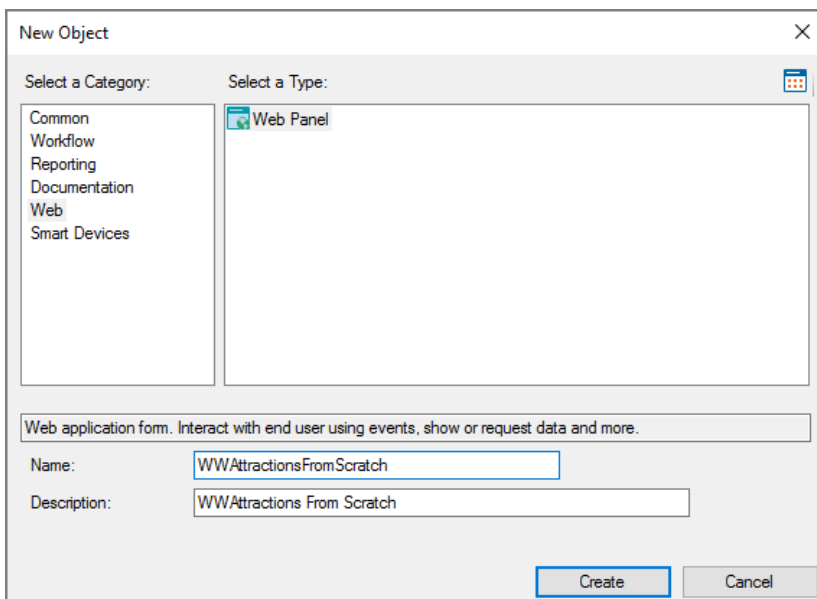
Why not add here a grid showing the desired attractions instead of the buttons?



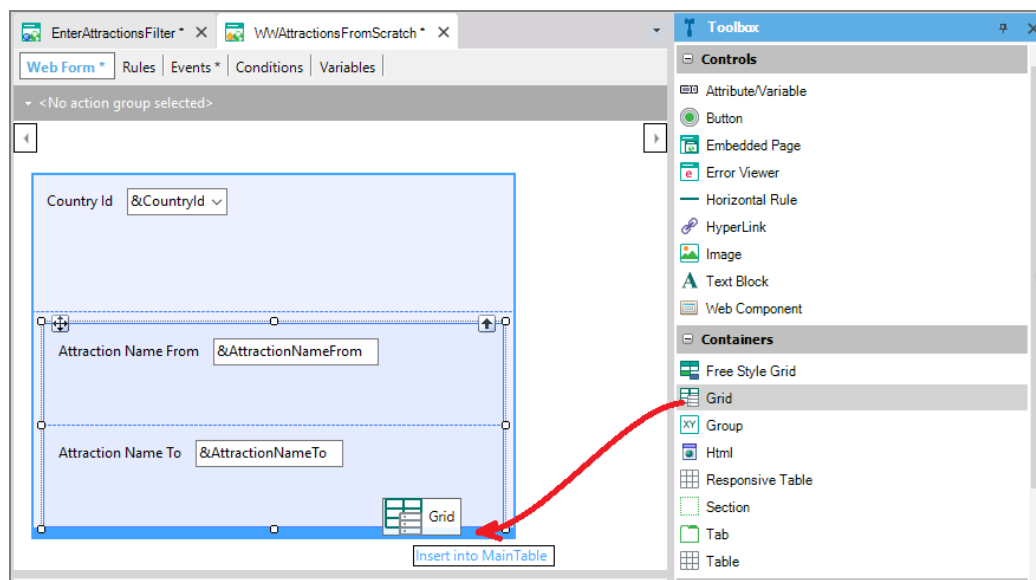
Apart from allowing the definition of variables to be used in actions programmed in buttons, web panels allow us to implement **interactive** queries to the database, which is in fact their main purpose.

“**Interactive**” implies that it is possible for the user to enter many different values – **in variables** – in the web page and then query the database for data matching the values entered, using them as filters, as we will see next.

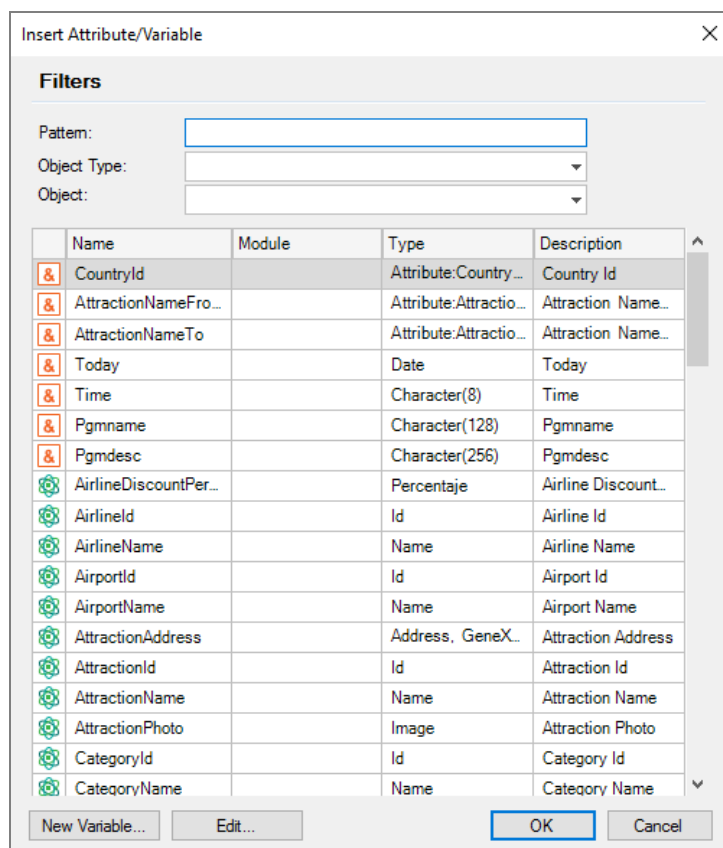
Let's now save this web panel with a different name. We will be implementing something similar to a Work With element, so we will call it:



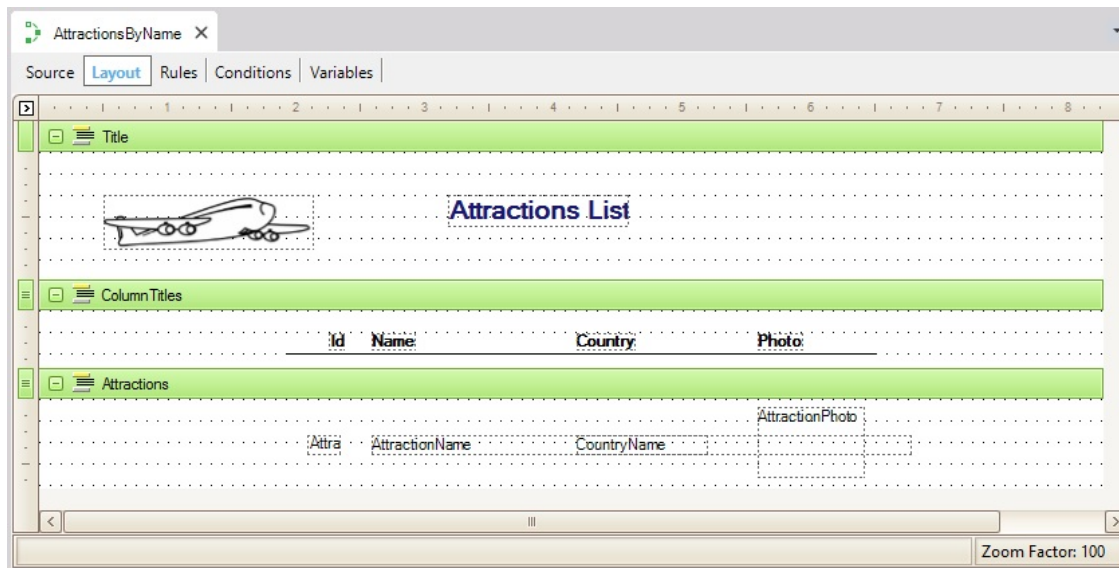
We remove the buttons and the associated events because they will no longer be necessary. Now, we insert a control of the grid type below the variables:



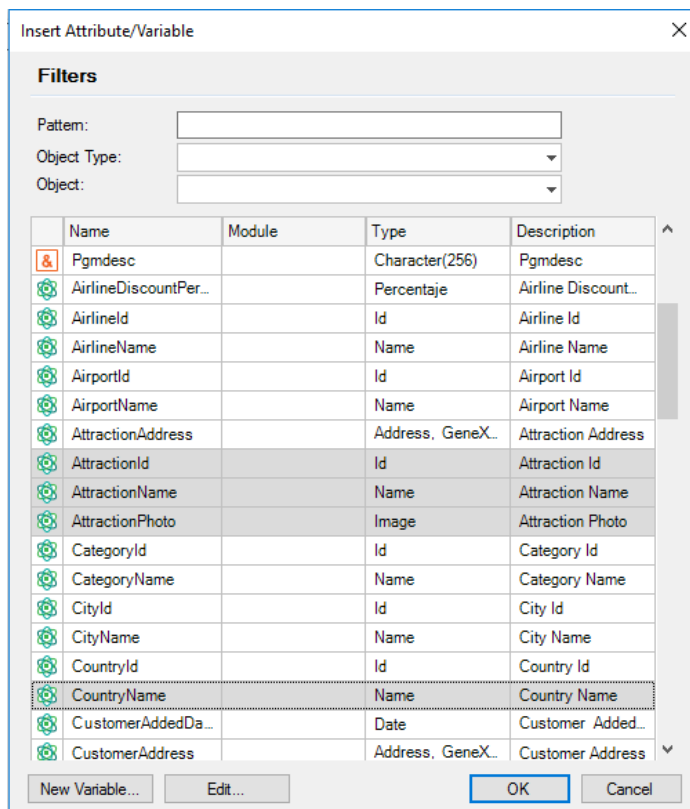
A screen opens up in order to select the attributes and/or variables that will be this grid's columns.



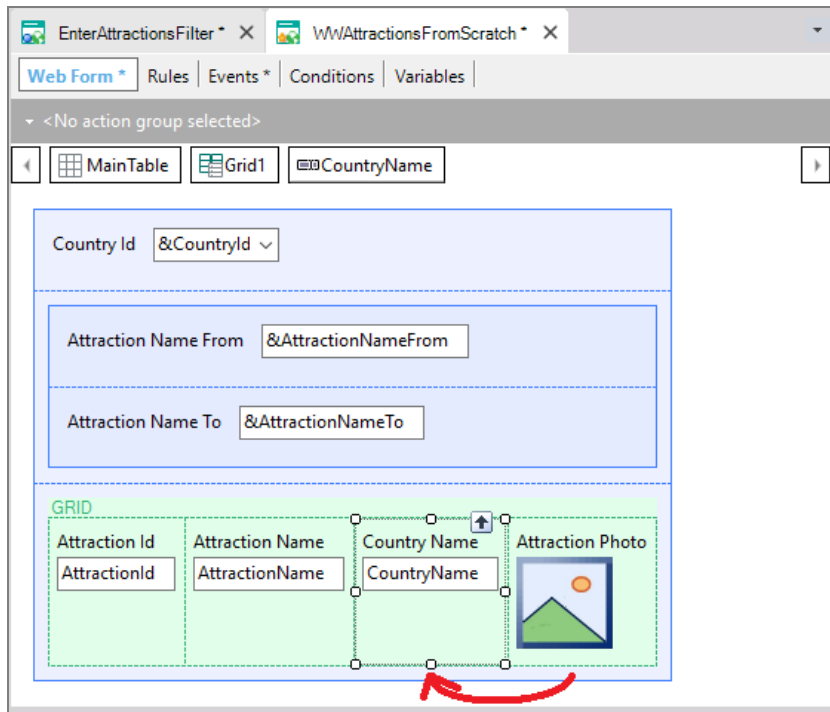
Since we want to show the same we showed on the PDF listings...



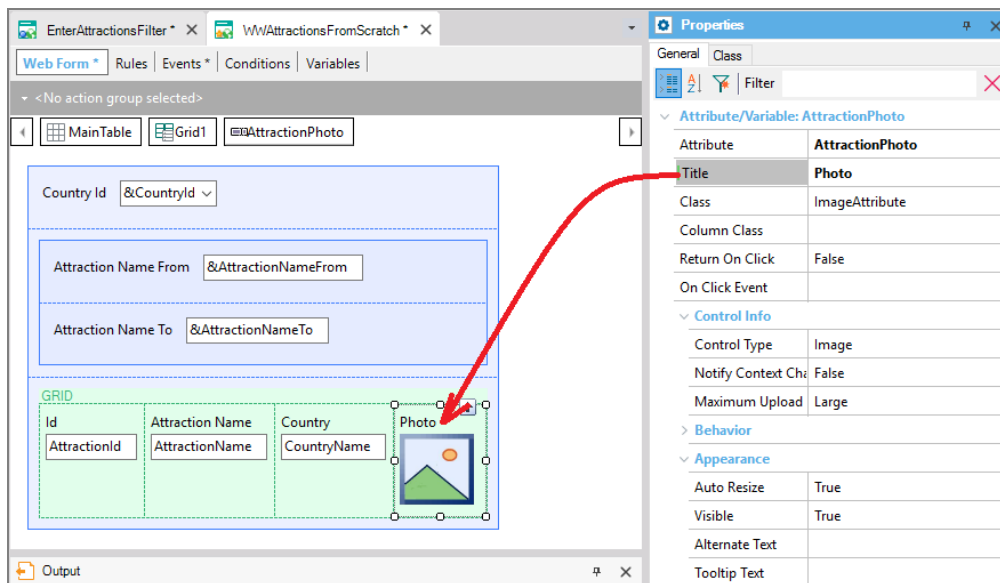
...we select the AttractionId, AttractionName, AttractionPhoto and CountryName attributes ...



... and then press OK. We will then see that a grid has been created with these columns. Let's move CountryName here:

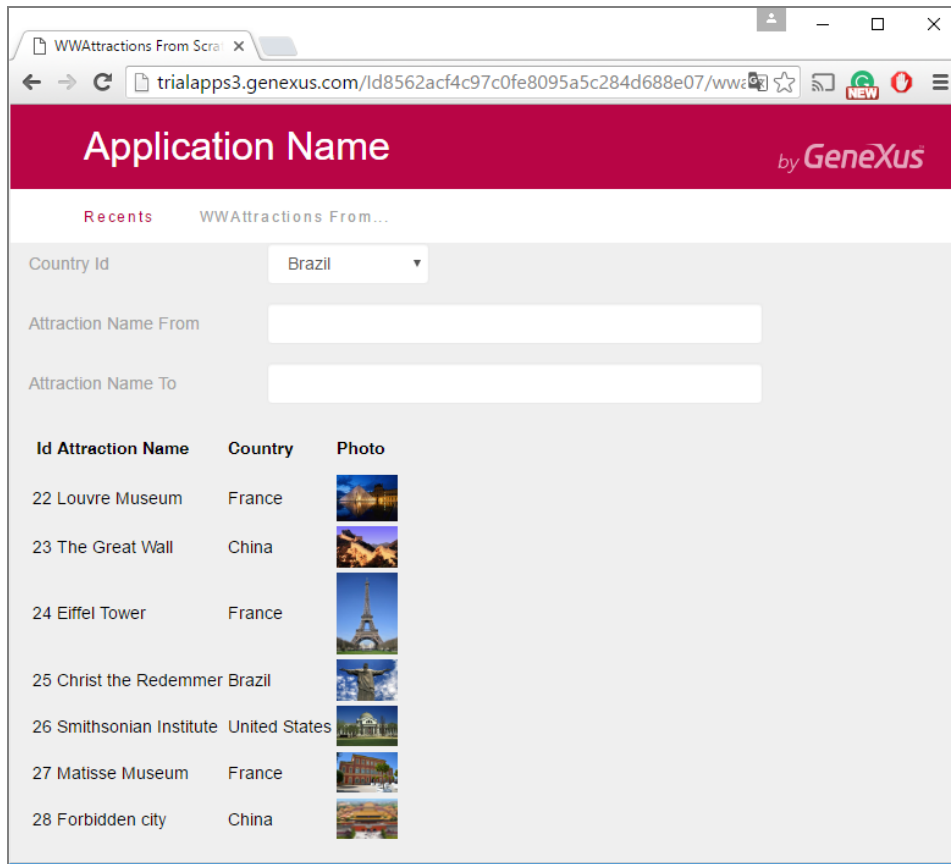


We may change the column titles by editing the properties of each attribute comprised in the grid columns.



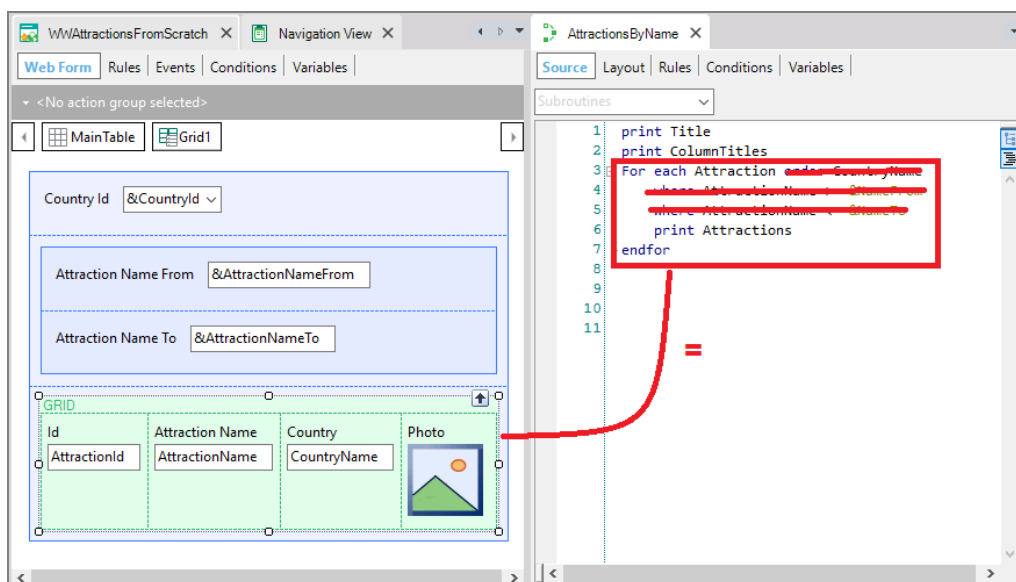
The **attributes** in a web panel form are, by default, **output** attributes. That is to say that they are **readonly**. This means that GeneXus understands that it must go to the database to search for their value and show it to the user.

Let's press F5 to run our new web panel, just as we have it so far.



We can see that all the attractions have been printed, with the data we indicated (ID, name, country and photo). We will also see that they have been ordered by AttractionId.

The mere grid with these attributes drove GeneXus to understand that it should go to the database to navigate the Attraction table, and then access Country to bring the country of the attraction, as we did with the For Each command (without these clauses):



We can see that one of the grid properties is called **Base Trn**. This property is similar to the base transaction of the For Each command. In fact, to make sure that the Attraction base table is selected for the grid, as we want, we should indicate the base transaction, just like for the For Each command.

