

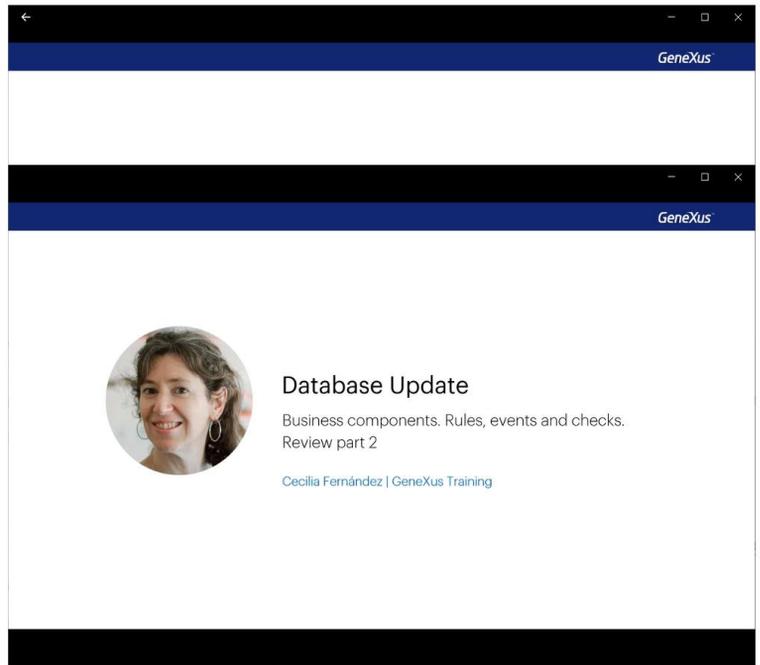
# Actualización de la base de datos

Business Components. Update o Insert (batch) y Data Provider

*GeneXus*<sup>™</sup>



Insert, Update, Delete



Centrados en una KB para un servicio de salud, en videos anteriores analizamos cómo insertar, actualizar y eliminar a través del Business Component de una transacción de dos niveles.

The screenshot displays the GeneXus IDE interface for the 'OfficeVisit' entity. On the left, the 'Structure' pane shows the entity's attributes: OfficeVisitDate (Date), PhysicianId (Id), PhysicianName (Name), ShiftId (Id), ShiftName (Name), MedicalSpecialtyId (Id), MedicalSpecialtyName (Name), OfficeId (Id), OfficeVisitLastNumber (Number), Patient (Patient), PatientId (Id), PatientName (Name), and OfficeVisitPatientNum (Number). Below this, a 'Checks' table lists various database constraints and their error messages.

Checks	Error Id	Error Description
FK Physician	ForeignKeyNotFound	No matching 'Physician'
error('Physician * = PhysicianId.ToString() * already has 2 shifts assigned for the date: * * OfficeVisitDate.ToString(), PhysicianNotAvailable) if (shifts) > 2 and Insert;	PhysicianNotAvailable	Physician... already has 2 shifts...
FK ShiftId	ForeignKeyNotFound	No matching 'Shift'
FK OfficeId	ForeignKeyNotFound	No matching 'Office'
CK: (OfficeVisitDate, ShiftId, OfficeId)		Office Visit Date, Shift Id, Office Id already exists
PK: (OfficeVisitDate, PhysicianId, ShiftId)	DuplicatePrimaryKey	Record already exists
FK PatientId	ForeignKeyNotFound	No matching 'Patient'
error('There is a pending office visit scheduled for this patient for the same specialty', PatientAlreadyScheduleIfOnMedicalSpecialty) if not (Shift and Insert level PatientId);	PatientAlreadyScheduleIfOnMedicalSpecialty	There is a pending office visit scheduled...
PK: (OfficeVisitDate, PhysicianId, ShiftId, PatientId)	DuplicatePrimaryKey	Record already exists

On the right, the 'Web Layout' pane shows a form for 'InsertOfficeVisit'. The form includes input fields for Schedule Date, Physician Id, Shift Id, Office Id, Patient Id, patient2 Id, and patient3 Id. It also features buttons for 'Insert Office Visit', 'Update Office Visit', and 'Delete Office Visit'. Below the form, a 'GRID' section shows a table structure with columns for Id, Type, and Description, with placeholders for data from a messages item.

En aquellos videos a partir de la transacción de consultas médicas, OfficeVisit, de dos niveles, que tenía una serie de reglas declaradas, en particular algunas de error, lo que probamos fue insertar una consulta con un paciente, actualizar una consulta (cambiándole el consultorio y modificando una línea, eliminando una y agregando otra) y eliminar una consulta médica, a través de una variable Business Component.

	Next Monday Form Date <input type="text" value="&amp;NextScheduleDate"/>	Weekly Schedule
→	Physician Id <input type="text" value="&amp;PhysicianId"/> <input type="text" value="1"/>	
	Most Frequent Shift Id <input type="text" value="&amp;MostFrecuentShiftId"/>	
→	Usual Office Id <input type="text" value="&amp;usualOfficeld"/> <input type="text" value="1"/>	

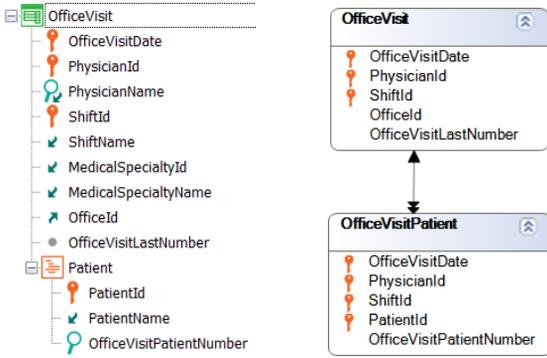
	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Shift 1</b> morning	Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
<b>Shift 2</b> intermediate		Physician: 1 Office: 1		Physician: 1 Office: 1	
<b>Shift 3</b> evening		Physician: 1 Office: 1		Physician: 1 Office: 1	
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

Ahora vamos a querer asignar en forma batch las consultas para un médico dado en la semana siguiente a una fecha dada, en su consultorio preferido.

Por ejemplo, para el médico 1, consultorio 1, queremos este esquema de consultas: lunes, miércoles y viernes en el turno elegido para esos días, por ejemplo, el 1...

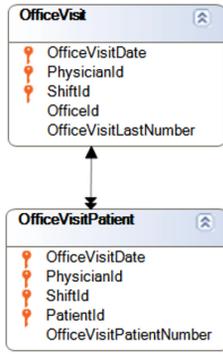
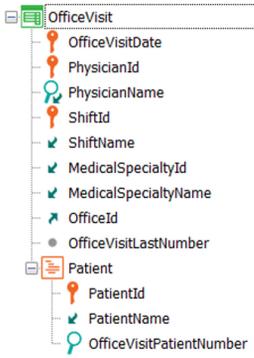
Martes y jueves en el turno siguiente, el 2...

Y martes y jueves, además, en el turno restante, el 3.



Monday	Tuesday	Wednesday	Thursday	Friday
Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
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	Physician: 1 Office: 1		Physician: 1 Office: 1	
10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

En principio solo queremos asignar las consultas sin pacientes, es decir, solo los registros correspondientes a los 7 cabezales de la transacción, es decir, operaremos sobre la tabla OfficeVisit, y respetando todos los chequeos y reglas de la transacción, por lo que lo haremos con un business component.



&officeVisit

OfficeVisitDate	10-10-2022
PhysicianId	1
PhysicianName	Doctor 1
ShiftId	1
ShiftName	Shift morning
MedicalSpecialtyId	1
MedicalSpecialtyName	Family Medicine
OfficeId	1
OfficeVisitLastNumber	0
Patient	

Monday	Tuesday	Wednesday	Thursday	Friday
Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
	Physician: 1 Office: 1		Physician: 1 Office: 1	
	Physician: 1 Office: 1		Physician: 1 Office: 1	
10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

Por ejemplo, utilizando una única variable, completando los datos requeridos para el primer registro y aplicándole el método Insert; luego vaciándola y haciendo lo mismo para la siguiente consulta, la del miércoles: es decir cargándole los datos y aplicándole Insert...Y así sucesivamente...

- Vaciamos, cargamos los datos para el viernes, turno 1... insertamos.
- Vaciamos, cargamos datos para martes turno 2... insertamos.
- Vaciamos, cargamos datos para jueves turno 2... insertamos.
- Vaciamos, cargamos datos para martes turno 3... insertamos.
- Vaciamos, cargamos datos para jueves, turno 3... insertamos.

```

1 Event 'WeeklySchedule'
2   &messages.Clear()
3   &FirstDayOfWeek = FirstDayOfWeek(&NextScheduleDate)
4
5   // Most frequent Shift for Monday Wednesday, Friday
6   for &n = 0 to 2
7     &officeVisit = new()
8     &officeVisit.OfficeVisitDate = &FirstDayOfWeek+(2*&n)
9     &officeVisit.PhysicianId = &PhysicianId
10    &officeVisit.ShiftId = &MostFrequentShiftId
11    &officeVisit.OfficeId = &usualOfficeId
12    &officeVisit.Insert()
13    Do "GetMessages"
14  endfor
15
16  // Following Shift for Tuesday, Thursday
17  &nextShift = AnotherShift(&MostFrequentShiftId)
18  for &n = 0 to 1
19    &officeVisit = new()
20    &officeVisit.OfficeVisitDate = &FirstDayOfWeek + ((2*&n)+1)
21    &officeVisit.PhysicianId = &PhysicianId
22    &officeVisit.ShiftId = &nextShift
23    &officeVisit.OfficeId = &usualOfficeId
24    &officeVisit.Insert()
25    Do "GetMessages"
26  endfor
27
28  // Resting Shift for Tuesday, Thursday
29  for &n = 0 to 1
30    &officeVisit = new()
31    &officeVisit.OfficeVisitDate = &FirstDayOfWeek + ((2*&n)+1)
32    &officeVisit.PhysicianId = &PhysicianId
33    &officeVisit.ShiftId = AnotherShift(&nextShift)
34    &officeVisit.OfficeId = &usualOfficeId
35    &officeVisit.Insert()
36    Do "GetMessages"
37  endfor

```

Aquí implementamos el requerimiento con un Web Panel donde le pedimos al usuario los datos (aquí mostraremos la colección de mensajes resultantes) y en el evento... primero vaciamos la colección de mensajes que se hubieran mostrado en una ejecución anterior, llamamos a este proc que nos devuelve para esta fecha, la fecha del lunes siguiente.