Grid: Grid1	
Control Name	Grid1
Collection	
Base Trn	Attraction
Order	
Conditions	
Data Selector	(none)

Appearance	
Class	Grid
Custom Render	
Empty Grid Text	
Auto Resize	True
Width	
Height	
Rows	0
Tooltip Text	

In addition, note that an **Order** property is available for the grid. This property corresponds to the Order clause of the For Each command.

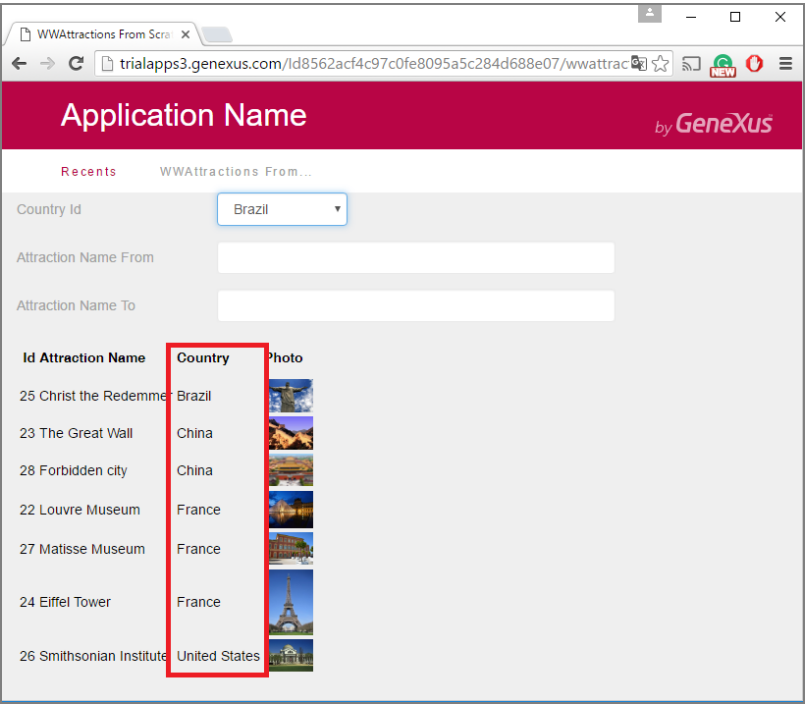
So, if we want to order by country name, as in the listing:

```
1 print Title
2 print ColumnTitles
3 For each Attraction order CountryName
4   print AttractionName
5   where AttrActionName = &AttractionName
6   print Attractions
7 endfor
```

Grid1's Order

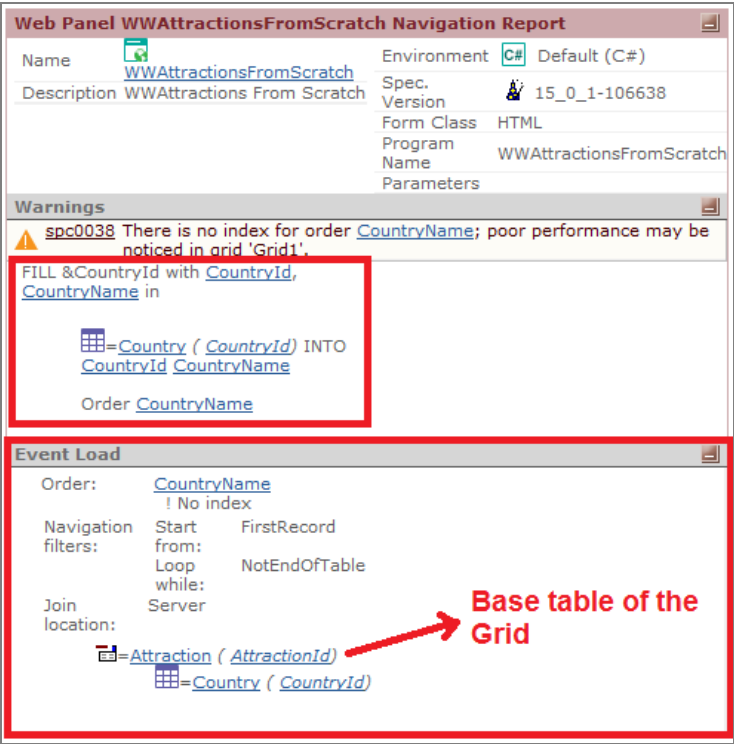
CountryName

We press F5...



And we will see that the grid is now ordered by country name.

Note that the navigation list of the web panel:

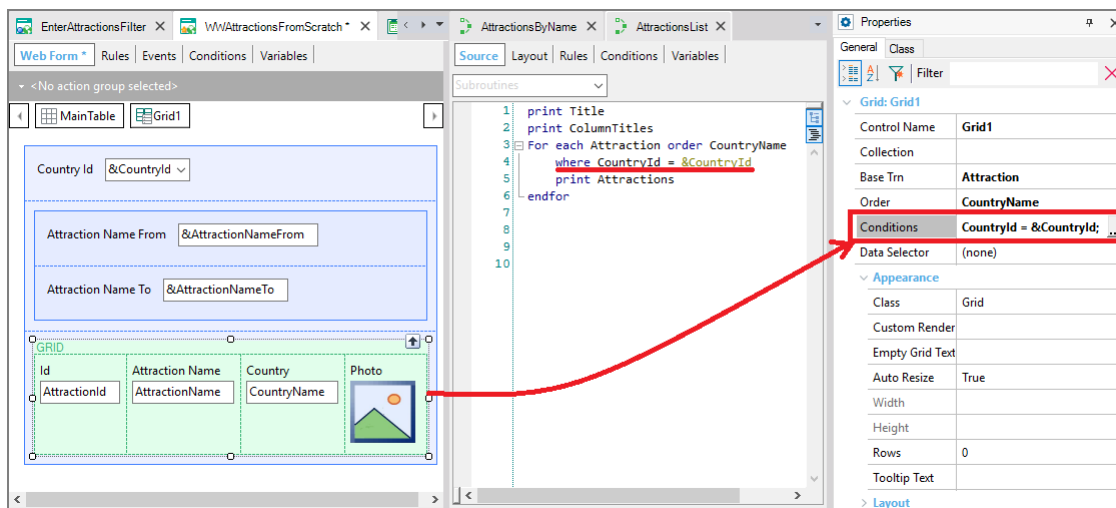


here indicates the navigation that has to be made to load the combo box of the &CountryId variable, which we have not used at all for the time being.

And, here, it indicates the navigation that will have to be made to load the grid. The list for this loading is identical to the list for a For Each command. It has selected the Attraction table, running it through CountryName - the attribute of the Order property. It will run through the entire table, and for each record in Attraction to be loaded, it will access the Country table to show the CountryName for the attraction.

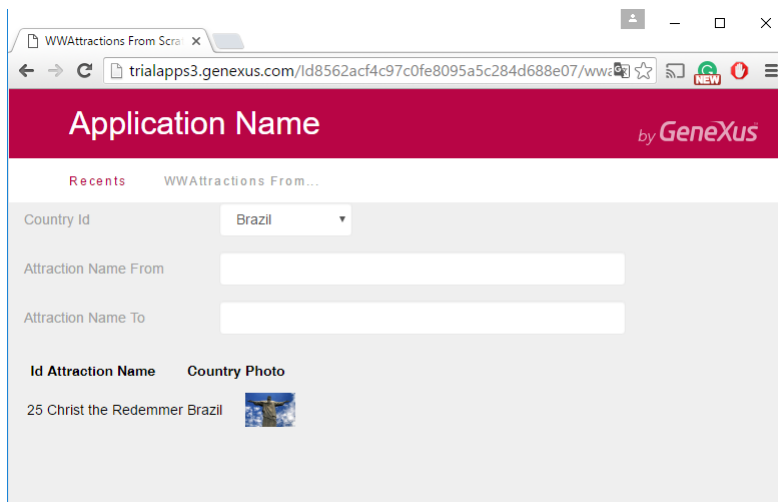
So far, we haven't done anything with variables. But we wanted to use them to filter the data displayed in the grid, by country and as well as by attraction name.

In AttractoinsList we filtered by country. How do we indicate this filter for the grid? Through the **Conditions** property:



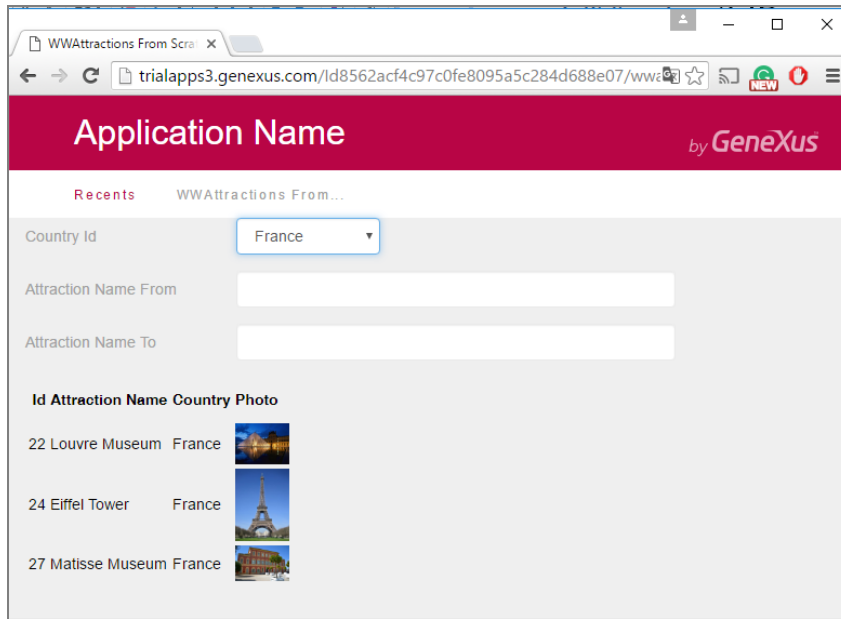
Here we're telling GeneXus that, when running through the grid base table, Attraction, we want it to filter those records for which the attraction CountryId is the same as the value selected by the user in the &CountryId combo box.

We press F5.



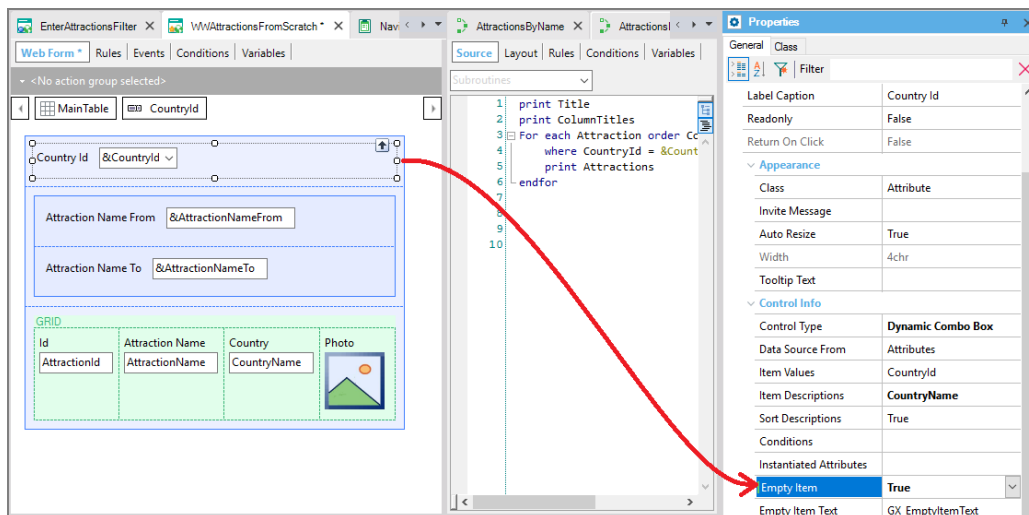
Note that, by default, the combo box takes the value Brazil, and that the grid only shows an attraction in Brazil. If we select France, we see that the screen is refreshed and the grid is loaded again, this time with the

attractions in France.

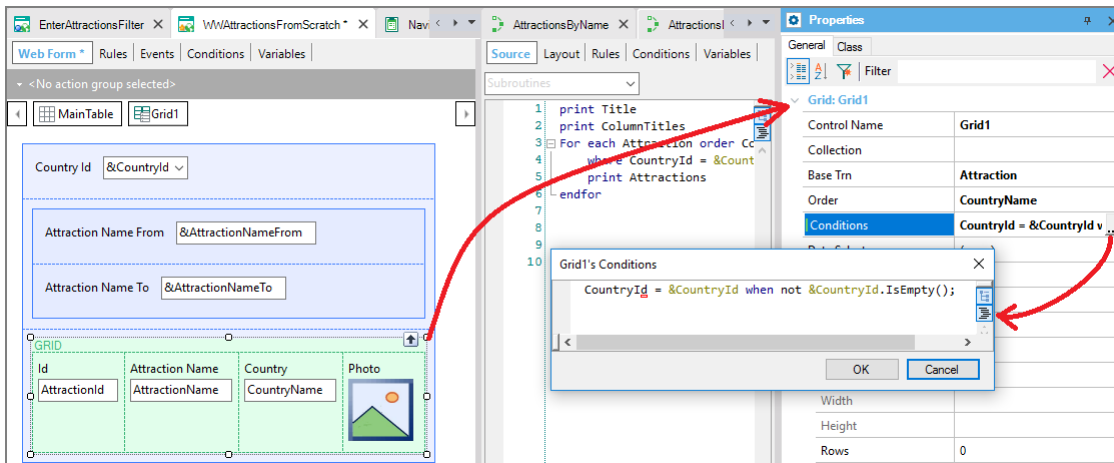


We will probably want the combo to be first displayed without a selected value, with the attractions of all countries displayed.

To do this we must edit the combo box properties... and set the Empty Item property to True. This will add a “(none)” option to the combo. It will correspond to an empty value.

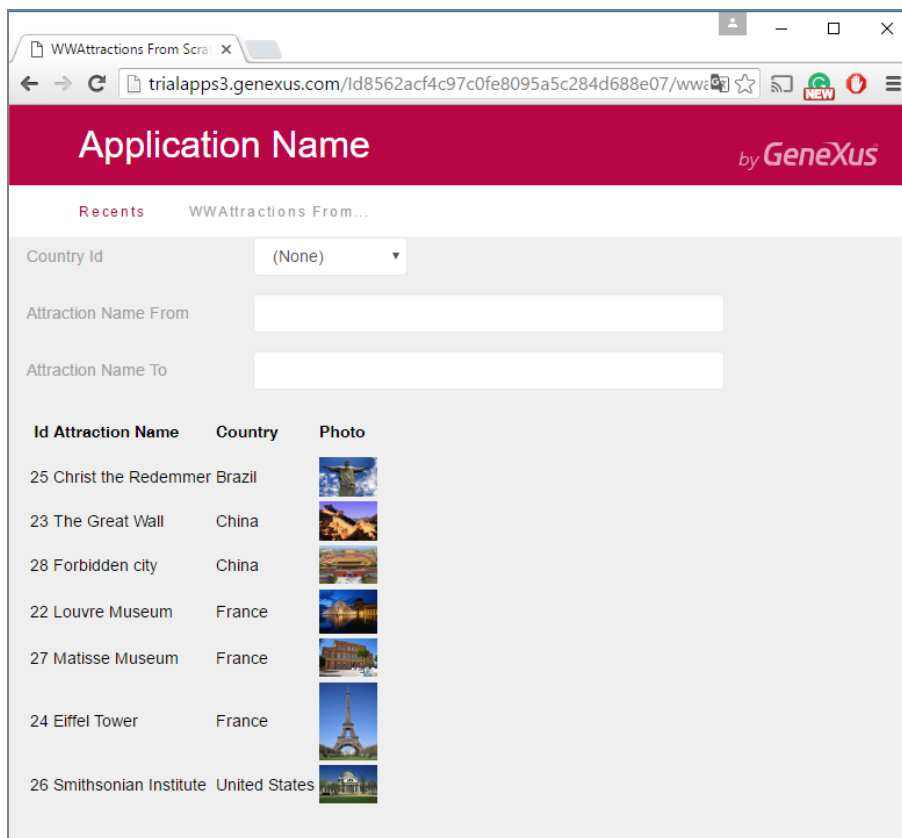


So, we open the **Conditions** property and indicate that we want to have this condition applied only when the combo's value is not empty. When it is empty, the condition should not be applied.

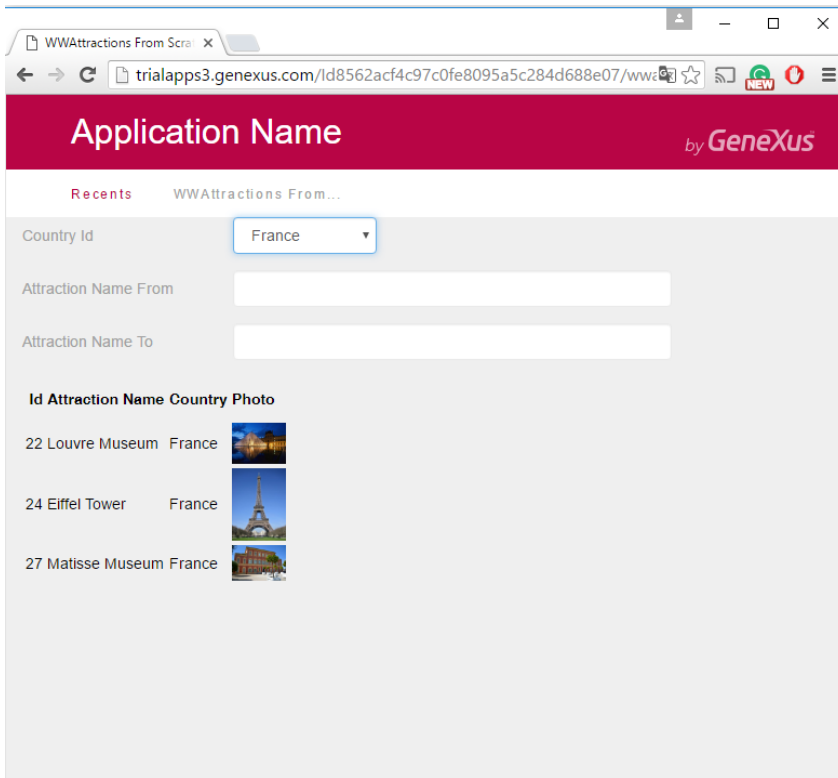


We run it...

...and see how the (None) value is displayed in the combo. In addition, in this case there is no filtering for the attractions, and all of them are displayed:

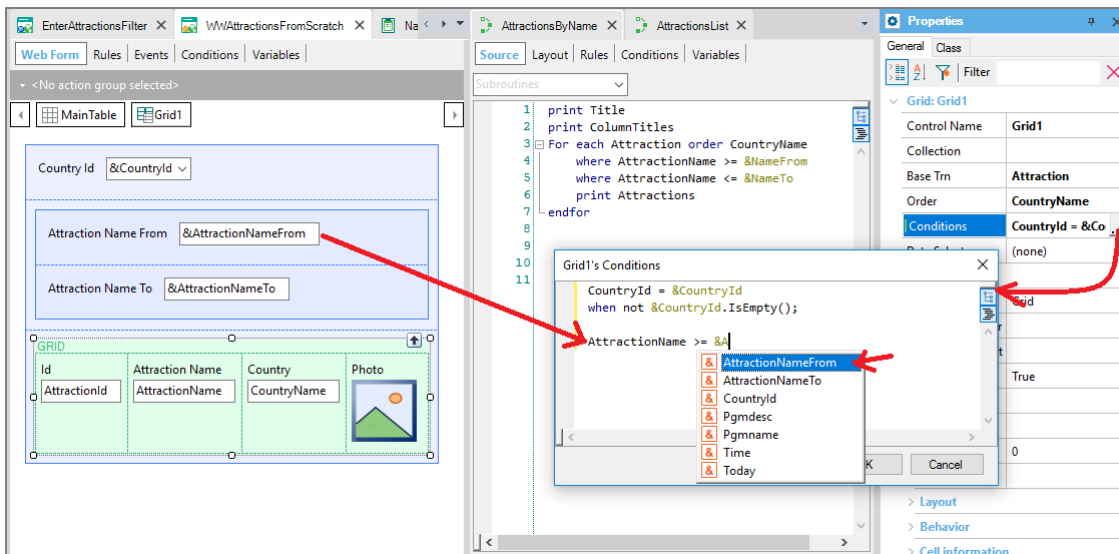


If now we choose, France, for example:

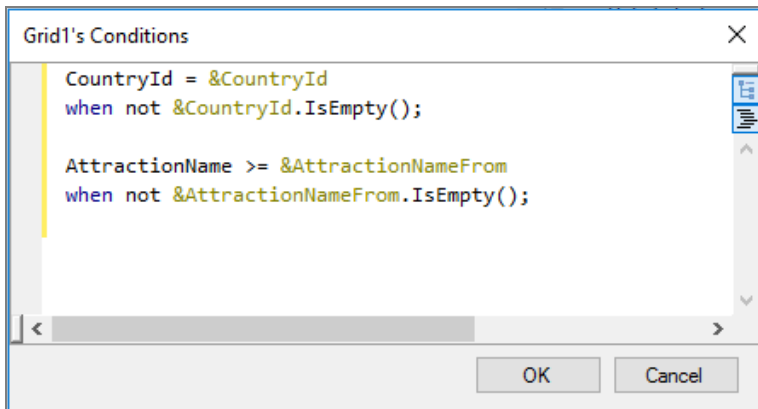


Since the variable's value is not empty, the filter is applied and the attractions in France are displayed.

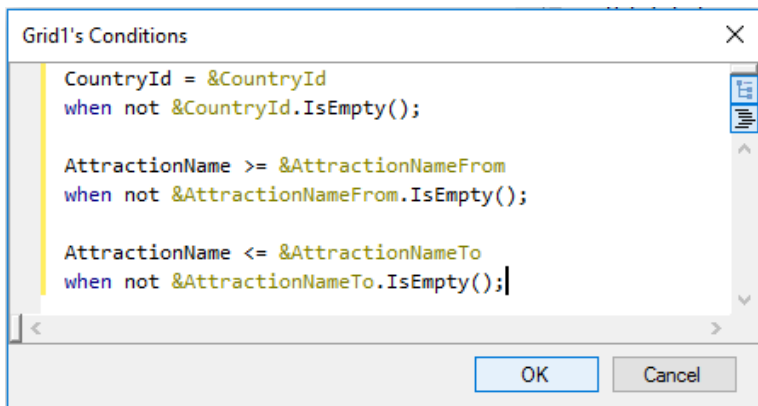
We would also have to add the filters by attraction name that we want added to the other filter. So, if in the listing we filtered in the For Each command using these two Where clauses... we will add them to the grid as conditions:



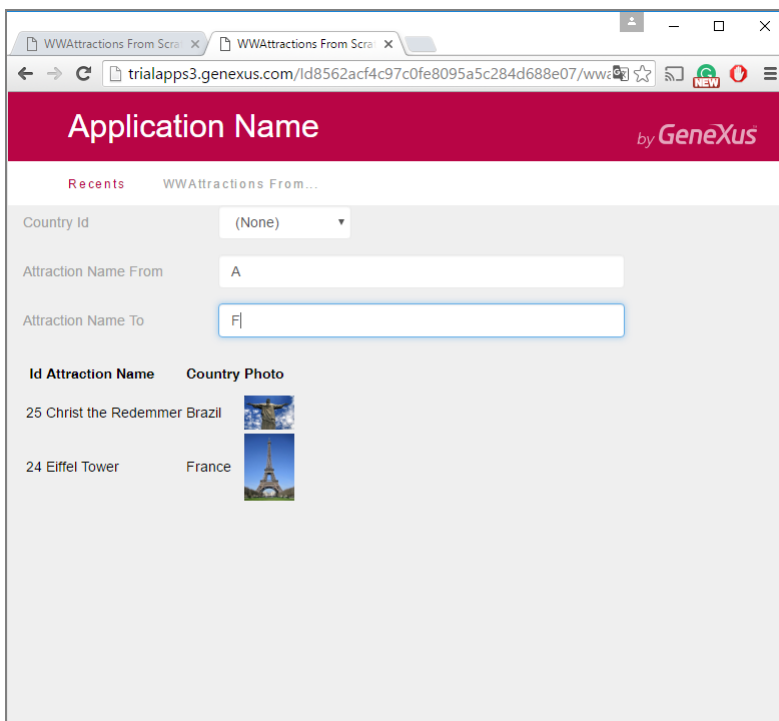
AttractionName greater than or equal to the value of the &AttractionNameFrom variable of the form, which may be entered by the user. Once again, if the user doesn't enter a value in the variable, we will not want this filter to be applied. So, we use the When clause. This clause may also be used in the Where clause of the For Each command, in a completely analogous way.



We add the other filter:

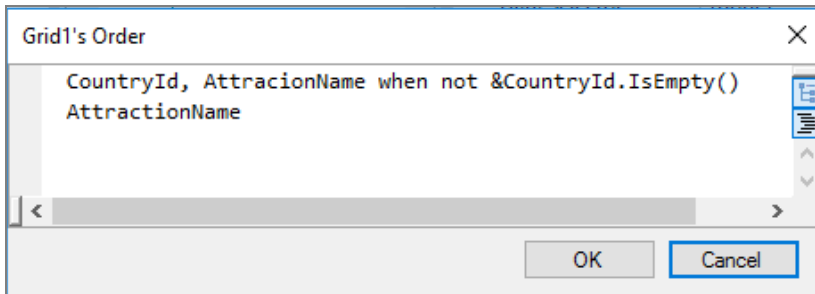


We run again. And now we choose to see the attractions between A and F:



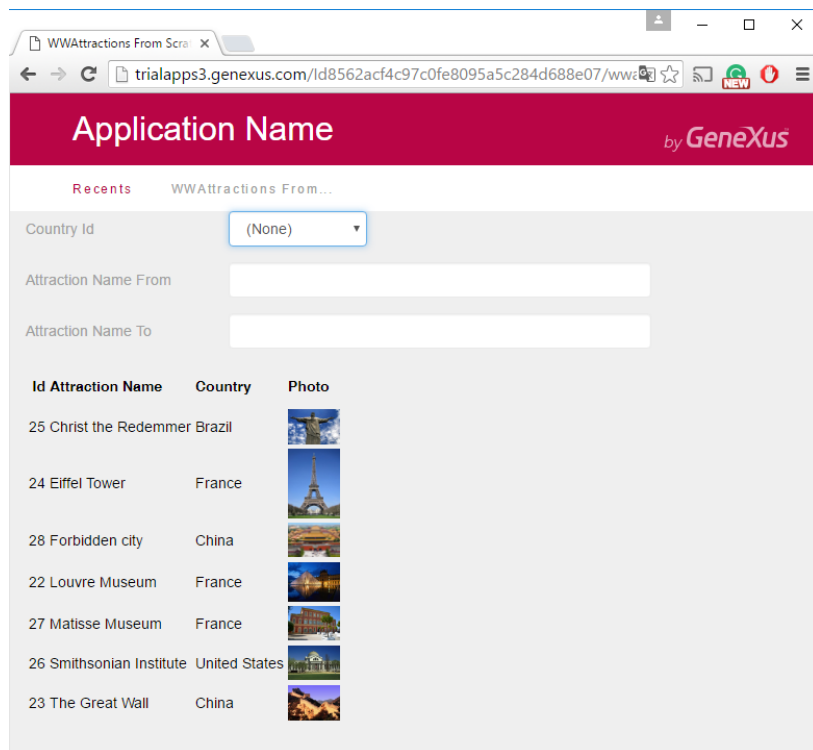
For the case when the user selects a country, we may instruct the web panel to then sort the information by CountryId, and inside CountryId by AttractionName, or otherwise, by AttractionName. This is meant to optimize the search of table records.

To do it, we edit the Order property of the grid and write the order first, conditioned to the selection, by the user, of a country in the combo. In this case, the data will be filtered by that country, and also the attractions will be listed in alphabetical order for that country. If the user left the combo empty, with the “(none)” value, then the following order –by AttractionName– will be selected:

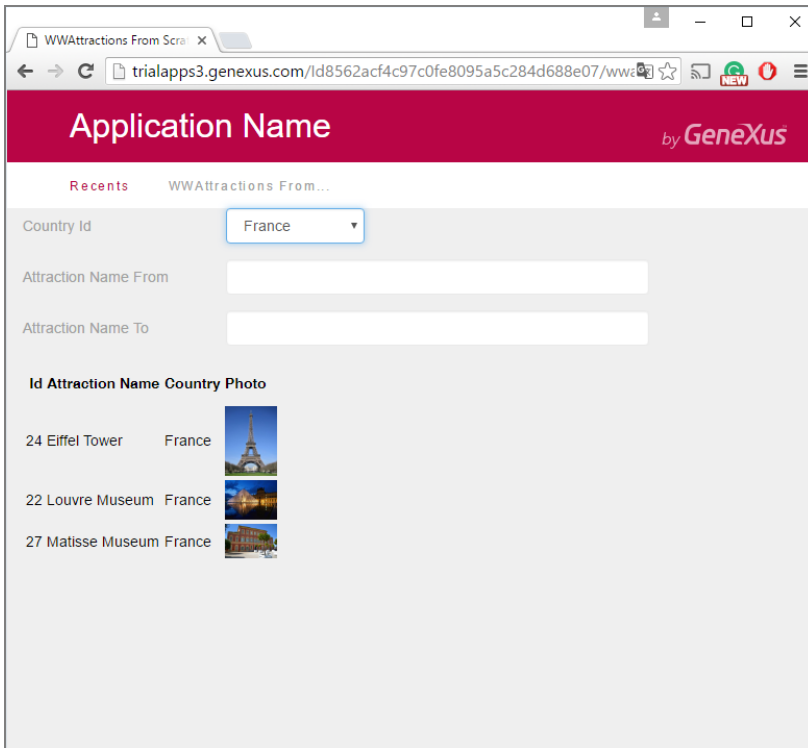


We will not go into further detail here. The purpose of mentioning this was just to show that we can also condition the way in which we want to have information ordered. It works exactly like in a For Each command.

We run it:

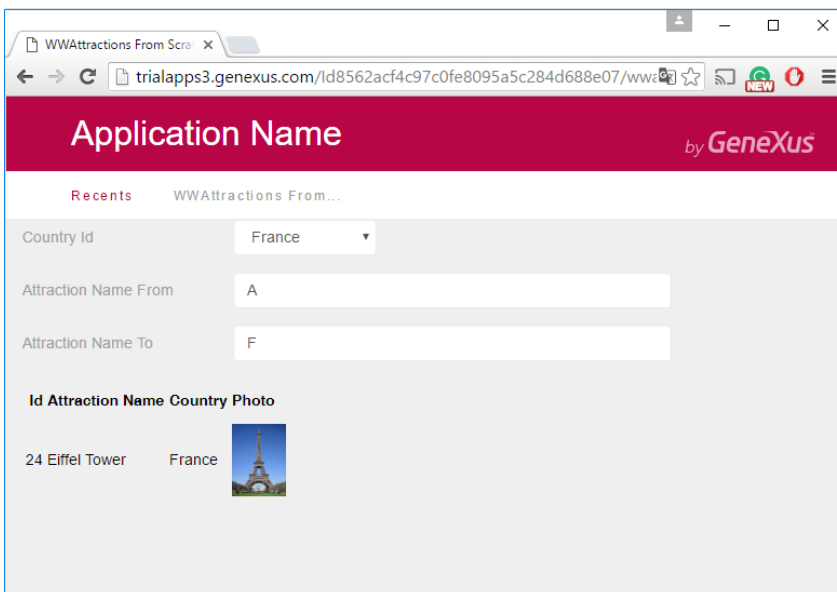


Here, it ordered by AttractionName. And if we select France, it will order by France's ID, and inside it, by AttractionName.

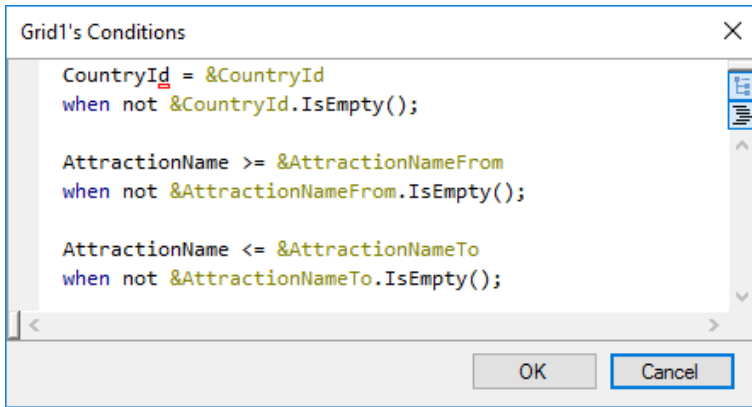


In sum, attractions will always be shown in alphabetical order.

If, within France's attractions, we want to see those between the letters A and F:



We see that the grid was loaded filtering by the three conditions we had added:

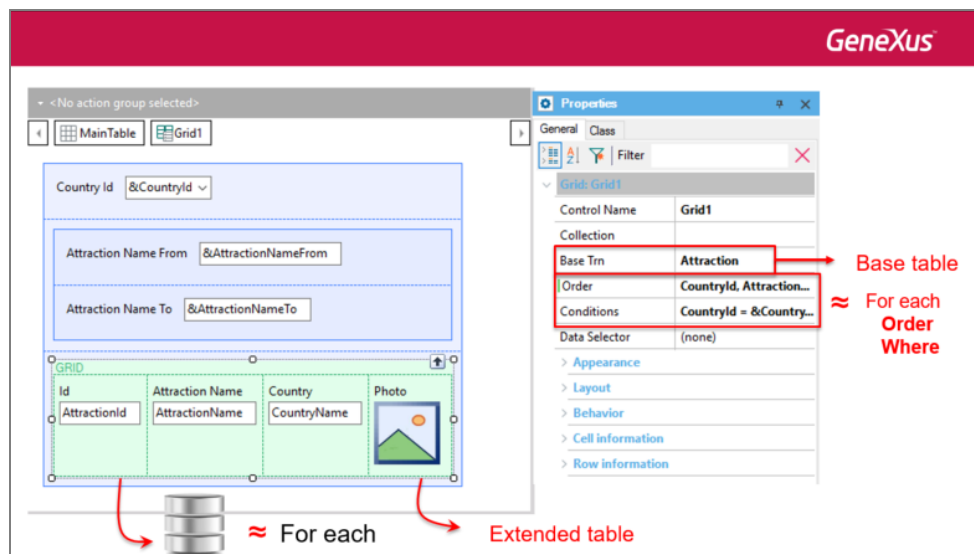


To summarize what we have done so far:

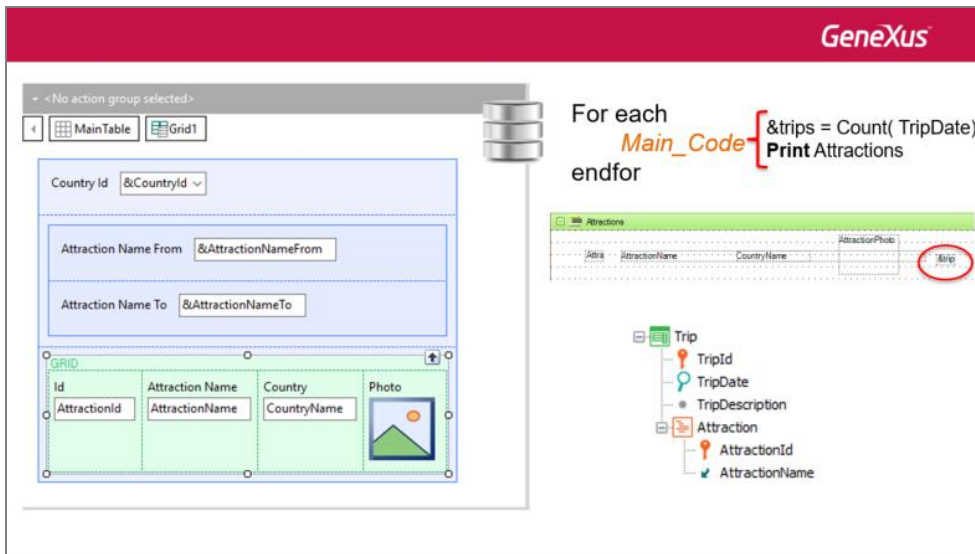
We implemented a web panel where, in addition to including some variables for which the user enters values, we also inserted a Grid control with attributes.

The attributes correspond to information in the database, so GeneXus understands that it has to search for it. A grid with attributes is like a For Each, so, we have the **Base Trn** property, as in the case of a For Each, to specify the level of the transaction whose associated table we want to run through. This table is called **grid base table**. When we don't specify it, as it may also be the case with a For Each command, then GeneXus will infer it based on the attributes used. However, we will not be considering such case at this point.

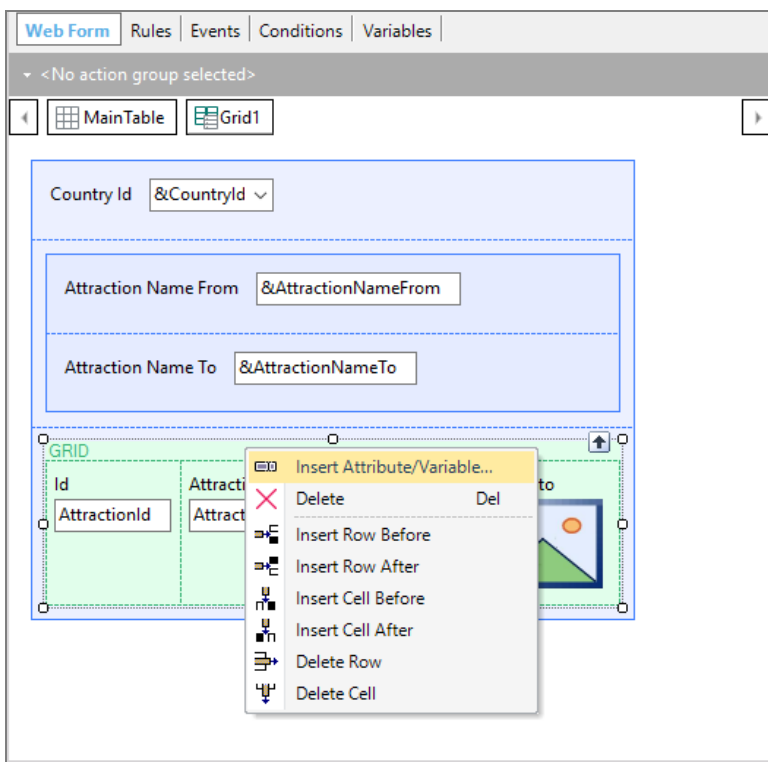
All the grid attributes will have to belong, as in a For Each command, to the extended table of that base table. Just like in a For Each we order data with the Order clause and filter the data to be returned by the query with one or several Where clauses, in order to do the same with the grid we have, respectively, the Order and Conditions properties.