File Edit View Layout Insert Build Knowledge Manager Window Tools Help | CloudNET | Release | Android | 1.2-SNAPSHOT

KB Explorer | OfficeVisit | OfficeVisitsSchedule | FirstDayOfWeek

Web Layout | Rules | **Events** | Conditions | Variables | Help | Documentation

'WeeklySchedule'

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1 Event 'WeeklySchedule'
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37  endfor
  
```

Monday	Tuesday	Wednesday	Thursday	Friday
Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
	Physician: 1 Office: 1		Physician: 1 Office: 1	
	Physician: 1 Office: 1		Physician: 1 Office: 1	

KB Explorer | Preferences | Output

:Models\GX17StableFon9\Hospital\_

Y en vez de repetir 7 veces el pedir memoria para la variable, asignarle los elementos que correspondan para cada uno, e Insertar, elegimos usar la estructura repetitiva "for" para escribir una sola vez la inserción cuando se trata de lunes, miércoles y viernes, donde solo cambia el día, y todo lo demás se mantiene...

Hospital\_ - GeneXus 17

File Edit View Layout Insert Build Knowledge Manager Window Tools Help

CloudNET Release Android 1.2-SNAPSHOT

KB Explorer Messages

OfficeVisit x OfficeVisitsSchedule x FirstDayOfWeek x

Web Layout Rules **Events** Conditions Variables Help Documentation

'WeeklySchedule'

```

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```

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	Physician: 1 Office: 1		Physician: 1 Office: 1	

KB Explorer Preferences

Output

Ln 17 Col 29 Ch 25 INS

...Luego otra para martes y jueves, que es en el siguiente turno (calculado con este proc), Y aquí lo asignamos...

File Edit View Layout Insert Build Knowledge Manager Window Tools Help

CloudNET Release Android 1.2-SNAPSHOT

KB Explorer

OfficeVisit x OfficeVisitsSchedule x FirstDayOfWeek x AnotherShift x

Web Layout Rules **Events** Conditions Variables Help Documentation

'WeeklySchedule'

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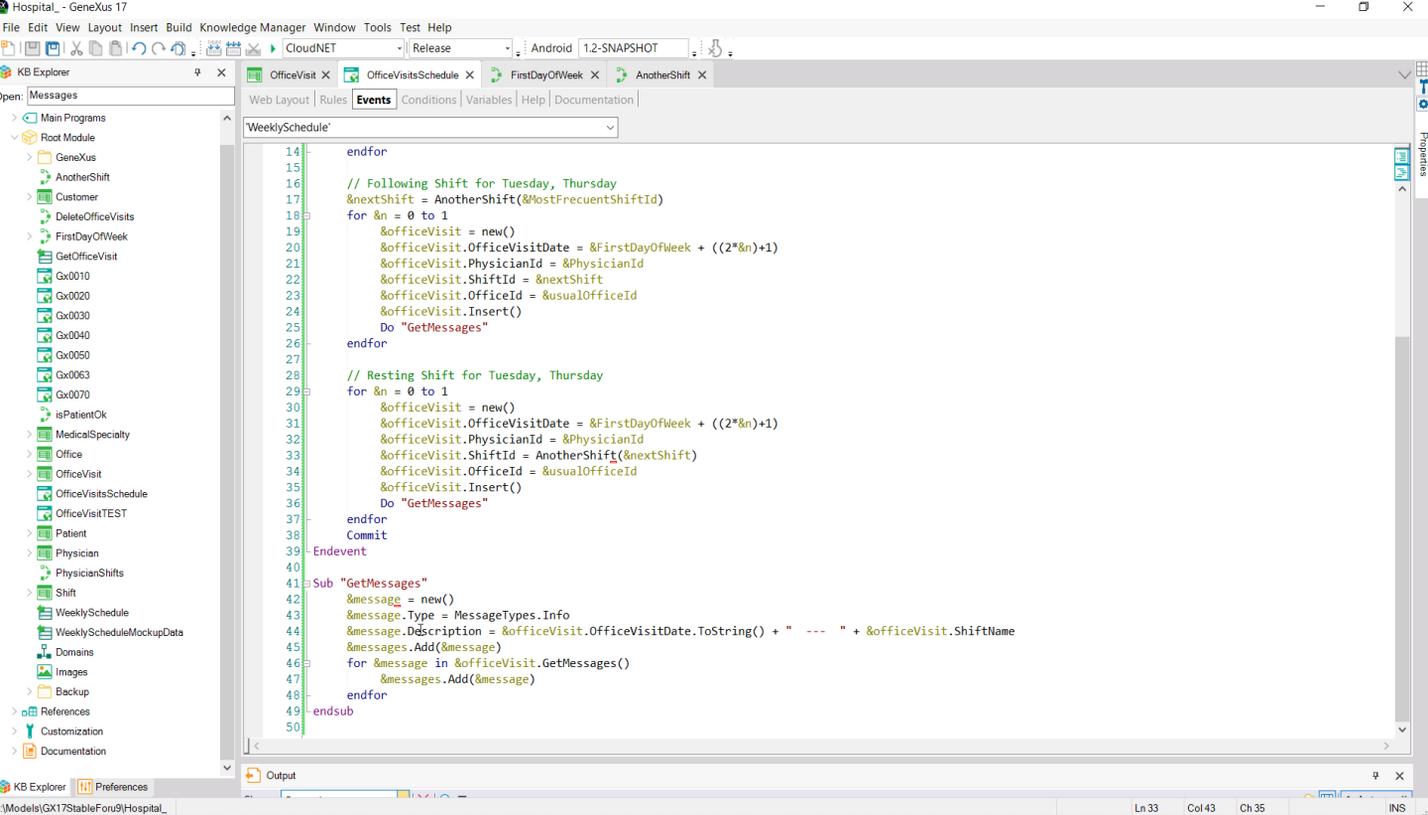
```

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	Physician: 1 Office: 1		Physician: 1 Office: 1	
	Physician: 1 Office: 1		Physician: 1 Office: 1	

Ln 33 Col 43 Ch 35

y luego otro "for" para también martes y jueves, pero en el turno restante.

Veamos que más allá de que mejoremos el código, en definitiva lo que estamos haciendo es utilizar una variable BC, asignándole los valores del cabezal, y utilizando el método Insert para intentar insertar en la tabla correspondiente.



Luego procesamos los mensajes obtenidos.

# Hospital Backoffice



Recents Office Visit — Office Visits — Office Visits Sche...

Next Monday Form Date: 10/04/22 29 Weekly Schedule

Physician Id: 25

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type	Description
	Info	10/10/22 --- Shift morning
ForeignKeyNotFound	Error	No matching 'Physician'.
ForeignKeyNotFound	Error	No matching 'Medical Specialty'.
	Info	10/12/22 --- Shift morning
ForeignKeyNotFound	Error	No matching 'Physician'.
ForeignKeyNotFound	Error	No matching 'Medical Specialty'.
	Info	10/14/22 --- Shift morning
ForeignKeyNotFound	Error	No matching 'Physician'.
ForeignKeyNotFound	Error	No matching 'Medical Specialty'.
	Info	10/11/22 --- Shift intermediate
ForeignKeyNotFound	Error	No matching 'Physician'.

Probemos esto cuando no hay ninguna consulta aún en la tabla.

Por supuesto, si colocamos valores inexistentes de claves foráneas, por ejemplo un médico inexistente, los intentos de inserción fallarán todos. Se intentará la inserción haciendo los mismos chequeos que a través de la transacción.

# Hospital Backoffice

by GeneXus

Recents Office Visit — Office Visits — Office Visits Sche...

Next Monday Form Date 10/04/22 29

Weekly Schedule

Physician Id 1

Most Frequent Shift Id 1

Usual Office Id 1

Id	Type	Description
	Info	10/10/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/12/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/14/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/13/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift evening

Ahora veamos el camino exitoso.

**Office Visits**

**HIDE FILTERS**

MEDICAL SPECIALTY NAME

OFFICE VISIT DATE

SHIFT NAME

Monday	Tuesday	Wednesday	Thursday	Friday
Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
	Physician: 1 Office: 1		Physician: 1 Office: 1	
	Physician: 1 Office: 1		Physician: 1 Office: 1	

**+ INSERT**

Visit Date	Physician Id	Physician Name	Shift Name	Medical Specialt...	Office Id	Last Number
10/10/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE
10/12/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE
10/14/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE
10/11/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0 UPDATE DELETE
10/13/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0 UPDATE DELETE
10/11/22	1	Doctor 1	Shift evening	Family Medicine	1	0 UPDATE DELETE
10/13/22	1	Doctor 1	Shift evening	Family Medicine	1	0 UPDATE DELETE

&officeVisits

<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>1</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(1)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	1	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>1</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(2)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	1	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>1</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(3)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	1	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>2</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(4)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	2	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>2</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(5)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	2	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>3</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>3</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>3</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(6)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	3	PhysicianName		ShiftId	3	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	3	OfficeVisitLastNumber		Patient		<table border="1"> <tr><td>OfficeVisitDate</td><td>#2022-10-10</td></tr> <tr><td>PhysicianId</td><td>1</td></tr> <tr><td>PhysicianName</td><td></td></tr> <tr><td>ShiftId</td><td>3</td></tr> <tr><td>ShiftName</td><td></td></tr> <tr><td>MedicalSpecialtyId</td><td></td></tr> <tr><td>MedicalSpecialtyName</td><td></td></tr> <tr><td>OfficeId</td><td>1</td></tr> <tr><td>OfficeVisitLastNumber</td><td></td></tr> <tr><td>Patient</td><td></td></tr> </table> <p>(7)</p>	OfficeVisitDate	#2022-10-10	PhysicianId	1	PhysicianName		ShiftId	3	ShiftName		MedicalSpecialtyId		MedicalSpecialtyName		OfficeId	1	OfficeVisitLastNumber		Patient	
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&officeVisits.Insert()

Monday	Tuesday	Wednesday	Thursday	Friday
Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
	Physician: 1 Office: 1		Physician: 1 Office: 1	
	Physician: 1 Office: 1		Physician: 1 Office: 1	
10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

Otra manera de programar esto sería cargar cada BC en un ítem de una colección, y recién luego dar la orden de Insert a toda la colección.

Sabemos que internamente se accederá a cada ítem y se intentará un Insert de ese ítem.

Name	Type	Is Collection	Description
Variables			
Standard Variables			
FirstDayOfWeek	Date	<input type="checkbox"/>	First Day Of Week
message	Messages.Message, GeneXus.Common	<input type="checkbox"/>	message
messages	Messages, GeneXus.Common	<input type="checkbox"/>	messages
MostFrecuentShiftId	Attribute:ShiftId	<input type="checkbox"/>	Most Frecuent Shift Id
n	Numeric(1,0)	<input type="checkbox"/>	n
NextScheduleDate	Date	<input type="checkbox"/>	NextMondayDate
nextShift	Attribute:ShiftId	<input type="checkbox"/>	next Shift
officeVisit	OfficeVisit	<input type="checkbox"/>	office Visit
officeVisits	OfficeVisit	<input checked="" type="checkbox"/>	office Visits
PhysicianId	Attribute:PhysicianId	<input type="checkbox"/>	Physician Id
usualOfficeId	Attribute:OfficeId	<input type="checkbox"/>	Office Id