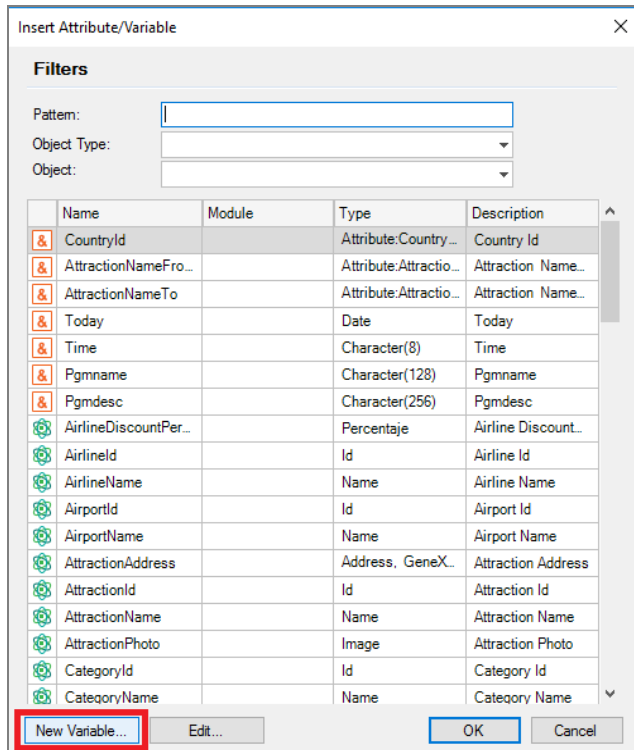
In a For Each command we program what we want to do with each record that meets the conditions inside its body.



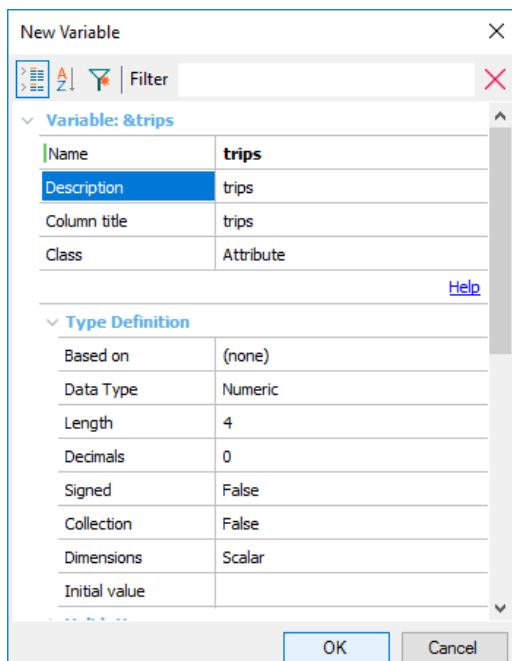
To do the same in the web panel, we right-click on the grid and select Insert Attribute/Variable



Then, New Variable:



And we define the Trips variable:




After pressing OK... we can see that it has been inserted as a grid column. We move it to the position where we want inside the grid.

Country Id

Attraction Name From


Attraction Name To

GRID

trips &trips	Id AttractionId	Attraction Name AttractionName	Country CountryName	Photo 
-----------------	--------------------	-----------------------------------	------------------------	--

Also, we change its **Title** property so that the column title appears in uppercase.

GRID

Id AttractionId	Attraction Name AttractionName	Country CountryName	Photo 	Trips &trips
--------------------	-----------------------------------	------------------------	---	-----------------

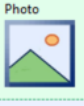
This corresponds to having inserted the variable in the print block. But, where do we indicate how the calculation is done?

Country Id

Attraction Name From

Attraction Name To

GRID

Id AttractionId	Attraction Name AttractionName	Country CountryName	Photo 	Trips &trips
--------------------	-----------------------------------	------------------------	--	-----------------

For each
Main_Code
endfor

&trips = Count(TripDate)

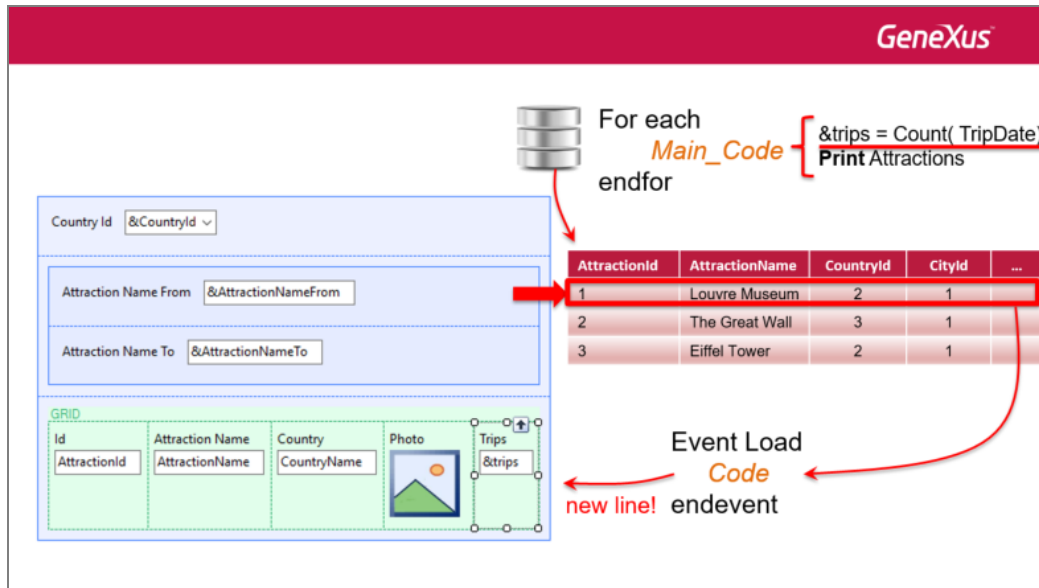
Print Attractions

Attractions

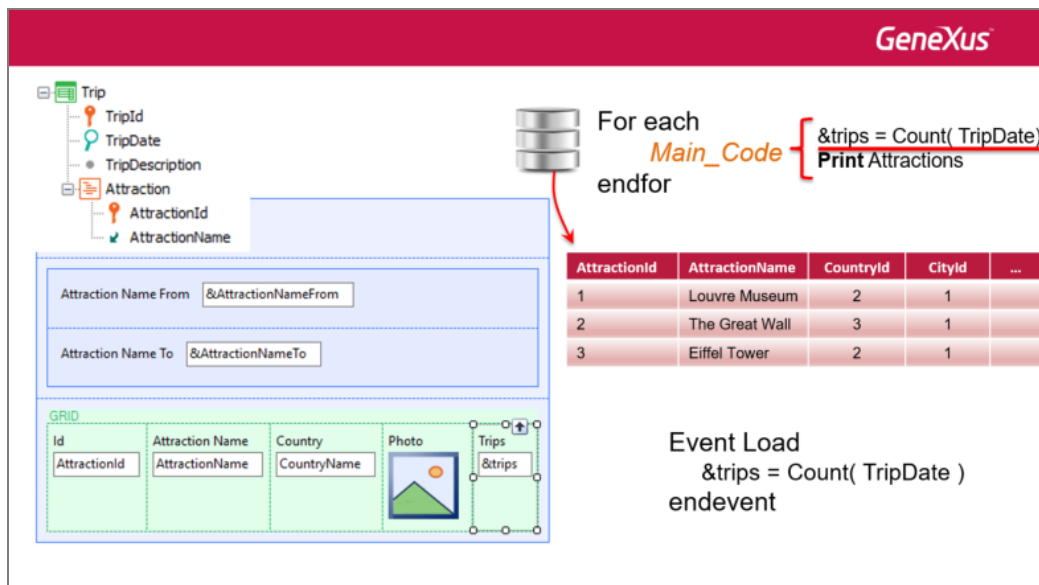
AttractionId	AttractionName	CountryName	AttractionPhoto	Trips
--------------	----------------	-------------	-----------------	-------

In the case of the For Each command, we did inside its body. And where do we do it in this case?

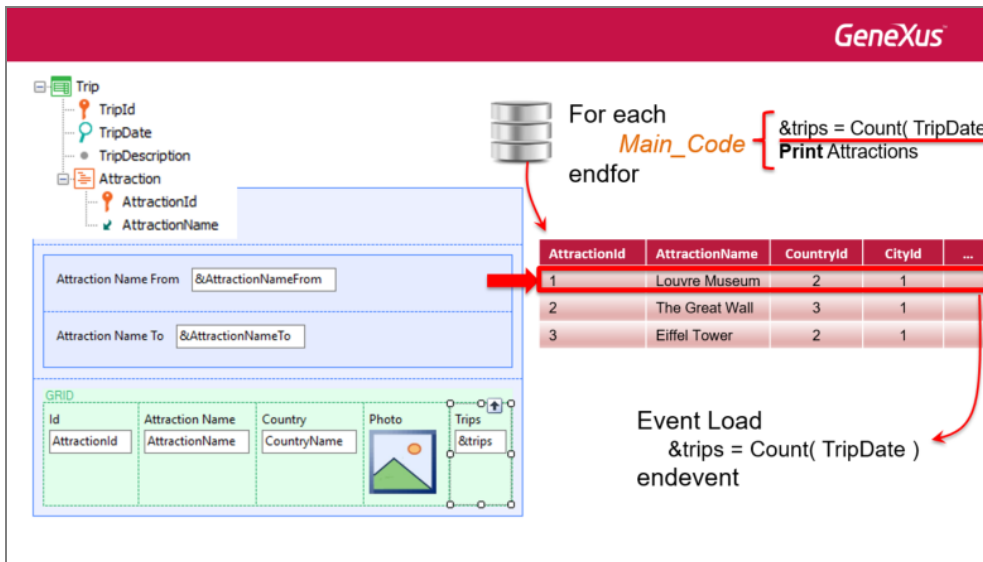
To do this we have the system's **Load** event. Inside it we program what we want executed when we're positioned on a record of the grid base table, right before the corresponding line is loaded in the grid.



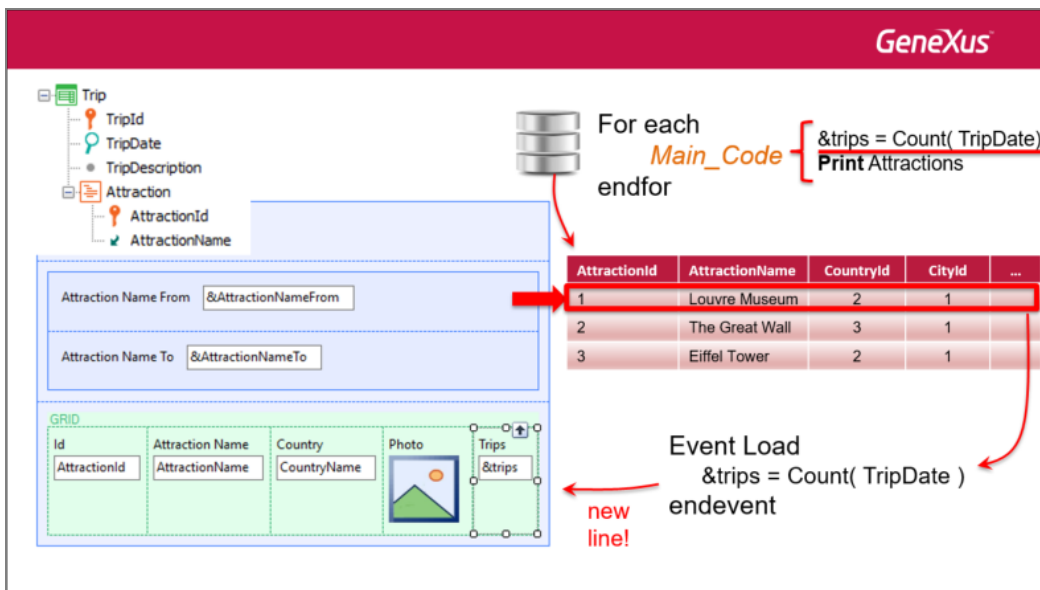
In this case, there is where we would assign a value to the &Trips variable:



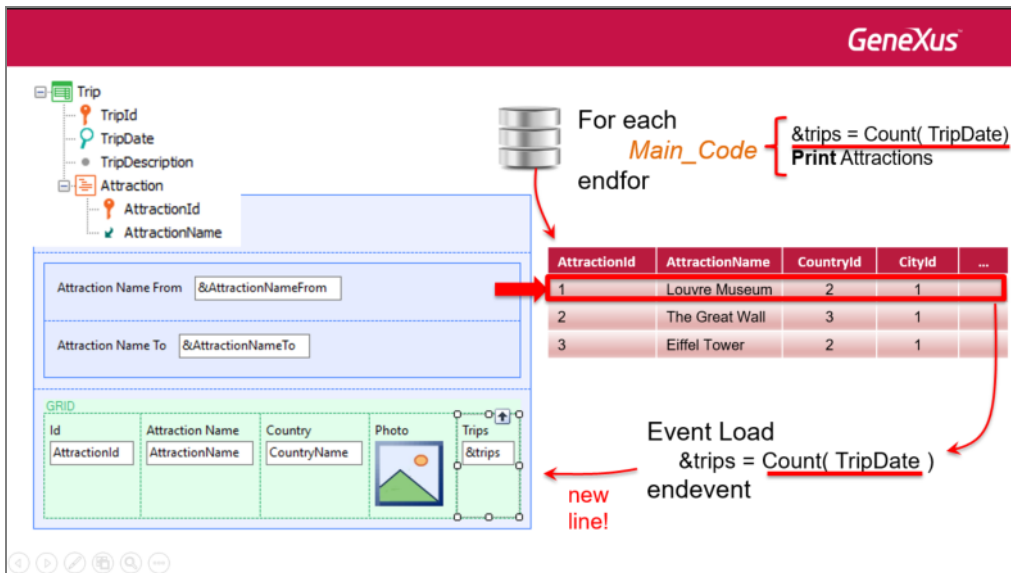
The Load event will be automatically executed for every record



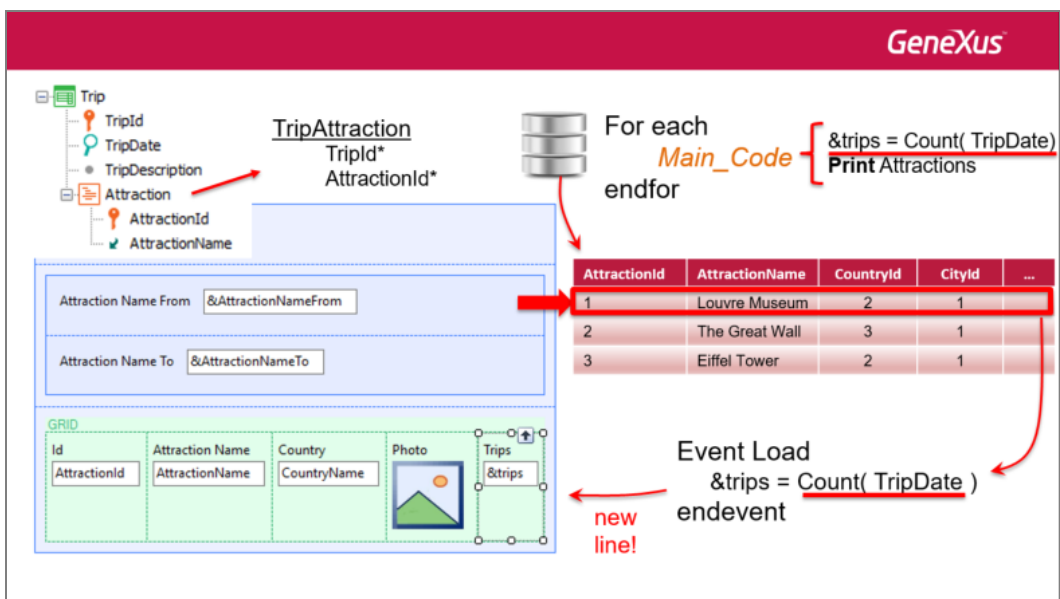
...of the grid base table that meets the filtering conditions, immediately prior to the addition of the line to the grid.



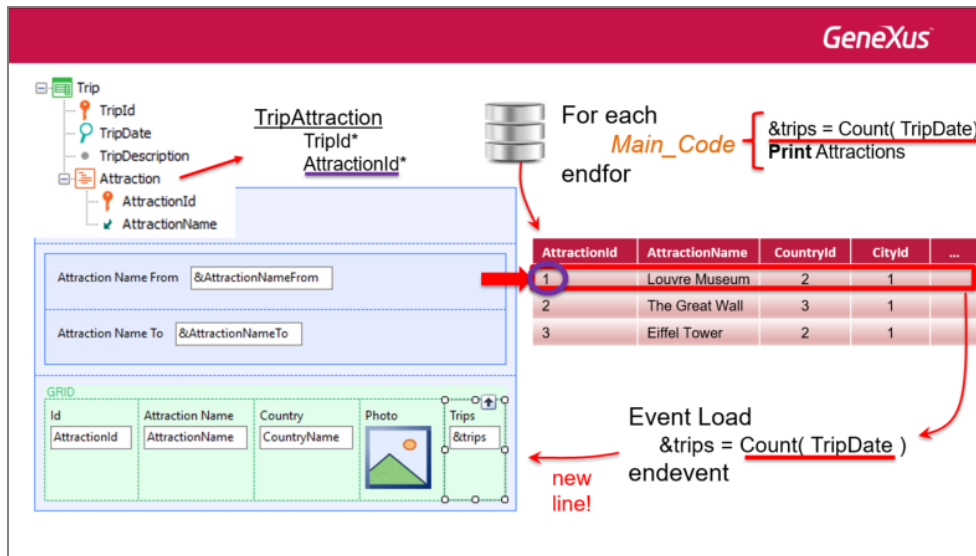
That's why, when its code is executed, we know we're working with a record from the base table and its extended table; and this inline formula:



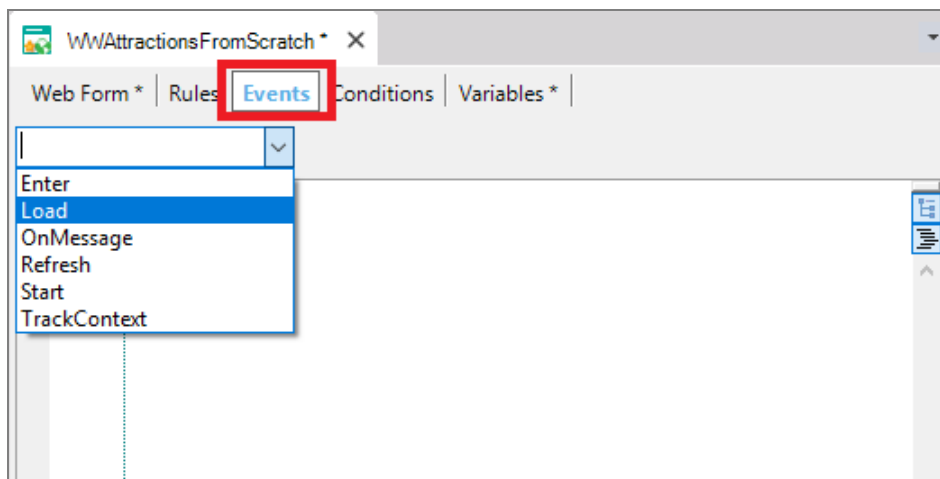
will not count all the trips.