```

1 Event 'WeeklySchedule'
2   &messages.Clear()
3   &FirstDayOfWeek = FirstDayOfWeek(&NextScheduleDate)
4   &officeVisits.Clear()
5   // Most frequent Shift for Monday Wednesday, Friday
6   for &n = 0 to 2
7     &officeVisit = new()
8     &officeVisit.OfficeVisitDate = &FirstDayOfWeek+(2*&n)
9     &officeVisit.PhysicianId = &PhysicianId
10    &officeVisit.ShiftId = &MostFrecuentShiftId
11    &officeVisit.OfficeId = &usualOfficeId
12    &officeVisit.Insert()
13  //
14  // Do "GetMessages"
15  // &officeVisits.Add(&officeVisit)
16  endfor
17
18  // Following Shift for Tuesday, Thursday
19  &nextShift = AnotherShift(&MostFrecuentShiftId)
20  for &n = 0 to 1
21    &officeVisit = new()
22    &officeVisit.OfficeVisitDate = &FirstDayOfWeek + ((2*&n)+1)
23    &officeVisit.PhysicianId = &PhysicianId
24    &officeVisit.ShiftId = &nextShift
25    &officeVisit.OfficeId = &usualOfficeId
26  //
27  // Do "GetMessages"
28  // &officeVisits.Add(&officeVisit)
29  endfor
30
31  // Resting Shift for Tuesday, Thursday
32  for &n = 0 to 1
33    &officeVisit = new()
34    &officeVisit.OfficeVisitDate = &FirstDayOfWeek + ((2*&n)+1)
35    &officeVisit.PhysicianId = &PhysicianId
36    &officeVisit.ShiftId = AnotherShift(&nextShift)
37    &officeVisit.OfficeId = &usualOfficeId
38    //
39    // Do "GetMessages"
40    // &officeVisits.Add(&officeVisit)
41  endfor
42  &officeVisits.Insert()
43  for &officeVisit in &officeVisits
44    Do "GetMessages"
45  endfor
46  Commit

```

Es decir, definiríamos una variable officeVisits, collection del BC OfficeVisit.

Y cargaríamos en la variable &officeVisit la información, pero en lugar de ya insertar en la base de datos, pedimos agregar a la colección el BC. Esto para todas las instancias del BC.

Y recién después pedimos la inserción de toda la colección.

Por supuesto, aquí si queremos obtener los mensajes de cada Insert (el de cada ítem) tendremos que recorrer la colección y llamar a la subrutina.

Y nos conviene limpiar la colección de BCs antes de empezar.

# Hospital Backoffice



Recents Office Visit — Office Visits — Office Visits Sche...

Next Monday Form Date: 10/04/22 29 Weekly Schedule

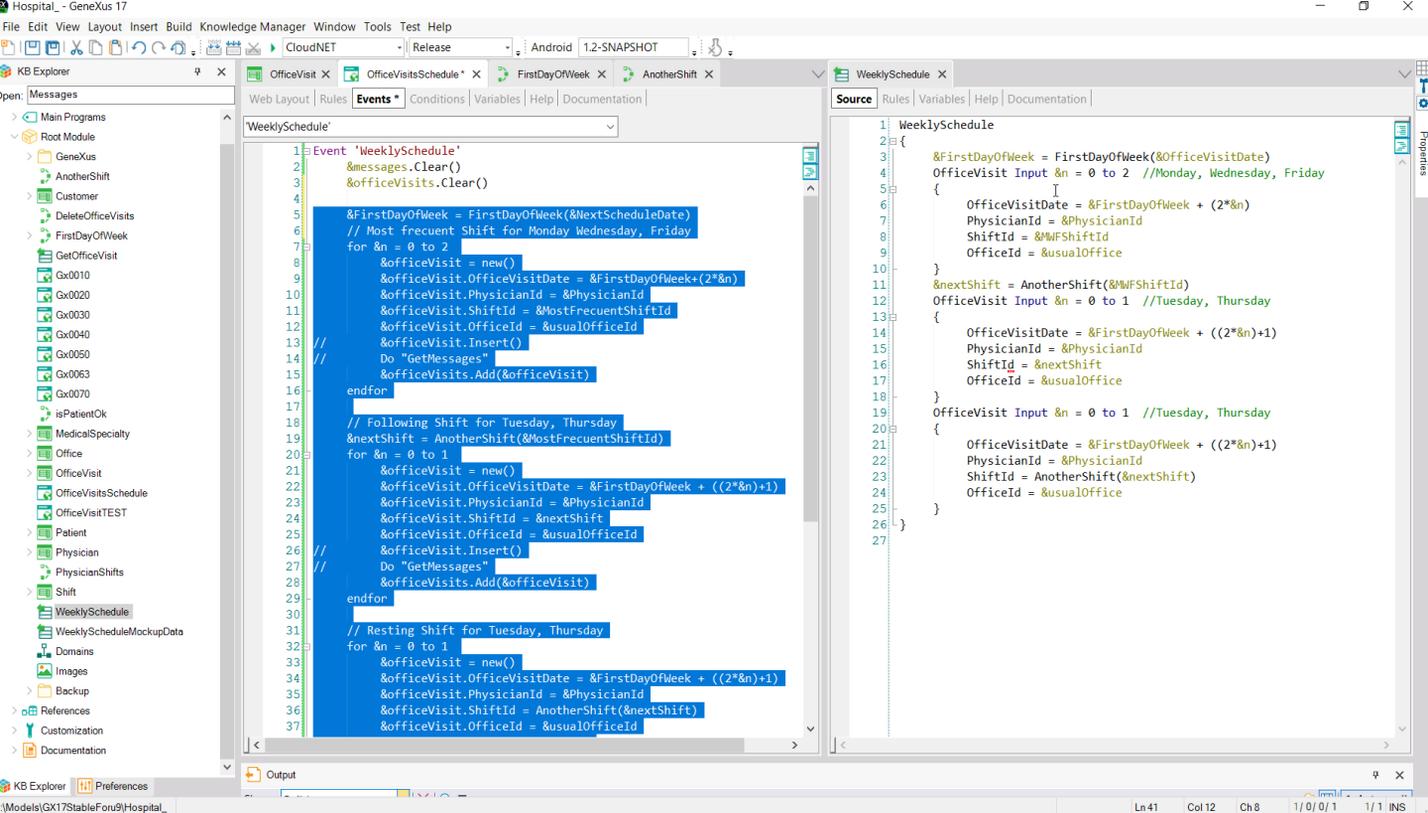
Physician Id: 1

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type	Description
	Info	10/10/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/12/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/14/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/13/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift evening

Si probamos ahora con la tabla vacía como antes, nos debería dar el mismo resultado exactamente...



Ahora, ¿no sería más sencillo en lugar de cargar la colección de esta forma tan manual hacerlo utilizando un Data Provider?

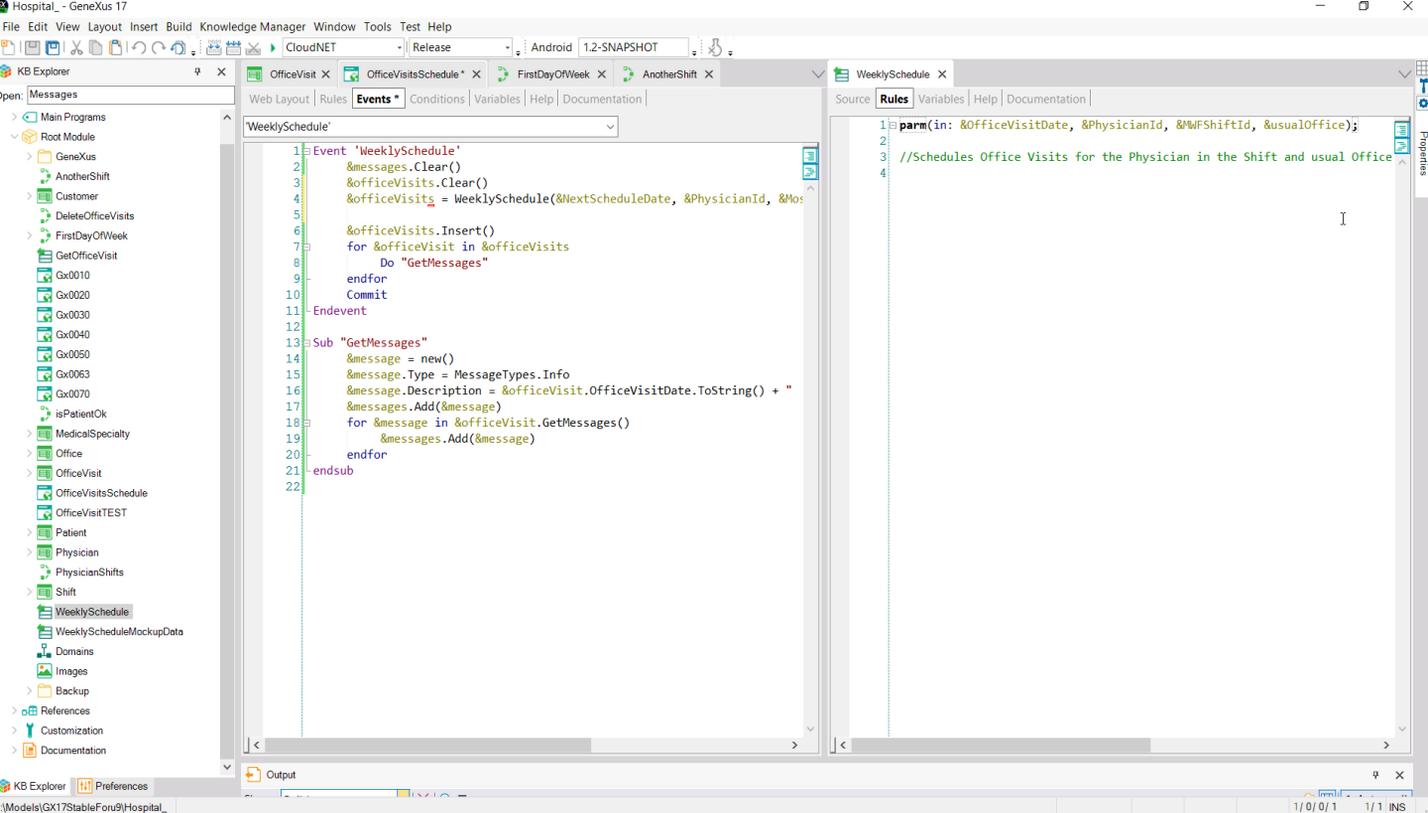
Es decir, sustituir todo esto...

The screenshot displays a software development environment with three main panels:

- Left Panel (KB Explorer):** A tree view showing a project structure with folders like 'Main Programs', 'Root Module', and 'WeeklySchedule'.
- Center Panel (Code Editor):** Shows the source code for an event named 'WeeklySchedule'. The code includes logic for clearing messages, determining the first day of the week, and generating office visits for different shifts (Monday-Friday, Tuesday/Thursday, and Resting Shift).
- Right Panel (Properties):** Shows the configuration for the 'WeeklySchedule' Data Provider. Key properties include:
 

Property	Value
Name	WeeklySchedule
Description	Weekly Schedule
Expose as Web Service	False
Main program	False
Call protocol	Internal
Module/Folder	Root Module
Qualified Name	WeeklySchedule
Object Visibility	Public
Infer Structure	No
Output	OfficeVisit
Collection	True
Collection Name	WeeklySchedule
Connectivity Support	Inherit
Warning messages	Disabled warnings: spc0096 spc0107 spc0142
Miscellaneous	
Generate Object	True

...por una invocación a este Data Provider, que devuelve una colección del BC OfficeVisit...



...cargada igual que en el evento del web panel, pero en más alto nivel.

Entonces cargamos la variable colección con el resultado de la invocación al Data Provider, al que debemos pasarle todos los parámetros.

GeneXus Developer Menu | Office Visits | Office Visits Schedule | +

apps5.genexus.com/Id9df182c70350001219afeaceeb30e8e2/officevisitschedule.aspx

GeneXus DL Portal

# Hospital Backoffice

by GeneXus

Recents Office Visit — Office Visits — Office Visits Sche...

Next Monday Form Date: 10/05/22 29 Weekly Schedule

Physician Id: 1

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type	Description
	Info	10/10/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/12/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/14/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/13/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift evening

Probemos. Otra vez, habiendo vaciado la tabla, vemos que nos da exactamente el mismo resultado.

```
|parm(in: &OfficeVisitDate, in: &PhysicianId, in: &ShiftId, in: &OfficeId);
```

```

1 OfficeVisit
2 {
3   OfficeVisitDate = &OfficeVisitDate
4   PhysicianId = &PhysicianId
5   ShiftId = &ShiftId
6   OfficeId = &OfficeId
7 }
8

```

Data Provider: GetOfficeVisit	
Name	<b>GetOfficeVisit</b>
Description	Get Office Visit
Expose as Web Service	False
Main program	False
Call protocol	Internal
Module/Folder	Root Module
Qualified Name	GetOfficeVisit
Object Visibility	Public
<b>Output</b>	
Infer Structure	No
Output	<b>OfficeVisit</b>
Collection	False
<b>Network</b>	
Connectivity Support	Inherit
<b>Warning messages</b>	
Disabled warnings	spc0096 spc0107 spc0142
<b>Miscellaneous</b>	
Generate Object	True

Por supuesto, tanto podemos utilizar el Data Provider para devolver una colección de Business components como hicimos aquí, que luego se la asignamos a esta variable colección, como para devolver uno solo y hacer el Insert sobre ese solo.

Por ejemplo aquí tenemos este otro Data Provider que devolverá un BC único, éste, OfficeVisit, vemos que collection está en False- Y donde se carga solamente un cabezal de acuerdo a los valores recibidos en los parámetros.

Next Monday Form Date	&NextScheduleDate	Weekly Schedule
Physician Id	&PhysicianId	Schedule One
Most Frequent Shift Id	&MostFrequentShiftId	
Usual Office Id	&usualOfficeId	

GRID		
Id	Type	Description
&messages.item(0).Id	&messages.item(0).Type	&messages.item(0).Description

& Variables			
Standard Variables			
● FirstDayOfWeek	Date		<input type="checkbox"/> First Day Of Week
● message	Messages.Message, GeneXus.Common		<input type="checkbox"/> message
● messages	Messages, GeneXus.Common		<input type="checkbox"/> messages
● MostFrequentShiftId	Attribute:ShiftId		<input type="checkbox"/> Most Frequent Shift Id
● n	Numeric(1.0)		<input type="checkbox"/> n
● NextScheduleDate	Date		<input type="checkbox"/> NextMondayDate
● nextShift	Attribute:ShiftId		<input type="checkbox"/> next Shift
● officeVisit	OfficeVisit		<input type="checkbox"/> office Visit
● officeVisits	OfficeVisit		<input checked="" type="checkbox"/> office Visits
● PhysicianId	Attribute:PhysicianId		<input type="checkbox"/> Physician Id
● usualOfficeId	Attribute:OfficeId		<input type="checkbox"/> Office Id