Instead, it will count only those from the TripAttraction table that correspond to this AttractionId, that of the Attraction record that we're about to load in the grid.



Let's implement it in GeneXus. We've already created the Trip transaction. Now we go to the events section of the Web Panel. In this combo box, we're offered predefined events; that is to say, system events that are generated at specific moments, and for which we may program code.



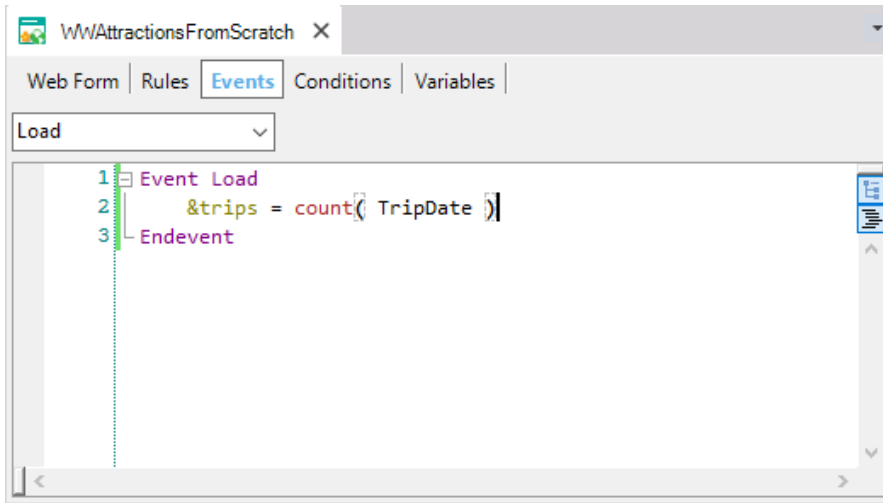
Among them is the Load event. After selecting it, this code is displayed:

```

Event Load
|
Endevent

```

Here we will program what we want executed every time we're positioned on a record from the Attraction table, before loading the line in the grid. In our case...



We run it... The database will have to be reorganized to add the tables corresponding to the new Trip transaction.

Here we show the execution with a couple of trips that have already been entered:

Trip

Navigation: << < > >> SELECT

Id: 1

Date: 09/12/16 29

Description: A

Attraction

Attraction Id	Attraction Name
24	Eiffel Tower
25	Christ the Redemmer
27	Matisse Museum

0

Trip

Navigation: << < > >> SELECT

Id: 2

Date: 09/13/16 29

Description: B

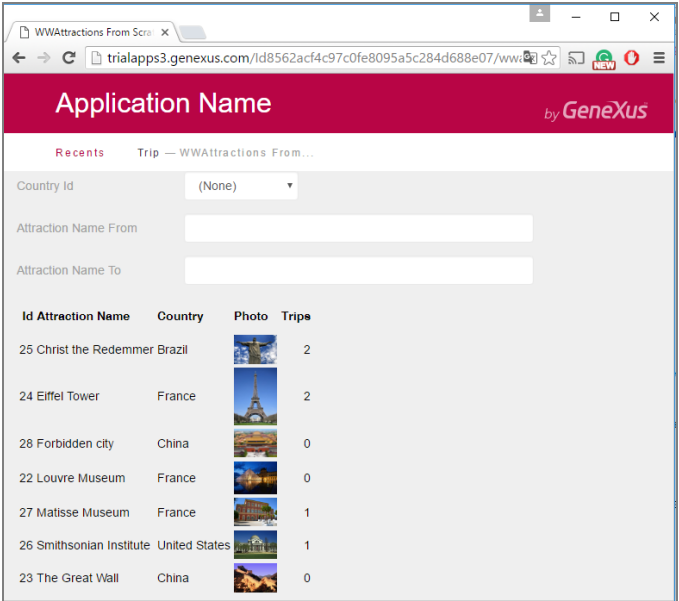
Attraction

Attraction Id	Attraction Name
24	Eiffel Tower
25	Christ the Redemmer
26	Smithsonian Institute








0

The Eiffel tower is included in two Trips, as is Christ the Redeemer; the Smithsonian Institute is included in one trip, and the Matisse museum is also included in one trip.

Now, let's run the web panel.

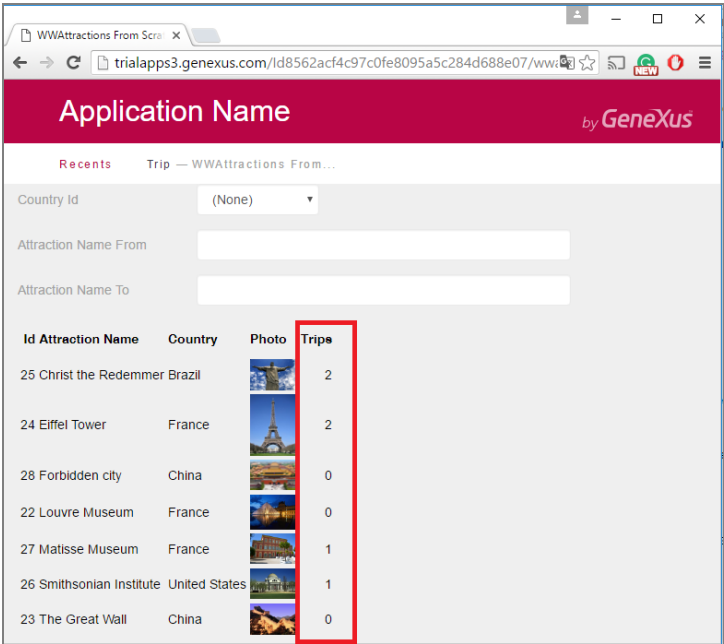


The screenshot shows a web application interface with a red header bar containing the text "Application Name" and "by GeneXus". Below the header, there is a navigation bar with "Recents" and "Trip — WWAttractions From...". The main content area features a search section with a "Country Id" dropdown menu set to "(None)", and two input fields for "Attraction Name From" and "Attraction Name To". Below the search section is a table with the following data:

Id	Attraction Name	Country	Photo	Trips
25	Christ the Redemmer Brazil			2
24	Eiffel Tower	France		2
28	Forbidden city	China		0
22	Louvre Museum	France		0
27	Matisse Museum	France		1
26	Smithsonian Institute	United States		1
23	The Great Wall	China		0

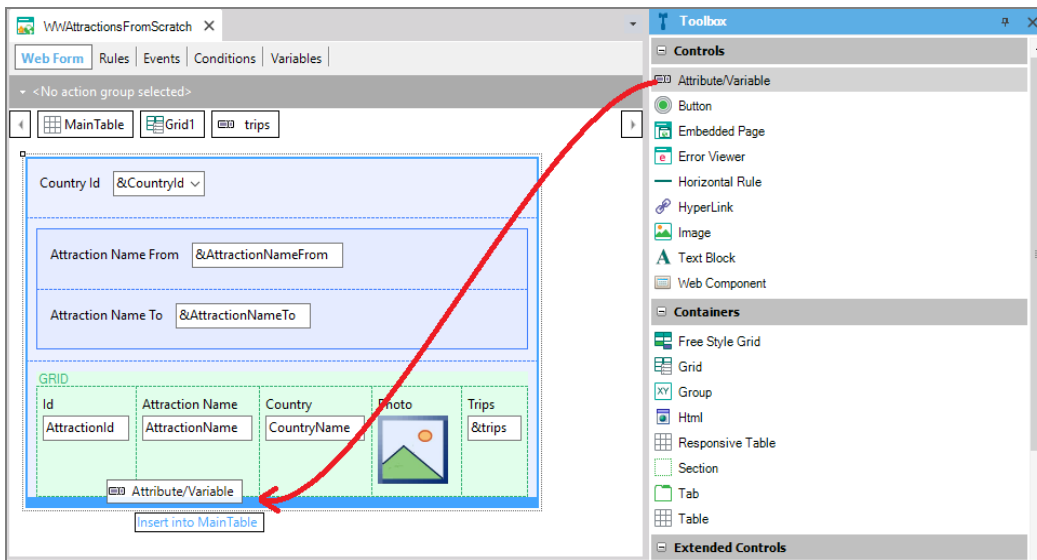
As we can see, it is showing exactly what we wanted.

Now we want to add the sum of trips in which the attractions displayed on the grid are included. That is to say, the sum of the values in this column:

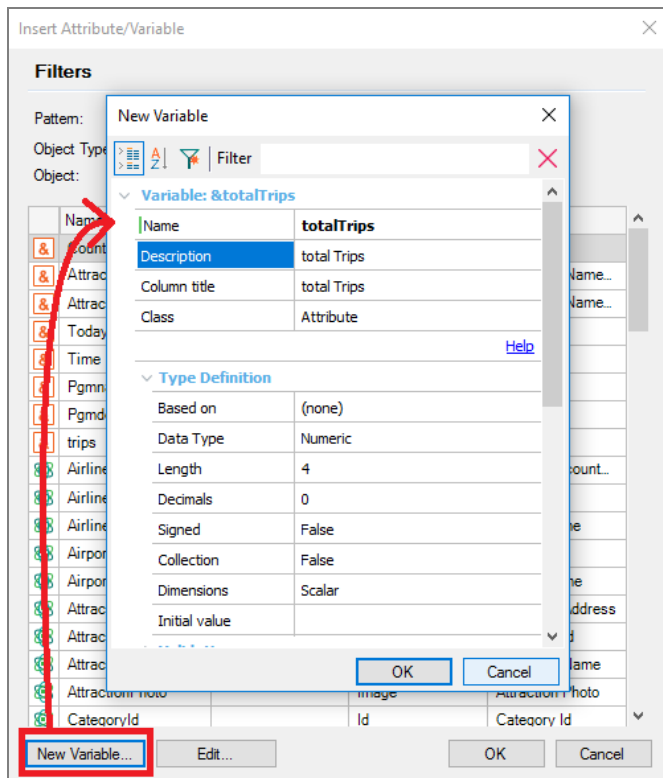


This screenshot is identical to the previous one, but with a red rectangular box highlighting the "Trips" column of the table. The values in this column are 2, 2, 0, 0, 1, 1, and 0.

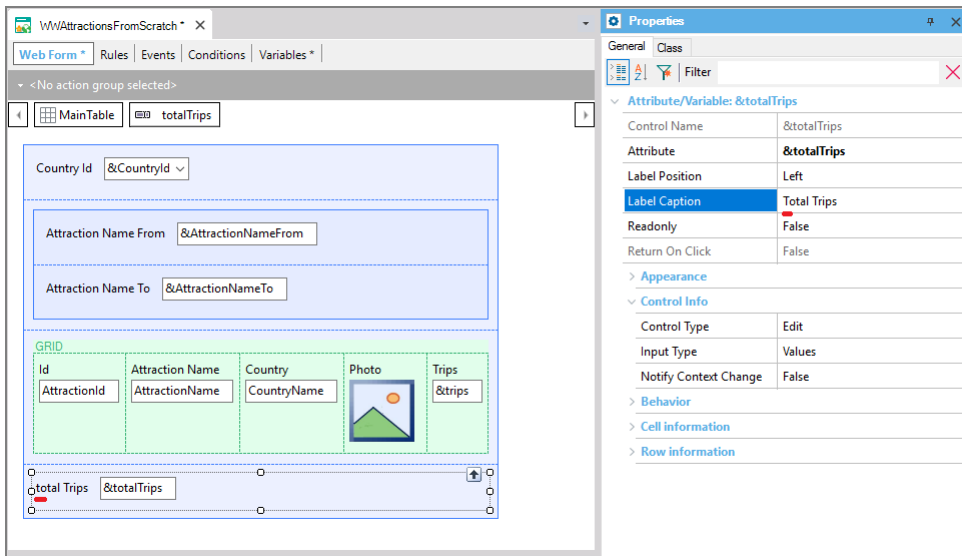
To do so, we add a variable outside the grid:



Let's call it totalTrips:



Also, let's change its **Label Caption** property so that its tag is displayed in uppercase, because we entered its name in lowercase:



An efficient way of calculating the value that the variable will have to display is... every time a line is to be loaded in the grid, we should add the value of the &Trips variable of that line, to the value calculated so far in &totalTrips.

This means that, in the Load event, after calculating the value of &trips, we assign to &totalTrips the value that it contains so far plus the value of the &trips variable:

```
Event Load
    &trips = count( TripDate )
    &totalTrips = &totalTrips + &trips
Endevent
```

For the first line to be loaded in the grid, the Load event is executed for the first time; &Trips is already calculated, and when &totalTrips is going to be calculated, the current value will be zero,

AttractionId	AttractionName	CountryId	CityId	...
1	Louvre Museum	2	1	
2	The Great Wall	3	1	
3	Eiffel Tower	2	1	

```
Event Load
    &trips = Count( TripDate )
    &totalTrips = &totalTrips + &trips
endevent
```

&trips 2

&totalTrips 0


So, in this case, &totalTrips will take the value of &Trips.

GeneXus

Country Id

Attraction Name From

Attraction Name To

Id	Attraction Name	Country	Photo	Trips
AttractionId	AttractionName	CountryName		&trips

Total Trips

AttractionId	AttractionName	CountryId	CityId	...
1	Louvre Museum	2	1	
2	The Great Wall	3	1	
3	Eiffel Tower	2	1	

Event Load
 &trips = Count(TripDate)
 &totalTrips = &totalTrips + &trips
 endevent

&trips

&totalTrips


For the second line to be loaded, the value of &trips is calculated and &totalTrips will contain the previous value...

GeneXus

Country Id

Attraction Name From

Attraction Name To

Id	Attraction Name	Country	Photo	Trips
AttractionId	AttractionName	CountryName		&trips

Total Trips

AttractionId	AttractionName	CountryId	CityId	...
1	Louvre Museum	2	1	
2	The Great Wall	3	1	
3	Eiffel Tower	2	1	

Event Load
 &trips = Count(TripDate)
 &totalTrips = &totalTrips + &trips
 endevent

&trips

&totalTrips


...to which the value of the &trips variable will be added for this second line, and so on.

GeneXus

Country Id

Attraction Name From

Attraction Name To

Id	Attraction Name	Country	Photo	Trips
AttractionId	AttractionName	CountryName		&trips

Total Trips

AttractionId	AttractionName	CountryId	CityId	...
1	Louvre Museum	2	1	
2	The Great Wall	3	1	
3	Eiffel Tower	2	1	

Event Load
 &trips = Count(TripDate)
 &totalTrips = &totalTrips + &trips
 endevent

&trips

&totalTrips

Once the last line has been loaded, the &totalTrips variable will have the desired value.

AttractionId	AttractionName	CountryId	CityId	
1	Louvre Museum	2	1	
2	The Great Wall	3	1	
3	Eiffel Tower	2	1	

Event Load
&trips = Count(TripDate)
&totalTrips = &totalTrips + &trips
endevent

&trips 1
&totalTrips 3

Let's run it.

Application Name by GeneXus

Recents WWAttractions From...

Country Id (None)

Attraction Name From

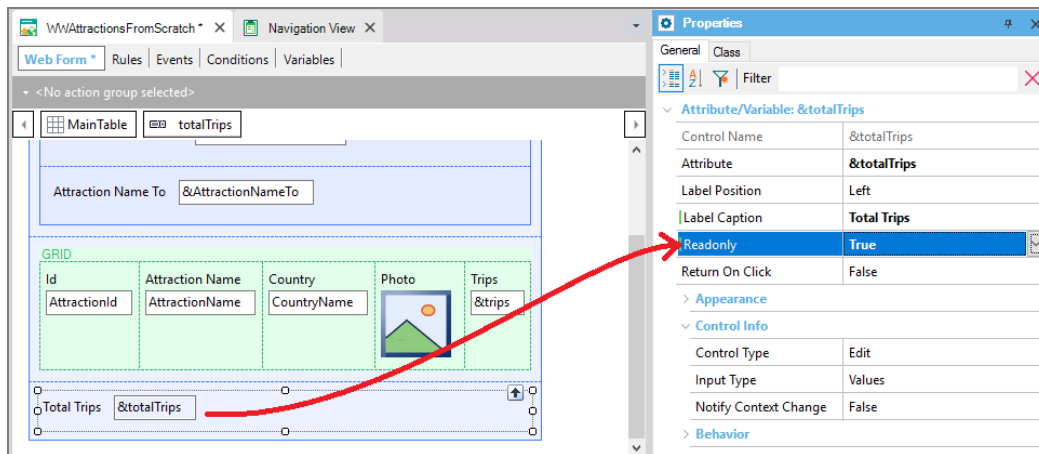
Attraction Name To

Id	Attraction Name	Country	Photo	Trips
25	Christ the Redemmer	Brazil		2
24	Eiffel Tower	France		2
28	Forbidden city	China		0
22	Louvre Museum	France		0
27	Matisse Museum	France		1
26	Smithsonian Institute	United States		1
23	The Great Wall	China		0

Total Trips 6

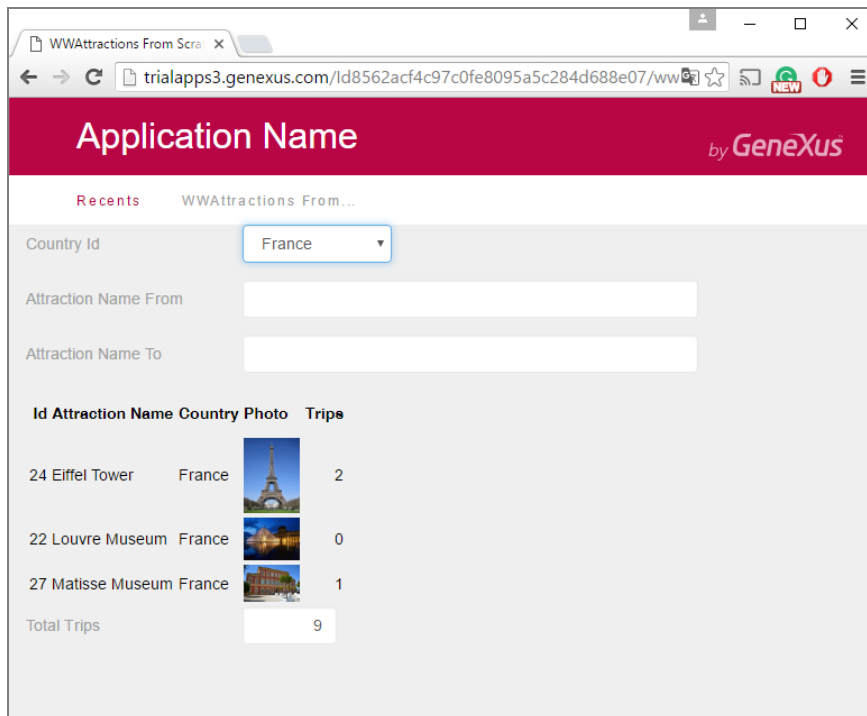
We can see two things: first, the sum is being made correctly; second: because it is a variable, it is an input method where the user may change the value, and this doesn't make sense. So, the first thing to do is set it as Readonly.