```

Event 'Schedule One'
  &messages.Clear()
  &officeVisit = GetOfficeVisit(&NextScheduleDate, &PhysicianId, &MostFrequentShiftId, &usualOfficeId)
  &officeVisit.Insert()
  Do "GetMessages"
  Commit
Endevent

```

Vamos a agregar un botón que permita insertar con las variables de pantalla una sola consulta, con esos valores. Entonces utilizamos la variable BC no colección, &officeVisit, que ya tenemos declarada... y la cargamos con lo que devuelve este Data Provider, al que le pasamos las variables de pantalla como parámetros.

Vemos que efectivamente la variable es del tipo de datos el BC, no collection.

Luego simplemente pedimos que inserte en la base de datos y procesamos los mensajes, agregando el Commit, claro.

MEDICAL SPECIALTY NAME

OFFICE VISIT DATE

SHIFT NAME

Visit Date ▲	Physician Id	Physician Name	Shift Name	Medical Specialt...	Office Id	Last Number		
10/10/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE
10/11/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0	UPDATE	DELETE
10/11/22	1	Doctor 1	Shift evening	Family Medicine	1	0	UPDATE	DELETE
10/12/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE
10/13/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0	UPDATE	DELETE
10/13/22	1	Doctor 1	Shift evening	Family Medicine	1	0	UPDATE	DELETE
10/14/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE

Probemos. Por ejemplo para una fecha anterior a esta primera...

# Hospital Backoffice



Recents Office Visits Sche...

Next Monday Form Date: 10/06/22

Physician Id:

Most Frequent Shift Id:

Usual Office Id:

Id	Type	Description
	Info	10/06/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.

...insertamos con éxito.

# Hospital Backoffice



Recents | Office Visits Sche... — Office Visits

X HIDE FILTERS

## Office Visits

Q Name

+ INSERT

MEDICAL SPECIALTY NAME

OFFICE VISIT DATE

SHIFT NAME

Visit Date	Physician Id	Physician Name	Shift Name	Medical Specialt...	Office Id	Last Number		
10/06/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE
10/10/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE
10/11/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0	UPDATE	DELETE
10/11/22	1	Doctor 1	Shift evening	Family Medicine	1	0	UPDATE	DELETE
10/12/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE
10/13/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0	UPDATE	DELETE
10/13/22	1	Doctor 1	Shift evening	Family Medicine	1	0	UPDATE	DELETE
10/14/22	1	Doctor 1	Shift morning	Family Medicine	1	0	UPDATE	DELETE

Ahora, pensemos si en caso de que exista el registro quisiéramos actualizarlo, por ejemplo, colocamos la misma clave primaria, pero queremos cambiar el consultorio.

# Hospital Backoffice

Recents Office Visits Sche...

Next Monday Form Date: 10/06/22 29 Weekly Schedule

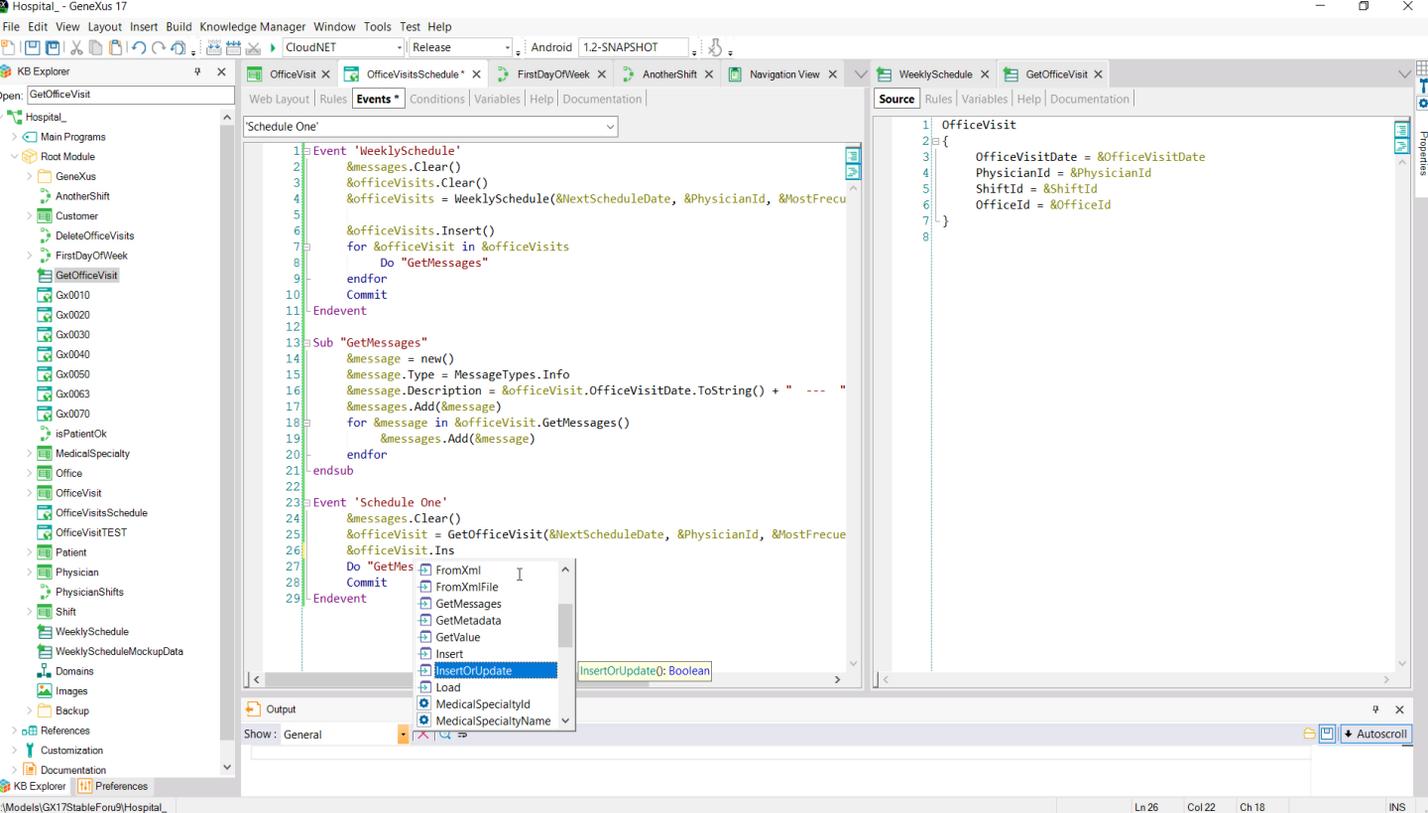
Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 2

Id	Type	Description
	Info	10/06/22 --- Shift morning
DuplicatePrimaryKey	Error	Record already exists

Por supuesto, nos arrojará el error de clave primaria duplicada, porque lo que intentamos fue un Insert y el registro ya existía.



Podemos pensar, entonces, que nos alcanzará para resolver esto con modificar el método que estamos invocando, cambiándolo por InsertOrUpdate, para que intente primero insertar, y si falla por clave duplicada, entonces intente actualizar.

# Hospital Backoffice



Recents Office Visits — Office Visits Sche...

Next Monday Form Date	10/06/22 	<input type="button" value="Weekly Schedule"/>
Physician Id	1	<input type="button" value="Schedule One"/>
Most Frequent Shift Id	1	
Usual Office Id	2	

Id	Type	Description
	Info	10/06/22 --- Shift morning
SuccessfullyUpdated	Warning	Data has been successfully updated.

Si ahora volvemos a intentar cambiar el consultorio de esta consulta por el 2...  
vemos que efectivamente hizo lo que queríamos.

Office Visits

NAME

HIDE FILTERS

INSERT

MEDICAL SPECIALTY NAME	OFFICE VISIT DATE	SHIFT NAME	Visit Date	Physician Id	Physician Name	Shift Name	Medical Specialt...	Office Id	Last Number
			10/06/22	1	Doctor 1	Shift morning	Family Medicine	2	0 UPDATE DELETE
			10/10/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE
			10/11/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0 UPDATE DELETE
			10/11/22	1	Doctor 1	Shift evening	Family Medicine	1	0 UPDATE DELETE
			10/12/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE
			10/13/22	1	Doctor 1	Shift intermediate	Family Medicine	1	0 UPDATE DELETE
			10/13/22	1	Doctor 1	Shift evening	Family Medicine	1	0 UPDATE DELETE
			10/14/22	1	Doctor 1	Shift morning	Family Medicine	1	0 UPDATE DELETE

Sin embargo, observemos qué sucede si queremos hacer eso mismo, pero por ejemplo para esta consulta, de este día en el turno intermedio y el doctor 1, que tiene otra consulta para el mismo día, en otro turno...

Recents Office Visits — Office Visits Sche...

Next Monday Form Date: 10/11/22  Weekly Schedule

Physician Id:  Schedule One

Most Frequent Shift Id:

Usual Office Id:

Id	Type	Description
	Info	10/11/22 --- Shift Intermediate
PhysicianNotAvailable	Error	Physician 1 already has 2 shifts assigned for the date: 10/11/22

```
&officeVisit.InsertOrUpdate()
```

Entonces colocamos ese día, el médico 1, turno 2 que es el intermedio y le queremos cambiar el consultorio del 1 al 2.

Oops, ¿por qué nos dio este error que nos indica que el médico 1 ya tiene 2 consultas asignadas para esa fecha?

Es que primero intenta el Insert, y allí es donde se va a producir este error.

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

apps5.genexus.com/Id9df182c70350001219afeaceeb30e8e2/officevisitsschedule.aspx

GeneXus DL Portal

# Hospital Backoffice

by GeneXus

Recents Office Visits — Office Visits Sche...

Next Monday Form Date 10/11/22 29

Physician Id 1

Most Frequent Shift Id 2

Usual Office Id 2

Id

PhysicianNotAvailable

**INSERT**

Checks	Error Id	Error Description
FK: PhysicianId	ForeignKeyNotFound	No matching 'Physician'
error("Physician " + PhysicianId.ToString() + " already has 2 shifts assigned for the date: " + OfficeVisitDate.ToString(), PhysicianNotAvailable) If &shifts >= 2 and Insert;	PhysicianNotAvailable	Physician... already has 2 shifts...
FK: ShiftId	ForeignKeyNotFound	No matching 'Shift'
FK: OfficeId	ForeignKeyNotFound	No matching 'Office'
CK: {OfficeVisitDate, ShiftId, OfficeId}		Office Visit Date, Shift Id, Office Id already exists
PK: {OfficeVisitDate, PhysicianId, ShiftId}	DuplicatePrimaryKey	Record already exists
FK: PatientId	ForeignKeyNotFound	No matching 'Patient'
error("There is a pending office visit scheduled for this patient for the same specialty", PatientAlreadyScheduledForMedicalSpecialty) if not &isOK and Insert Level PatientId;	PatientAlreadySchedule dForMedicalSpecialty	There is a pending office visit scheduled...
PK: {OfficeVisitDate, PhysicianId, ShiftId, PatientId}	DuplicatePrimaryKey	Record already exists

`&officeVisit.Insert()`

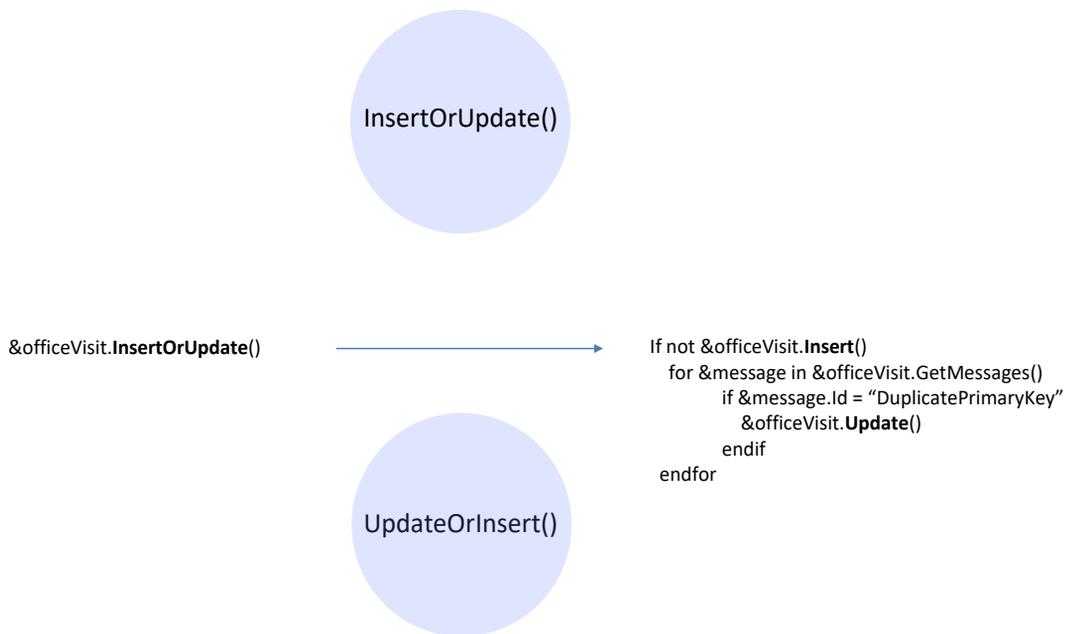
Si recordamos el orden en el que se disparan los chequeos, vemos que antes de controlar la unicidad de la clave primaria, primero disparará el procedimiento que va a calcular la cantidad de turnos en los que se encuentra ese médico y si el resultado es 2 o más, ya se disparará la regla de error.

Lo interesante aquí es que nunca llegará a chequear la unicidad del registro. ¿Por qué?

Aquí hay algo importante que saber: por motivos de performance, asumiendo una estrategia optimista, se supone que en la mayoría de los casos la inserción no fallará por PK duplicada, por lo que primero se realizan todos los chequeos para después enviar al DBMS el comando INSERT de base de datos. Es decir, solo se envía el INSERT si estos chequeos previos fueron exitosos. Y allí, al intentar el Insert es que el DBMS podrá arrojar el error de clave duplicada. Recién allí nos enteramos de si existía o no otro registro con esa clave.

Por lo que si alguno de estos chequeos previos falla, por ejemplo, por esta regla de error, no se intenta el Insert, y quedamos sin saber si, **además**, ya existía un registro con esa clave y por el que también debía fallar la inserción.

En este caso el Update no se intenta, porque éste sólo se ejecuta si el fallo de Insert fue por clave duplicada.

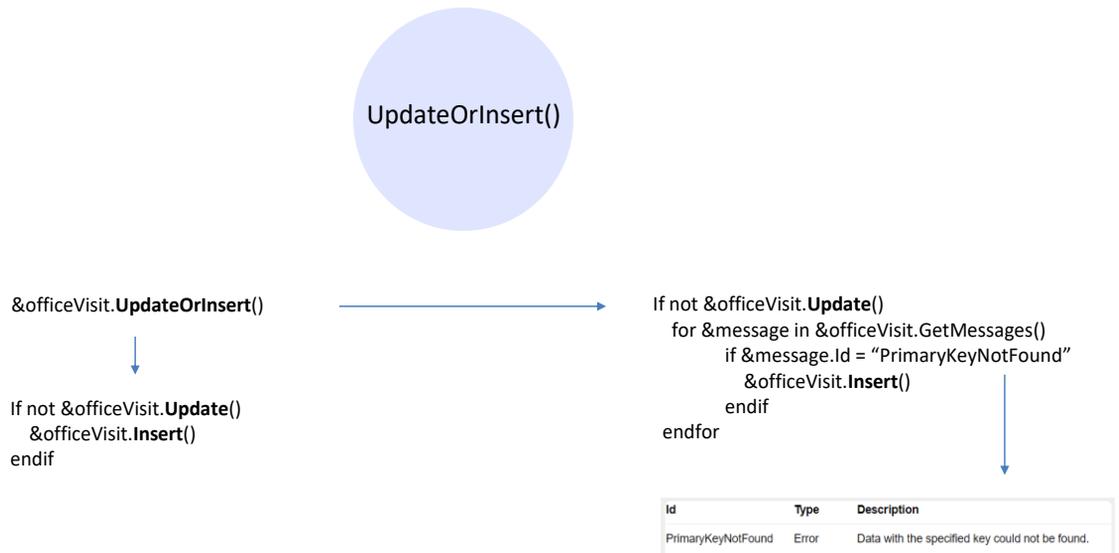


Si traducimos la lógica del método `InsertOrUpdate` a lo que sucede por detrás, sería algo así:

Se intenta el `Insert`, si funcionó, perfecto, se sigue con el código que venga luego. Si no funcionó, solo en el caso en el que haya sido por clave primaria duplicada se intenta el `Update`, que por su parte podrá funcionar o no, por supuesto.

Pero tenemos que tener en cuenta el comportamiento que describimos hace unos instantes. Es decir, si el `Insert` falla por alguna otra cosa previa al intento real de inserción, como nunca se llega a saber si además el registro ya existía, nunca ejecutará el `Update`.

El método inverso no ha sido aún implementado en GeneXus.

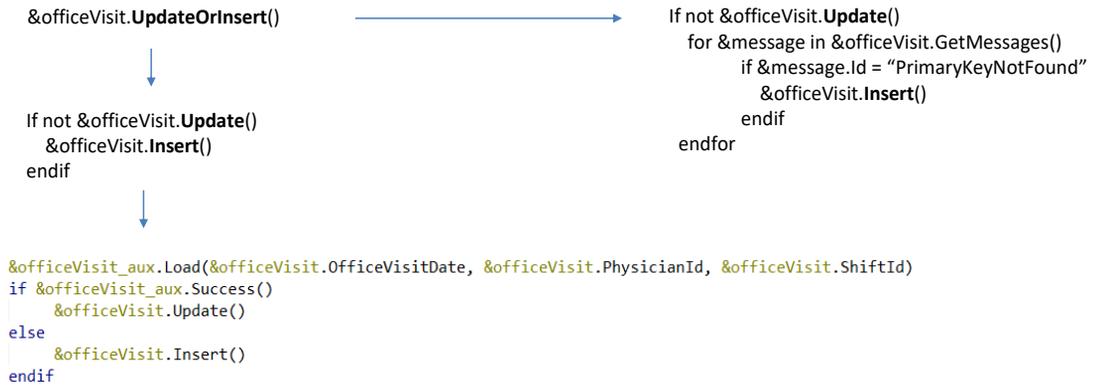


Pero debería ser análogo, en el sentido de que solo si no puede hacer el Update por inexistencia del registro y no por cualquier otra cosa, intente el Insert.

Como aún no contamos con este método, podemos intentar el Update y si falla por la razón que sea, de todos modos intentar el Insert, sabiendo que si el fallo no fue porque la clave no existiera, entonces el Insert fallará indefectiblemente.

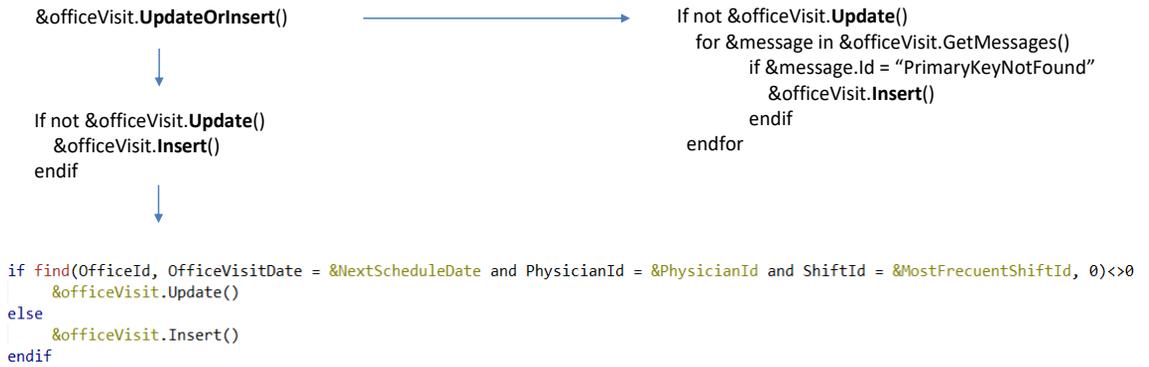


## UpdateOrInsert()

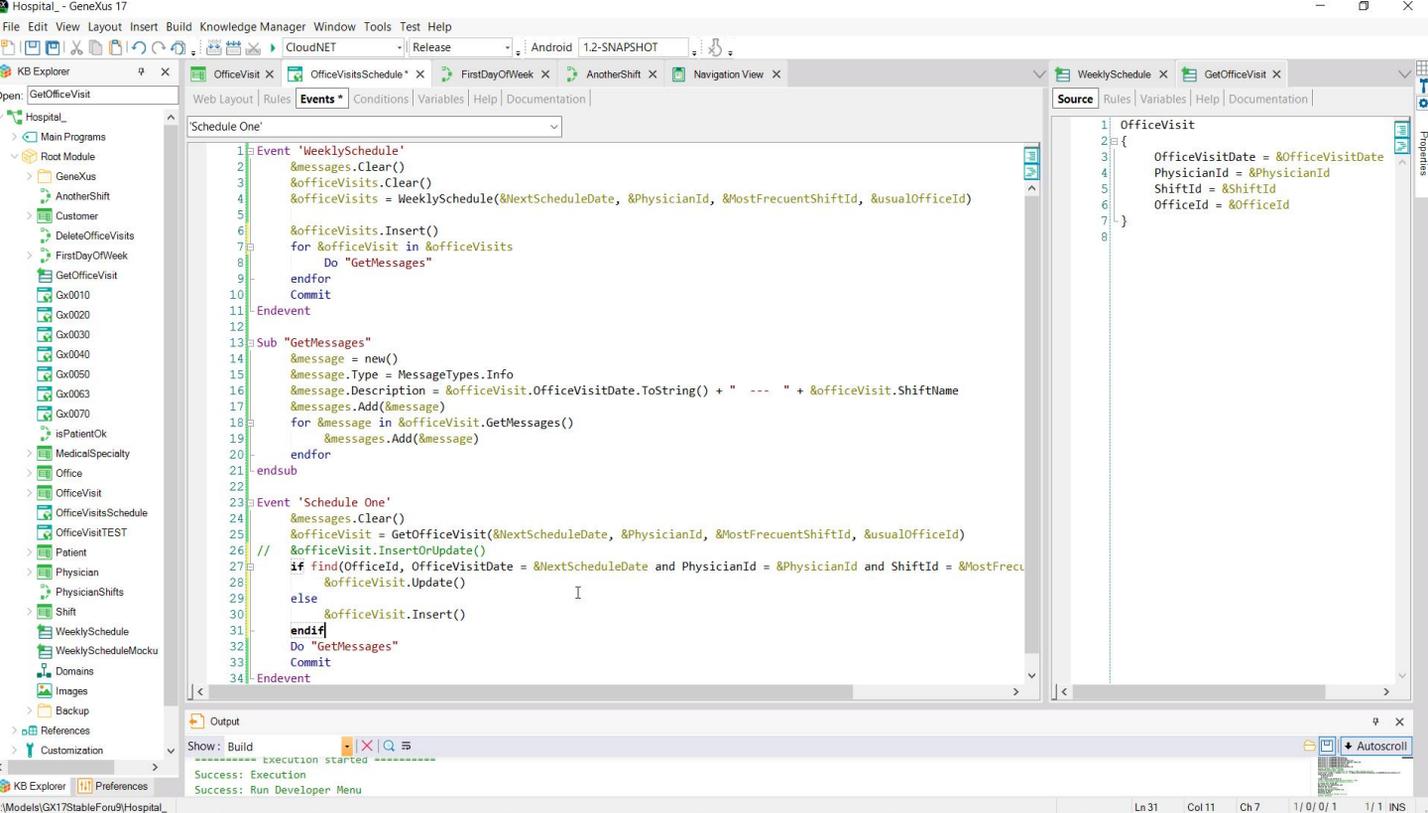


O, claro, también podríamos ser más específicos e intentar el método Load, y preguntar por si fue exitoso o no, y recién allí ordenar un Update o un Insert respectivamente.

## UpdateOrInsert()



O, si queremos ser más eficientes, buscar la existencia o no del registro con una fórmula find por ejemplo.



Probemos esta solución.

# Hospital Backoffice



Recents Office Visits — Office Visits Sche...

Next Monday Form Date: 10/11/22

Physician Id:

Most Frequent Shift Id:

Usual Office Id:

Id	Type	Description
	Info	10/11/22 ---
SuccessfullyUpdated	Warning	Data has been successfully updated.

Ahora sí pudimos modificar el consultorio.

Next Monday Form Date	<input type="text" value="&amp;NextScheduleDate"/>	Weekly Schedule
Physician Id	<input type="text" value="&amp;PhysicianId"/> 1	
Most Frequent Shift Id	<input type="text" value="&amp;MostFrequentShiftId"/>	
Usual Office Id	<input type="text" value="&amp;usualOfficeld"/> 1	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Shift 1</b> morning	Physician: 1 Office: 1		Physician: 1 Office: 1		Physician: 1 Office: 1
<b>Shift 2</b> intermediate		Physician: 1 Office: 1		Physician: 1 Office: 1	
<b>Shift 3</b> evening		Physician: 1 Office: 1		Physician: 1 Office: 1	
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

Volvamos la inserción batch. Antes habíamos insertado todos estos registros sin problemas porque no había otros registros para esa semana en la base de datos. Pero ¿y si existieran?