To do so, we click on the variable in the form and, among its properties, we change its ReadOnly variable by setting it to True:



We may find it odd that &trips, which is also a variable, is shown as Readonly even when we did nothing in that sense. When no events have been programmed at the line level and when they are not run through by code, grid variables will always be Readonly. We will be seeing this in detail further ahead.

Let's also see what happens if, for example, we filter by France:



Instead of showing a total of 3, it shows 9, which is the sum of the value displayed before –6– plus the 3 that it should be displaying now. Why did this happen?

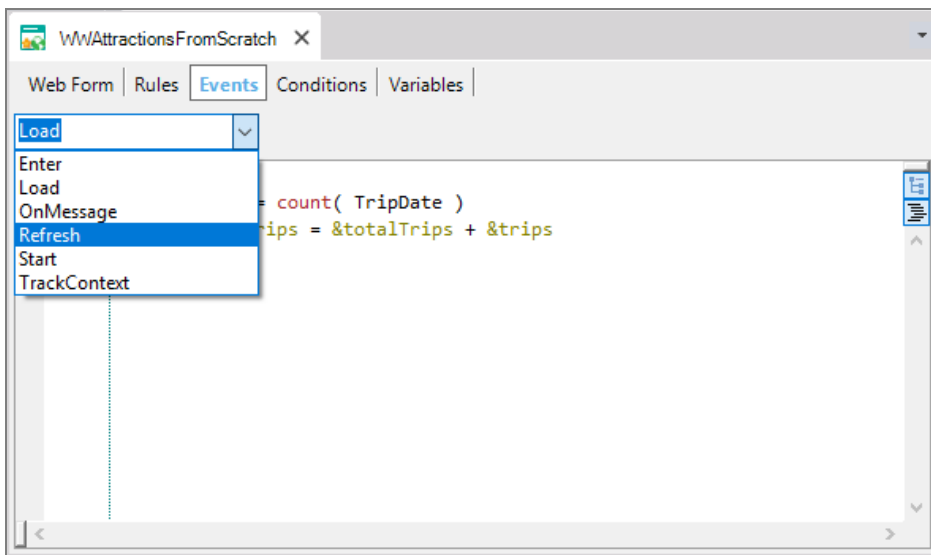
After changing one of the filter variables, the web panel loaded the grid again, meaning that it queried the Attraction table in the database again, and it executed the Load event again for every record that met the filters criteria. The problem is that the &totalTrips variable should have been reset, returning it to zero, before the

start of the grid load.

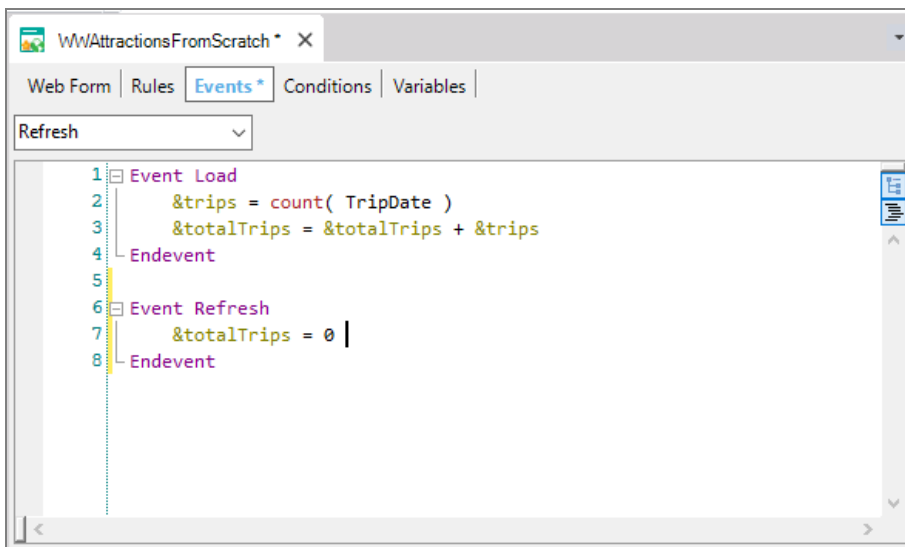
Where do we do this? In the **Refresh event**.

This system event takes place every time that the web panel is going to be loaded, right before accessing the database to look for data for loading it to the grid, that is, immediately prior to the execution of the Load events for each line that will be loaded.

So, we open the events tab and select Refresh from the combo...



This is the point where the variable must be set to zero.



Note that the order in which the events are written is not important. Here we will only indicate the code that will be run when each one of them is triggered.

Let's now press F5.

We will see that the total number of trips is now Readonly. To run this web panel for the first time, three events

were triggered in sequence: the **Start event**, which is run only when the web panel is opened for the first time, the **Refresh event**, which set the variable to zero, and the **Load event**, as many times as lines were to be loaded in the grid. In this case, they were 7.

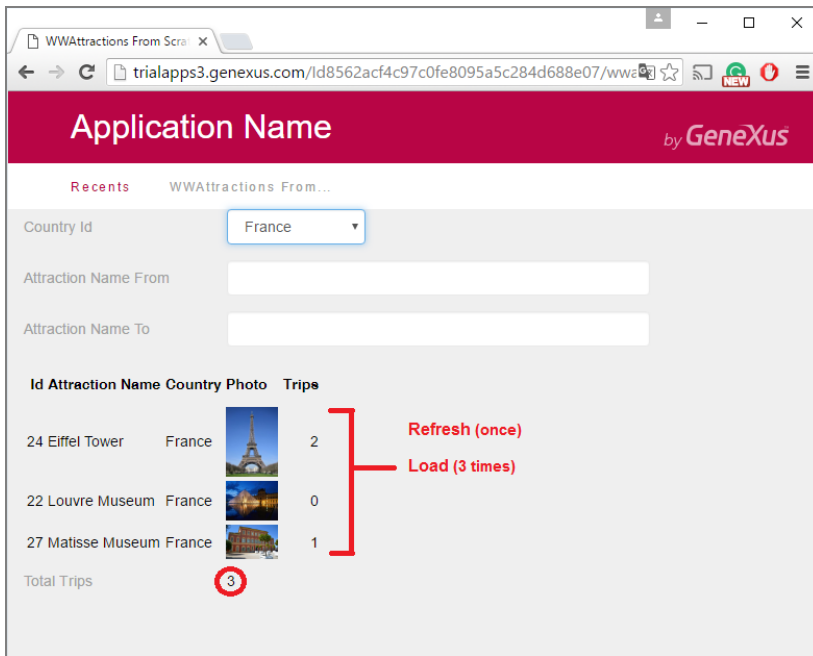
The screenshot shows a web application titled "Application Name by GeneXus". It features a search interface with a "Country Id" dropdown set to "(None)", and two input fields for "Attraction Name From" and "Attraction Name To". Below these is a table of attractions. A red bracket on the right side of the table, spanning the first seven rows, is annotated with "Start (only the first time)", "Refresh (once)", and "Load (7 times)". The table data is as follows:

Id	Attraction Name	Country	Photo	Trips
25	Christ the Redemmer	Brazil		2
24	Eiffel Tower	France		2
28	Forbidden city	China		0
22	Louvre Museum	France		0
27	Matisse Museum	France		1
26	Smithsonian Institute	United States		1
23	The Great Wall	China		0

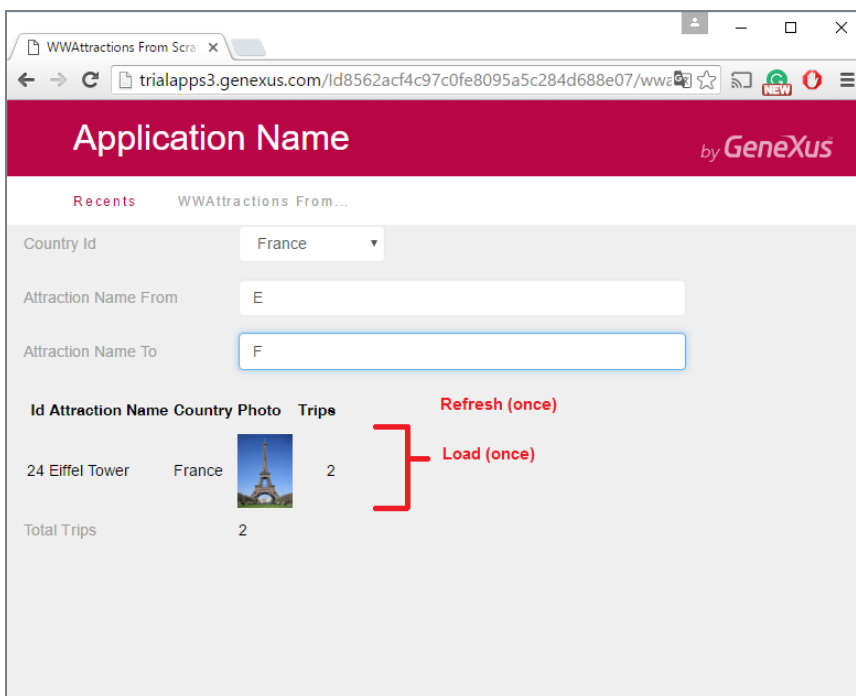
At the bottom left, the "Total Trips" is displayed as "6", which is circled in red.

Now, if we filter by a country, such as France, we see that the number of trips is correctly calculated.

Changing the value of a variable that affects the conditions that must be met by the records to be loaded in the grid causes the Refresh event to be triggered again (and therefore, the &totalTrips variable is reset to zero), and the database is accessed to filter and load the records in the grid again. Therefore, the **Load** event is triggered again for every attraction in France that is to be loaded.

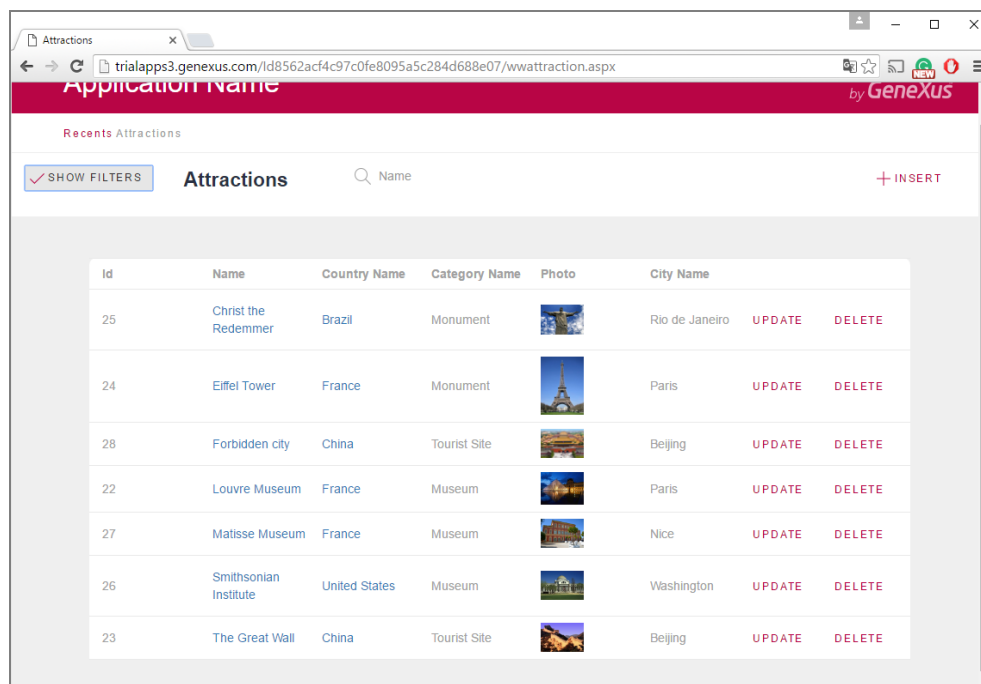


If now we select to view the attractions from E to F, the screen is refreshed again. The &totalTrips variable is reset to zero again in the Refresh event, and the grid base table and its extended table are run through again, this time retrieving only one record, so the Load event will be executed just once.

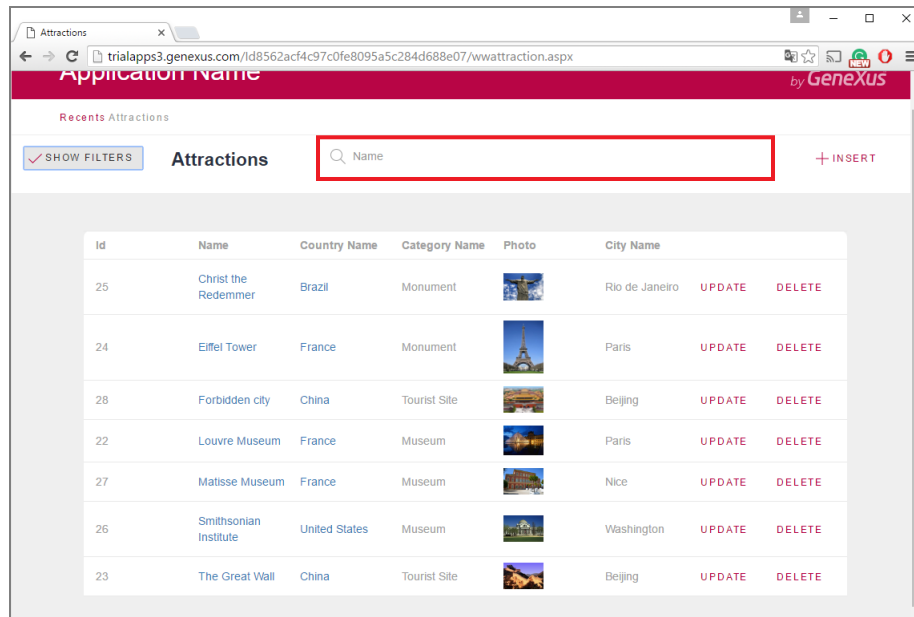


If we look at the web panel that we have implemented so far, we can see that it now looks like the object created by the WorkWith Pattern applied to the Attraction transaction.

Obviously, this object was a web panel.



Here, a single variable was used to filter:



What's most interesting is that, in addition to allowing us to filter the grid data, the WorkWith includes the option to run actions over the data. For example, updating an attraction's data or deleting the attraction or adding a new attraction.

To this end, the pattern inserted two controls at the grid line level, and another one outside. In any of these three cases, the action associated with each control consists in calling the Attraction transaction, sending it, as parameter, the **mode** in which the transaction must be opened if it is called to update, delete or insert data. In the first two cases, since Update or Delete will correspond to events of one line, the ID of the line attraction will be sent as a second parameter to the transaction, in order to update the data of **that** attraction, or in order to delete **that** attraction. For the Insert control outside the grid, 0 will be sent as a second parameter, because the attractions in Insert are autonumbered.

This is why the pattern modified the Attraction transaction by adding the Parm rule, among other things:

```

1 /* Generated by Work With Pattern [Start] - Do not change */
2 [web]
3 {
4   parm(in:&Mode, in:&AttractionId);
5 }
6 AttractionId = &AttractionId if not &AttractionId.IsEmpty();
7 noaccept(AttractionId);
8 noprompt(AttractionId);
9
10 CountryId = &Insert_CountryId if &Mode = TrnMode.Insert and not &Insert_CountryId.IsEmpty();
11 noaccept(CountryId) if &Mode = TrnMode.Insert and not &Insert_CountryId.IsEmpty();
12 CategoryId = &Insert_CategoryId if &Mode = TrnMode.Insert and not &Insert_CategoryId.IsEmpty();
13 noaccept(CategoryId) if &Mode = TrnMode.Insert and not &Insert_CategoryId.IsEmpty();
14 CityId = &Insert_CityId if &Mode = TrnMode.Insert and not &Insert_CityId.IsEmpty();
15 noaccept(CityId) if &Mode = TrnMode.Insert and not &Insert_CityId.IsEmpty();
16 /* Generated by Work With Pattern [End] - Do not change */
17

```

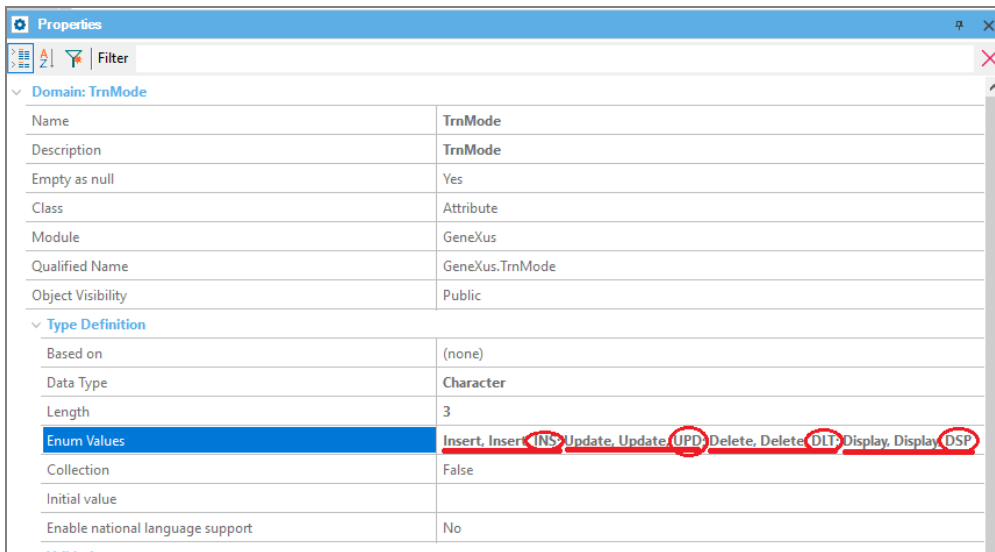
As we can see, it receives two variables: the &Mode variable is a standard variable in transactions, 3 Character:

Name	Type	Is Collection	Description
& Variables			
Standard Variables			
GxRemove	Numeric(1,0)	<input type="checkbox"/>	Gx Remove
Mode	Character(3)	<input type="checkbox"/>	Mode
PgmDesc	Character(256)	<input type="checkbox"/>	PgmDesc
PgmName	Character(128)	<input type="checkbox"/>	PgmName
Time	Character(8)	<input type="checkbox"/>	Time
Today	Date	<input type="checkbox"/>	Today
AttractionId	Attribute:AttractionId	<input type="checkbox"/>	Attraction Id
Insert_CategoryId	Attribute:CategoryId	<input type="checkbox"/>	Insert_Category Id
Insert_CityId	Attribute:CityId	<input type="checkbox"/>	Insert_City Id
Insert_CountryId	Attribute:CountryId	<input type="checkbox"/>	Insert_Country Id
Insert_SupplierId	Attribute:SupplierId	<input type="checkbox"/>	Insert_Supplier Id
IsAuthorized	Boolean	<input type="checkbox"/>	Is Authorized
TrnContext	TransactionContext	<input type="checkbox"/>	Trn Context
TrnContextAtt	TransactionContext.Attribute	<input type="checkbox"/>	Trn Context Att

which accepts one of four values indicated in the TrnMode enumerated domain:

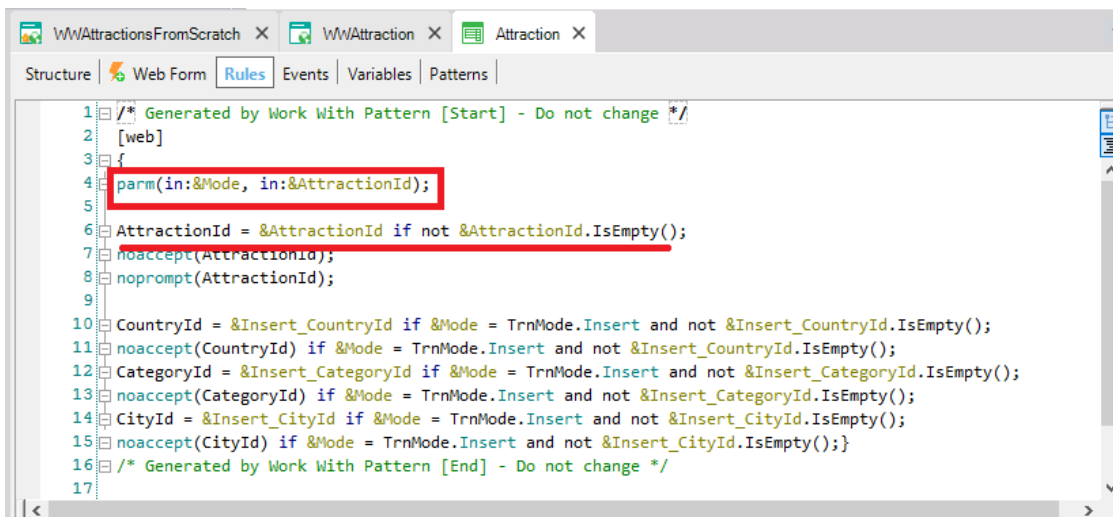
- Insert, Ins
- Update, U Pe De

- Delete, De eLe Te
- Display, De eSe Pe



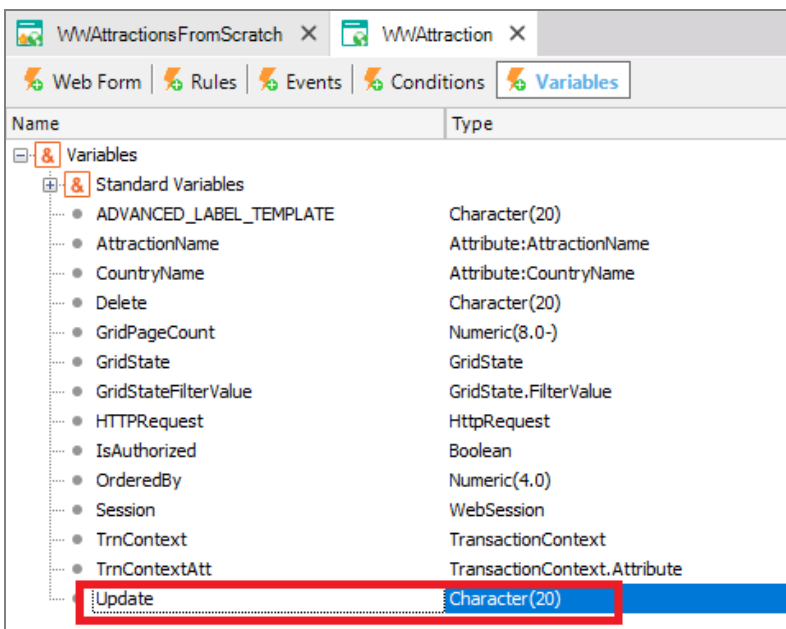
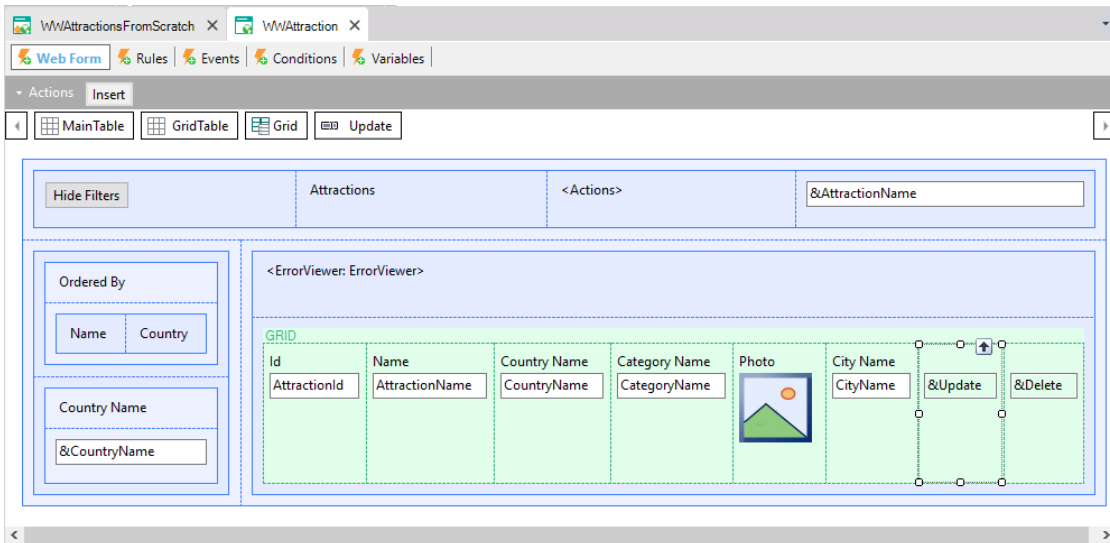
Upon receiving one of these four values, the transaction will know the mode in which it should be opened.

In addition, it will receive, as a second parameter, the attraction ID, in the &AttractionId variable, for updating, deleting or displaying.

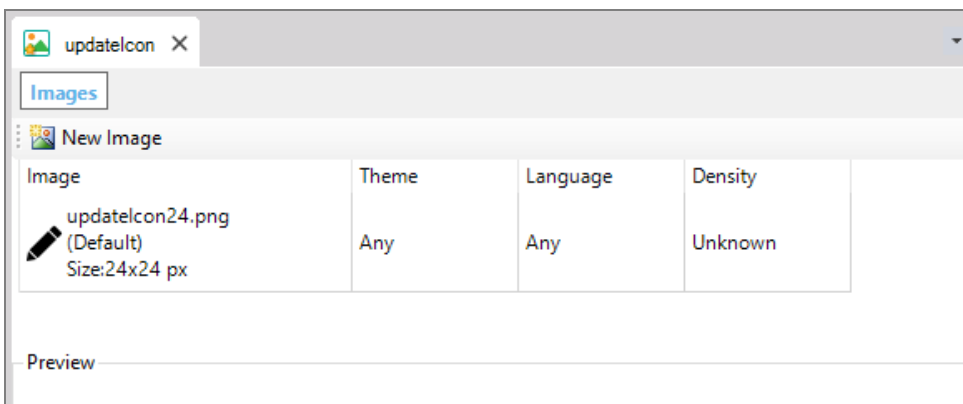


In our web panel, we will implement one of these actions over the transactions. For example, Update. The idea is to show an example of actions over the data.

We will have to insert a control in the grid. In the case of the pattern, a character variable called update is inserted.

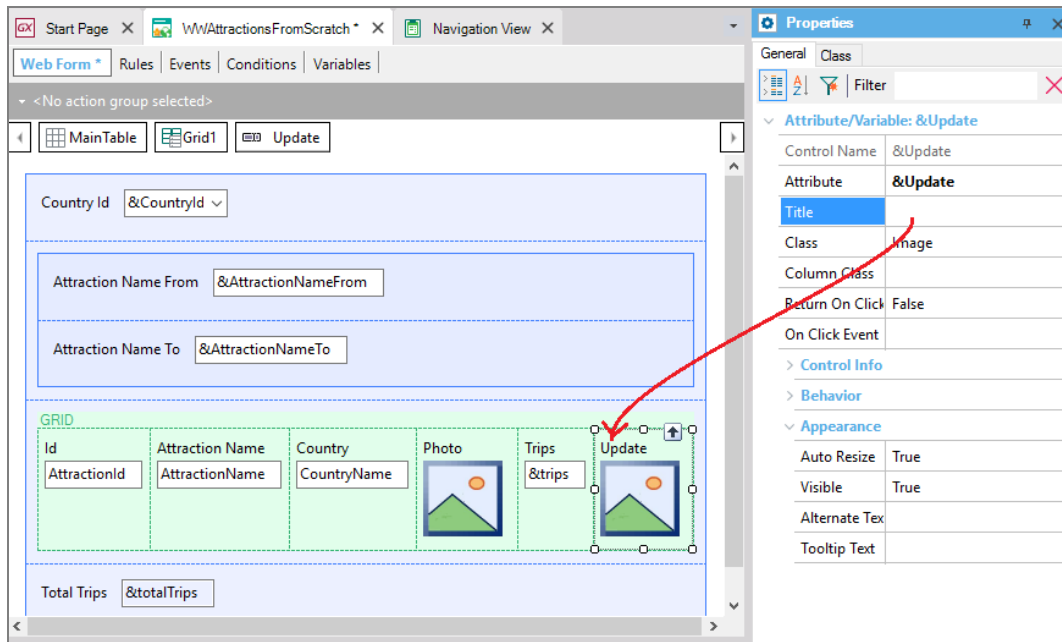


It is assigned the "UPDATE" text that we see in runtime. But we will choose to insert an image, which we must insert in the KB to start with.



We will call it updateIcon.

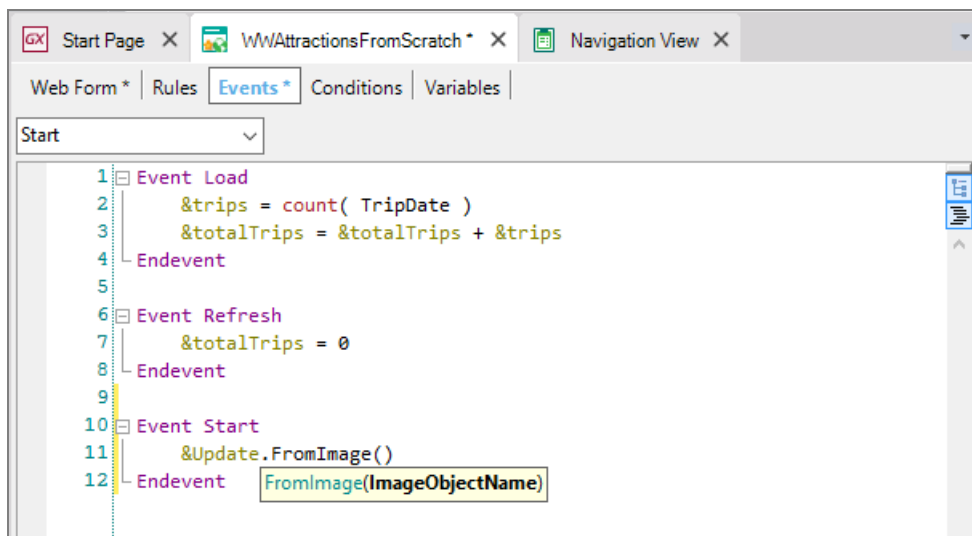
Now we go to the web panel and drag the Attribute/Variable control from the toolbox to the last grid column, and define the new variable as &Update, of the Image type instead of character:



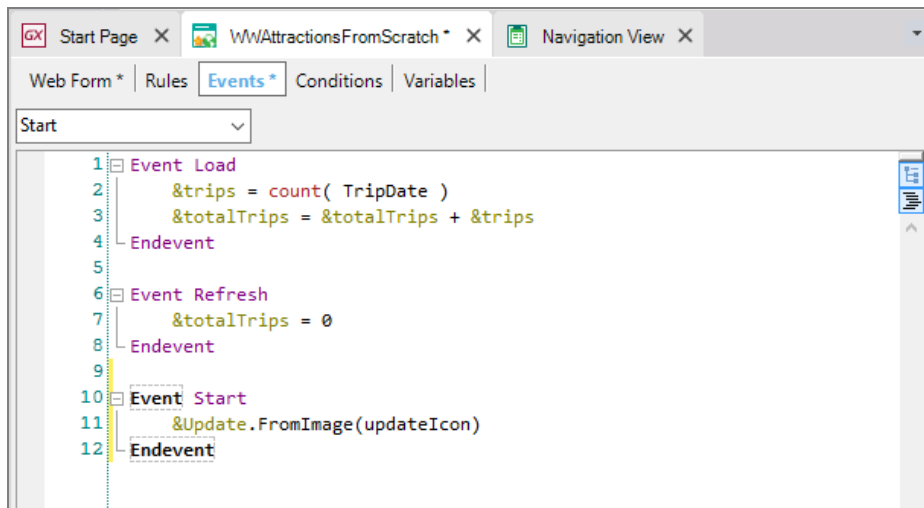
We remove the title so that it isn't displayed as a column title and then we need to load that variable with the image we've just inserted in the KB. Where do we do this?

If the image changed according to the grid line, we would then do it in the Load event. But since the image will never vary and will remain the same for every line, then a good option is to do it in the **Start event**, which will be run only once, when the web panel is opened.

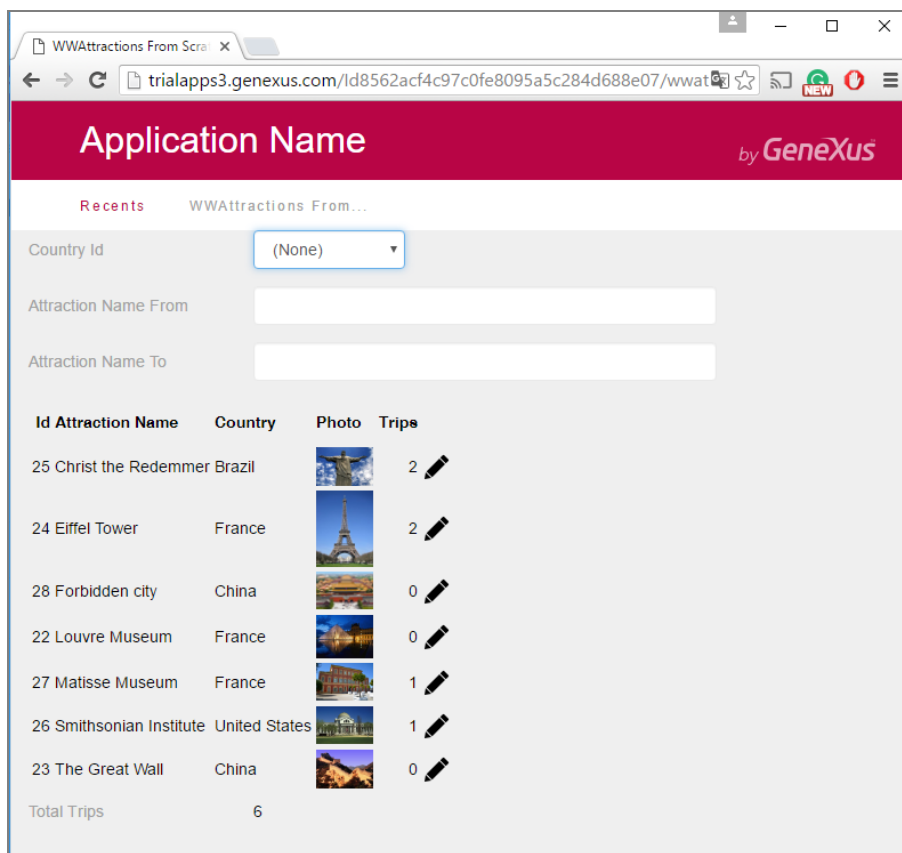
So we insert the Start event, and there we type:



As a method parameter, we type the name of the image in the KB, that is: updatelcon.



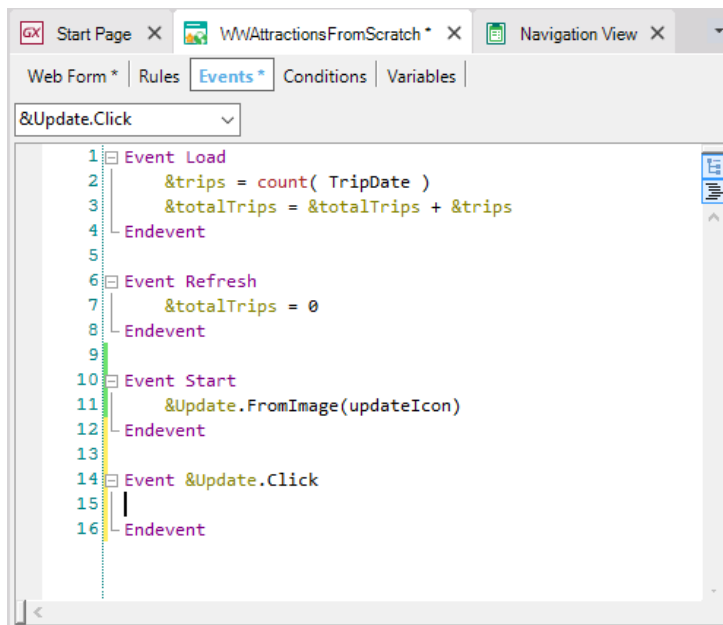
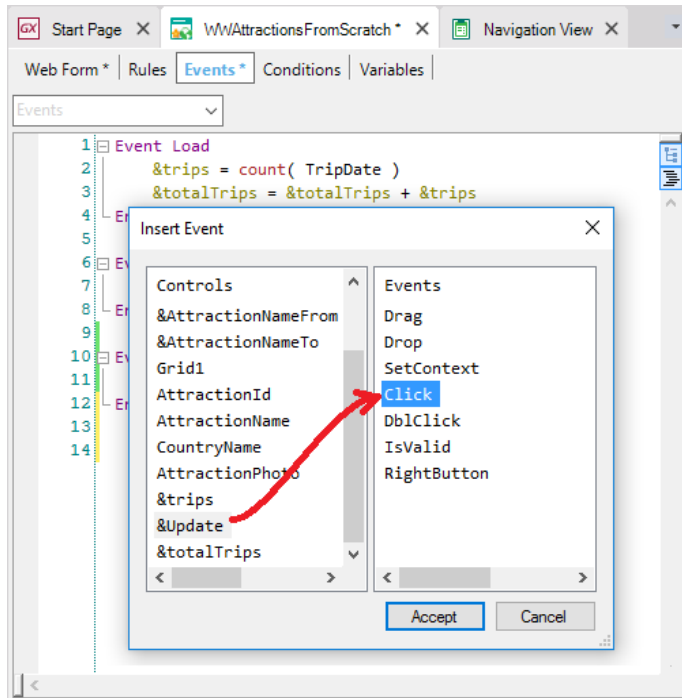
Let's see it in runtime.