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Shift 1</b> morning	Physician: 1 Office: 2 → 1 Physician: 1 Office: 1 ↻		Physician: 2 Office: 1 Physician: 1 Office: 1 !	Physician: 1 Office: 2	Physician: 1 Office: 1 ↕
<b>Shift 2</b> intermediate	Physician: 1 Office: 2	Physician: 1 Office: 1 ↕		Physician: 1 Office: 1 ↕	
<b>Shift 3</b> evening		Physician: 1 Office: 2 → 1 Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 !	
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022

Por ejemplo, supongamos que ya existían estos registros para esa semana, cuando queremos lanzar el proceso batch.

Vamos a querer hacer lo mismo que en el caso individual anterior: es decir, insertar si no existe un registro con esa clave y en caso contrario, actualizar.

¿Entonces, qué debería pasar con cada uno? Para el primero, ya existe registro con esa clave primaria, es este, por lo que intentará el Update, que funcionará, cambiándole el consultorio por este, el 1.

Para el segundo, consulta si existe registro con esa clave, como no existe, intenta el Insert, pero le va a fallar por clave candidata duplicada. Es que el consultorio 1 ya está ocupado.

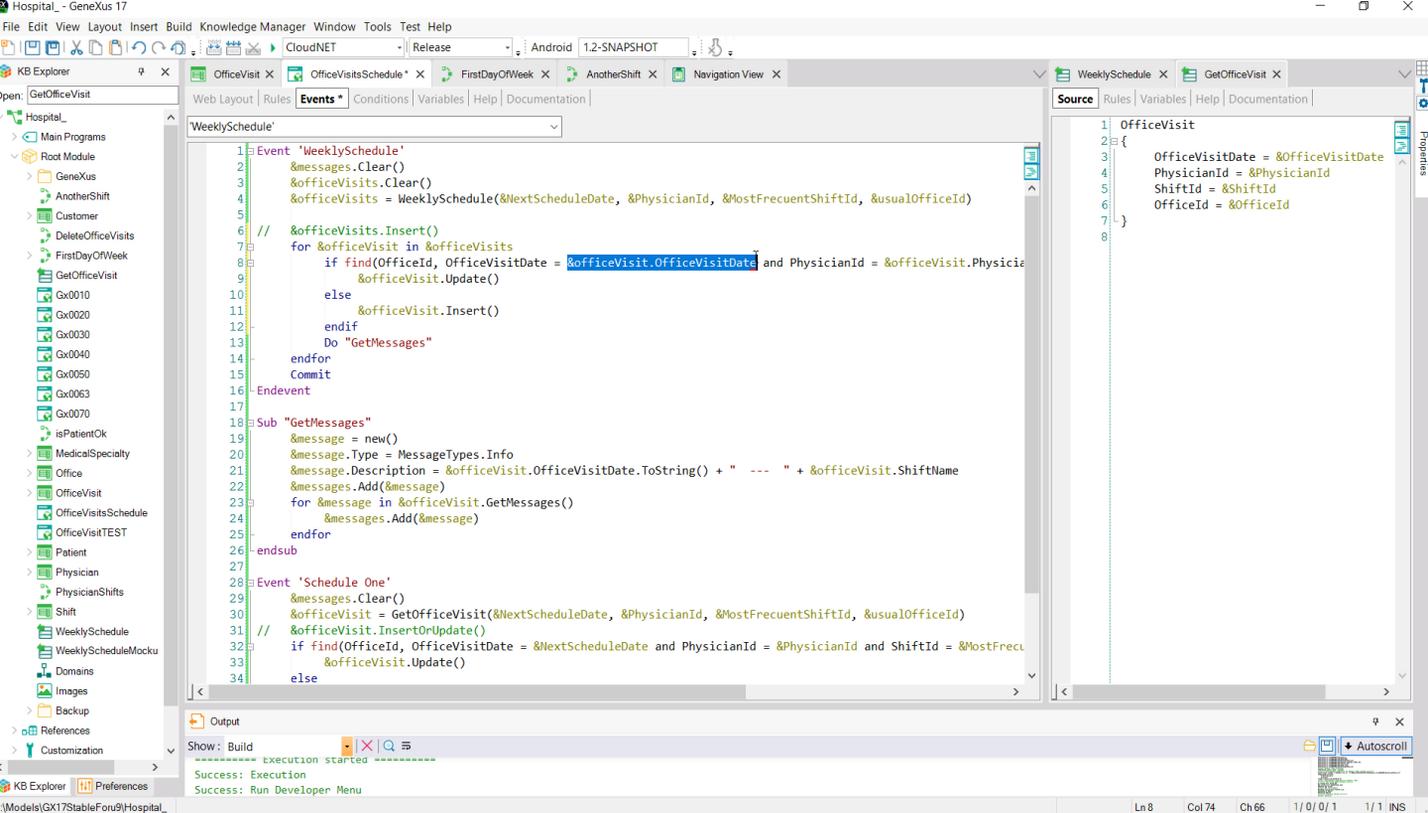
Para el tercero, consulta si existe registro con esa clave; no existe, intenta el Insert, que será exitoso.

Para el cuarto intenta el Insert, que contará cuántas consultas hay ya ingresadas para ese día para el médico, y como le dará 1, no se disparará ningún error y podrá insertar sin problema.

Para el quinto sucederá lo mismo, insertará sin inconveniente.

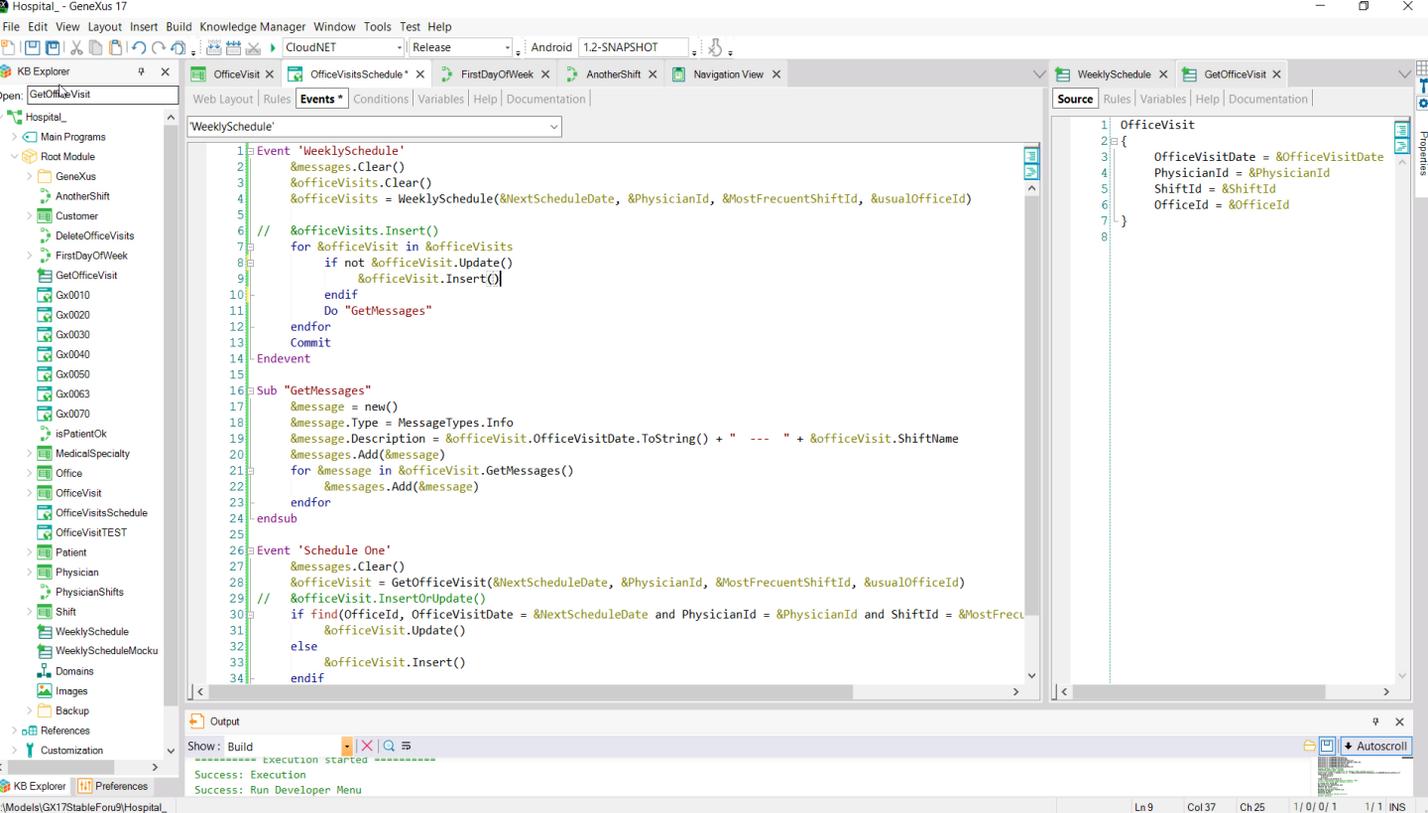
Ahora viene el sexto y como ya existe registro con esa clave intenta el Update, que será exitoso, modificando el consultorio del registro existente.

Para el último, como no existe registro con esa clave intentará el Insert, pero fallará. ¿Por qué? Porque encontrará que el médico 1 ya tiene 2 consultas agendadas ese día.



¿Cómo cambiamos el código que teníamos para que funcione así?

Ya no nos sirve lanzar operación masiva sobre la colección de los 7 ítems que nos devolvía el Data Provider. Tendremos que operar individualmente, recorriéndola toda y en cada caso preguntando sobre la existencia o no del registro con esa clave. Aquí debemos de domozar los datos de cada BC.



O, si queremos probarlo de manera más sencilla, intentamos el Update y si no funciona, intentamos el Insert...

Probemos.

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

apps5.genexus.com/ld9df182c70350001219afeaceeb30e8e2/wwofficevisit.aspx

GeneXus DL Portal

# Hospital Backoffice

by GeneXus

Recents Office Visits

Office Visits

NAME

+ INSERT

HIDE FILTERS

MEDICAL SPECIALTY NAME

OFFICE VISIT DATE

SHIFT NAME

Visit Date	Physician Id	Physician Name	Shift Name	Medical Specialt...	Office Id	Last Number		
10/10/22	1	Doctor 1	Shift morning	Family Medicine	2	0	UPDATE	DELETE
10/10/22	1	Doctor 1	Shift intermediate	Family Medicine	2	0	UPDATE	DELETE
10/11/22	1	Doctor 1	Shift evening	Family Medicine	2	0	UPDATE	DELETE
10/13/22	1	Doctor 1	Shift morning	Family Medicine	2	0	UPDATE	DELETE
10/12/22	2	Doctor 2	Shift morning	Family Medicine	1	0	UPDATE	DELETE

Aquí tenemos los datos iniciales...

GeneXus Developer Menu | Office Visits | Office Visits Schedule

apps5.genexus.com/Id9df182c70350001219afeaceeb30e8e2/officevisitschedule.aspx

GeneXus DL Portal

# Hospital Backoffice

by GeneXus

Recents Office Visits — Office Visits Sche...

Next Monday Form Date: 10/06/22 29 Weekly Schedule

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type	Description
	Info	10/10/22 ---
SuccessfullyUpdated	Warning	Data has been successfully updated.
	Info	10/12/22 --- Shift morning
	Error	Office Visit Date,Shift Id,Office Id already exists
	Info	10/14/22 --- Shift morning
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/13/22 --- Shift intermediate
SuccessfullyAdded	Warning	Data has been successfully added.
	Info	10/11/22 ---

Y ahora intentemos lanzar la agenda batch, para la semana siguiente, médico 1, turno 1.

Comparemos los mensajes producidos con lo que esperábamos...

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

apps5.genexus.com/Id9df182c70350001219afeaceeb30e8e2/officevisitschedule.aspx

GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	<div style="border: 1px solid orange; padding: 2px;">           Physician: 1 Office: 2 → 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 2 Office: 1         </div>	<div style="border: 1px solid gray; padding: 2px;">           Physician: 1 Office: 2         </div>	<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>	<div style="background-color: #f9cb9c; padding: 2px;">10/10/22 ---</div> Data has been successfully updated.
	<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>			10/12/22 --- Shift morning
						Office Visit Date, Shift Id, Office Id already exists
						10/14/22 --- Shift morning
SuccessfullyAdded	<div style="border: 1px solid gray; padding: 2px;">           Physician: 1 Office: 2         </div>	<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		Data has been successfully added.
						10/11/22 --- Shift intermediate
SuccessfullyAdded		<div style="border: 1px solid gray; padding: 2px;">           Physician: 1 Office: 2 → 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		Data has been successfully added.
		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		10/13/22 --- Shift intermediate
SuccessfullyAdded		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		<div style="border: 1px dashed gray; padding: 2px;">           Physician: 1 Office: 1         </div>		Data has been successfully added.
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 ---
SuccessfullyUpdated			Warning			Data has been successfully updated.
			Info			10/13/22 --- Shift evening
PhysicianNotAvailable			Error			Physician 1 already has 2 shifts assigned for the date: 10/13/22