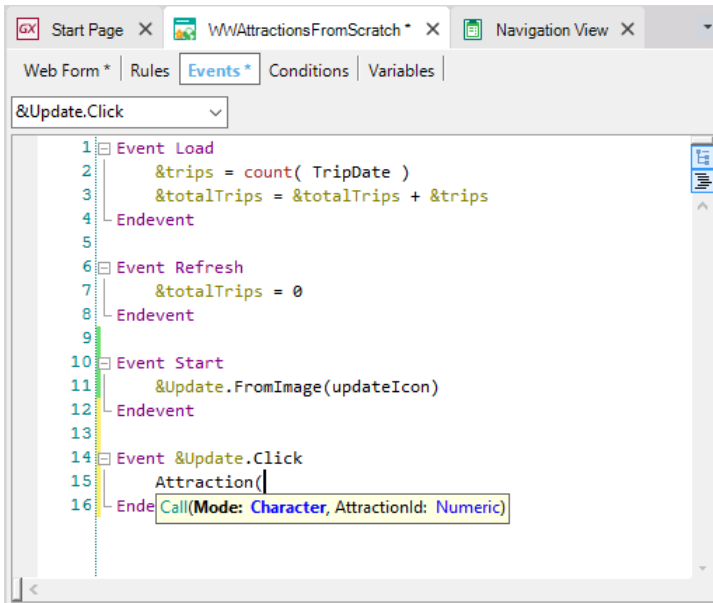
Now we need to associate an event with that image, so that when the user clicks on it, the event is triggered and its code is run, where we will invoke the Attraction transaction.

There are several options available to do this. One of them is to go to the events tab and with Insert/Event on the left we can see all the names of the controls we have inserted in the form. We choose the one desired, the &Update variable, and on the right we will see the events that may be associated with it, such as the Click

event:

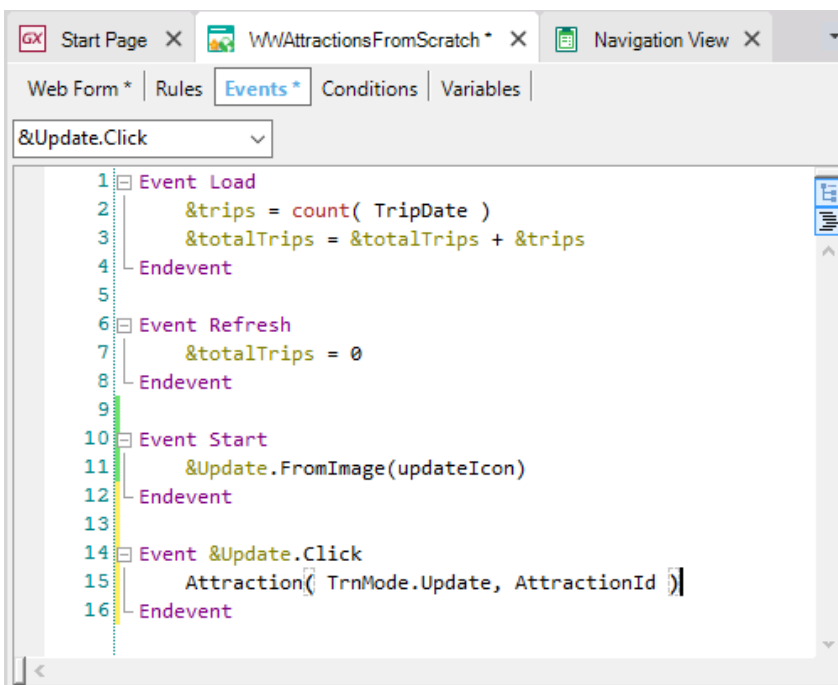


This will cause that, when the user clicks on the image for a line, the code that we type inside this event will be executed. In such case what we will want to do is to invoke the Attraction transaction:



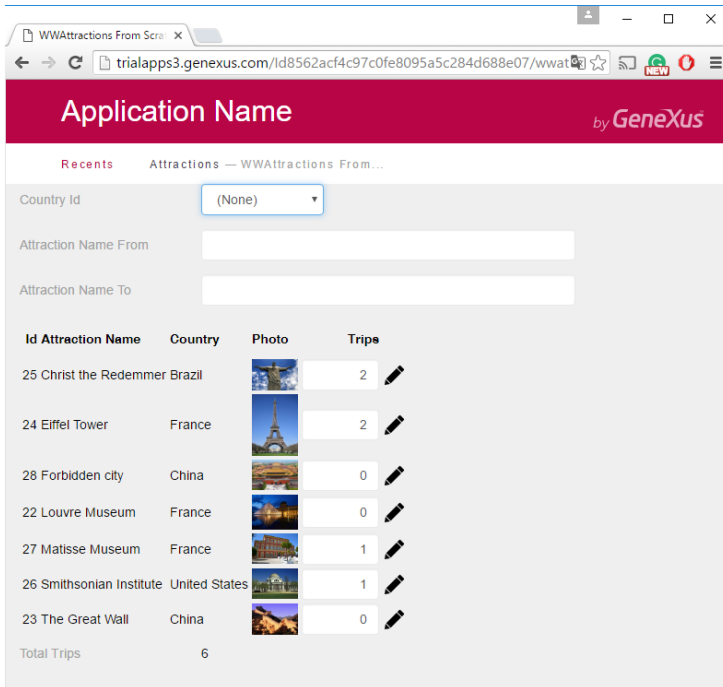
```
1 Event Load
2     &trips = count( TripDate )
3     &totalTrips = &totalTrips + &trips
4 Endevent
5
6 Event Refresh
7     &totalTrips = 0
8 Endevent
9
10 Event Start
11     &Update.FromImage(updateIcon)
12 Endevent
13
14 Event &Update.Click
15     Attraction(
16     Call(Mode: Character, AttractionId: Numeric)
```

We will pass the Update mode, that is to say, the Update value of the TrnMode enumerated domain we saw before, and the AttractionId value corresponding to the grid line where the click was made:



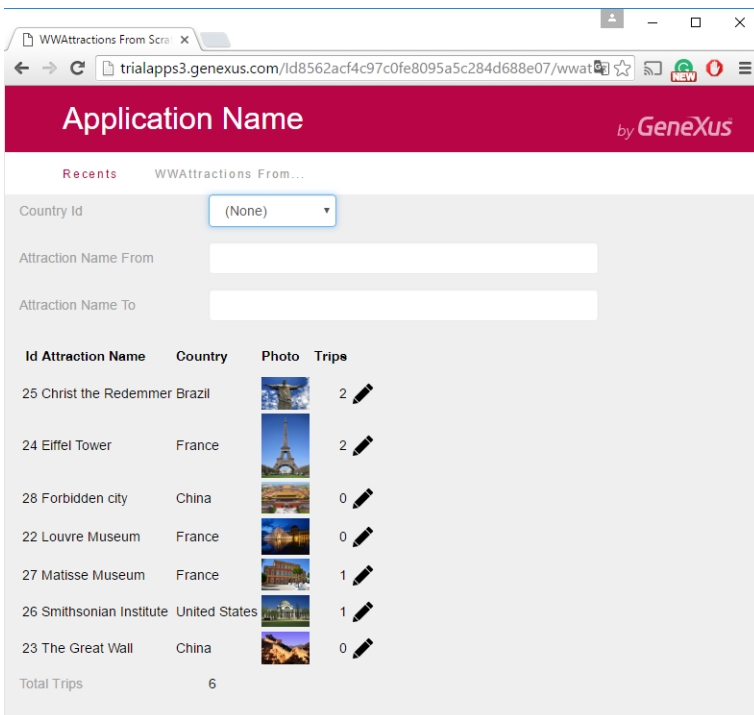
```
1 Event Load
2     &trips = count( TripDate )
3     &totalTrips = &totalTrips + &trips
4 Endevent
5
6 Event Refresh
7     &totalTrips = 0
8 Endevent
9
10 Event Start
11     &Update.FromImage(updateIcon)
12 Endevent
13
14 Event &Update.Click
15     Attraction( TrnMode.Update, AttractionId )
16 Endevent
```

Let's run it.

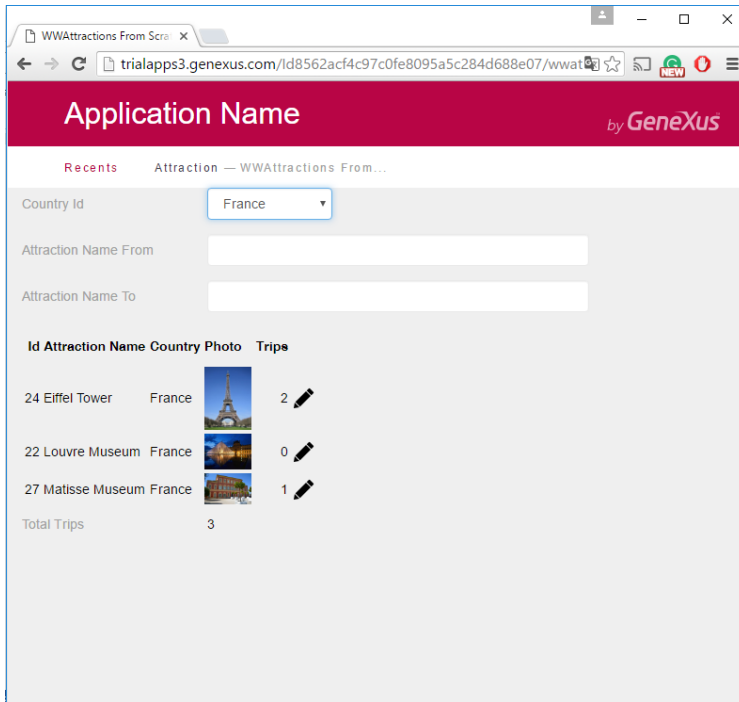


First, we see that the column of the &Trips variable is now editable. We had not defined it as Readonly explicitly because we had noticed, upon the execution, that it was already done. As we said, grid variables are first added as readonly, except when an event is defined at the line level, as in this case, or under other circumstances that we will not discuss now.

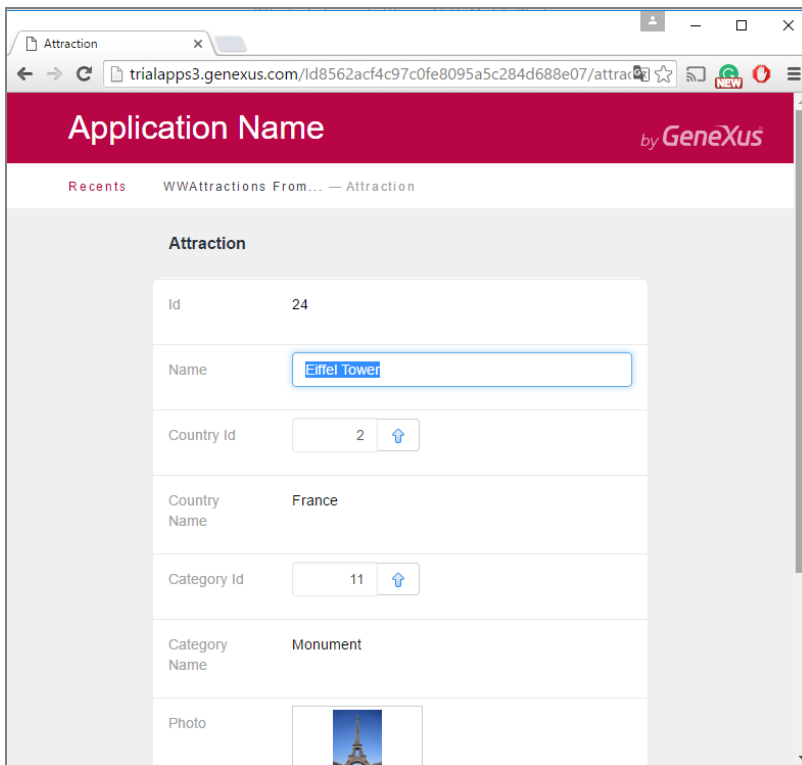
Let's set it as Readonly, and run it again.



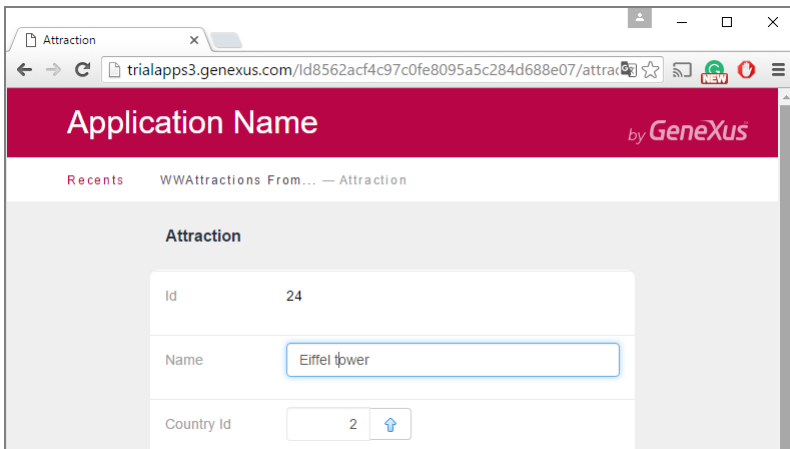
We now select a country, like France:



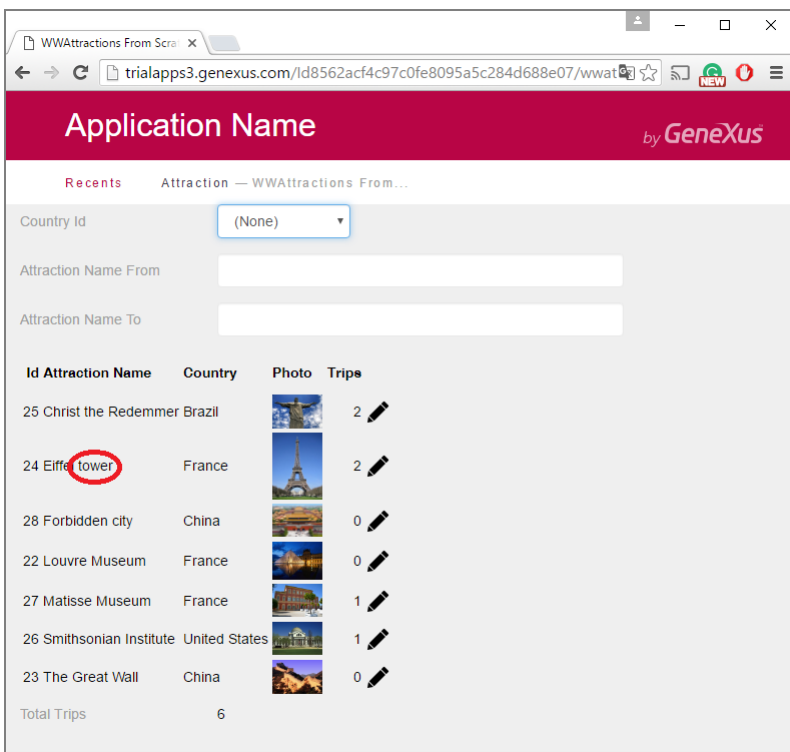
And now we click on the update image for the Eiffel Tower:



In update we see the name of the transaction. Now we modify something... for example, we can change the T in Tower from uppercase to lowercase:



We now confirm... and since the work with pattern, which we have not seen, has added a Return command to the transaction, to return to the caller, we will return to the web panel. This Return command is similar to invoking the web panel for the first time, so the Start event will be executed in it, followed by the Refresh and Load events as many times as the number of records that will be loaded:



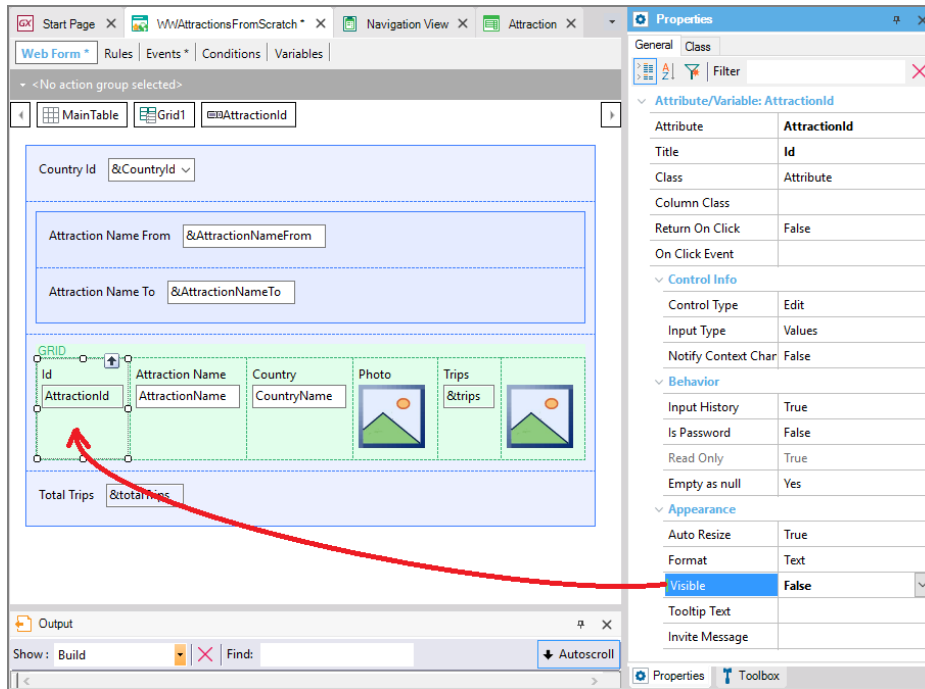
This is why we see that, upon returning, all the attractions are loaded without any filters.

What would happen if we hadn't added the AttractionId attribute in the grid? By clicking on the image to update, what AttractionId would have been sent as a parameter to the transaction? It would not have that value to send.

```
Event &Update.Click
    Attraction( TrnMode.Update, AttractionId )
Endevent
```


Since it will be used in an event at the line level, which will be triggered after the lines have been loaded, we cannot remove AttractionId from the grid, because here, we are no longer in the database. The grid has saved, upon the loading with the Load event, all its column values and nothing else. A later event will work only on the data loaded in the grid. So, if we don't want to see this column in the grid, we can hide it. It will continue to be present, though hidden.

To this end, we use the **Visible property with its value set to False**:



And we run it.

In the following video we will see what happens with an event at the line level that changes the value of a grid variable; we will see a web panel without a grid but with attributes in the form; we will summarize concepts on everything we have seen so far; we will see web panels without a base table, and we will mention more advanced use cases of web panels and their characteristics.