El primero actualizó con éxito, bien.

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

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GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Physician: 1 Office: 1 ↻	10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ↻		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		10/11/22 --- Shift intermediate Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		10/13/22 --- Shift intermediate Data has been successfully added.
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 ---
SuccessfullyUpdated			Warning			Data has been successfully updated.
			Info			10/13/22 --- Shift evening
PhysicianNotAvailable			Error			Physician 1 already has 2 shifts assigned for the date: 10/13/22

El segundo falló por clave candidata duplicada, bien.

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

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GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠			10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↕		Physician: 1 Office: 1 ↕		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		10/11/22 --- Shift intermediate
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Data has been successfully added.
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 ---
SuccessfullyUpdated	Warning					Data has been successfully updated.
	Info					10/13/22 --- Shift evening
PhysicianNotAvailable	Error					Physician 1 already has 2 shifts assigned for the date: 10/13/22

El tercero se insertó con éxito, bien.

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GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Physician: 1 Office: 1 ↻	10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ↻		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		10/11/22 --- Shift intermediate Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		10/13/22 --- Shift intermediate Data has been successfully added.
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 ---
SuccessfullyUpdated			Warning			Data has been successfully updated.
			Info			10/13/22 --- Shift evening
PhysicianNotAvailable			Error			Physician 1 already has 2 shifts assigned for the date: 10/13/22

El cuarto de insertó con éxito, bien.

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GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Physician: 1 Office: 1 ↻	10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ↻		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		10/11/22 --- Shift intermediate Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		10/13/22 --- Shift intermediate Data has been successfully added.
	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 ---
SuccessfullyUpdated			Warning			Data has been successfully updated.
			Info			10/13/22 --- Shift evening
PhysicianNotAvailable			Error			Physician 1 already has 2 shifts assigned for the date: 10/13/22

El quinto también se insertó con éxito, bien.

GeneXus Developer Menu x Office Visits x Office Visits Schedule x +

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GeneXus DL Portal

Physician Id: 1 Schedule One

Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Physician: 1 Office: 1 ↻	10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ↻		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded						10/11/22 --- Shift intermediate
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		Data has been successfully added. 10/13/22 --- Shift intermediate
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Data has been successfully added.
SuccessfullyUpdated	10-10-2022	10-11-2022	10-12-2022	10-13-2022	10-14-2022	10/11/22 --- Data has been successfully updated.
PhysicianNotAvailable	Warning					10/13/22 --- Shift evening
	Info					Physician 1 already has 2 shifts assigned for the date: 10/13/22

El sexto se actualizó con éxito, bien.

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Physician Id: 1 Schedule One

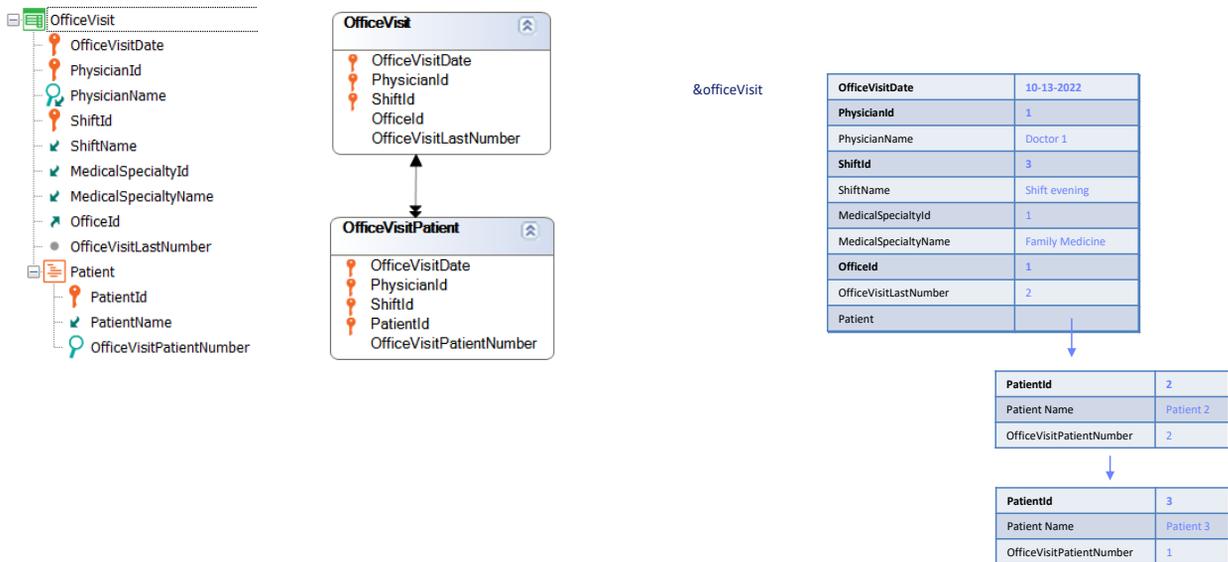
Most Frequent Shift Id: 1

Usual Office Id: 1

Id	Type					Description
	Monday	Tuesday	Wednesday	Thursday	Friday	
SuccessfullyUpdated	Physician: 1 Office: 2 → 1		Physician: 2 Office: 1	Physician: 1 Office: 2	Physician: 1 Office: 1	10/10/22 --- Data has been successfully updated.
	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		Physician: 1 Office: 1 ↻	10/12/22 --- Shift morning Office Visit Date, Shift Id, Office Id already exists
SuccessfullyAdded	Physician: 1 Office: 2	Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ↻		10/14/22 --- Shift morning Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 2 → 1		Physician: 1 Office: 1 ⚠		10/11/22 --- Shift intermediate Data has been successfully added.
SuccessfullyAdded		Physician: 1 Office: 1 ↻		Physician: 1 Office: 1 ⚠		10/13/22 --- Shift intermediate Data has been successfully added.
SuccessfullyUpdated	Warning					10/11/22 --- Data has been successfully updated.
PhysicianNotAvailable	Error					10/13/22 --- Shift evening Physician 1 already has 2 shifts assigned for the date: 10/13/22

Y el último falló porque el médico ya tenía 2 consultas para ese día, bien.

Veamos que efectivamente haya cambiado el consultorio de esta consulta... bien  
Y de esta otra... bien también.



Hasta aquí trabajamos con BCs de dos niveles, pero que tenían vacío su segundo nivel. En relación a lo que aquí estudiamos respecto al Insert o al Update no habrá ninguna diferencia con el caso en el que tengamos la colección de pacientes no vacía.

A continuación, luego de abordar las diferencias entre métodos de business components, mostraremos cómo hacer las operaciones de Insert o Update con un BC de dos niveles donde sí trabajaremos con las líneas, pero lo haremos en el más alto nivel, utilizando Data Provider.

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