

# Actualización a la Base de datos con comandos específicos de procedimientos.

Cómo eliminar (delete)

**GeneXus**<sup>™</sup>

# For each Command

| AttractionId | AttractionName | CountryId | CityId | CategoryId |
|--------------|----------------|-----------|--------|------------|
| 1            | Louvre Museum  | 2         | 1      | 1          |
| 2            | The Great Wall | 3         | 1      | 2          |
| 3            | Forbidden city | 3         | 1      | 2          |
| 4            | Forbidden city | 3         | 1      | 2          |
| 5            | Eiffel Tower   | 2         | 1      | 3          |



**For each** Attraction  
Where AttractionName = "Eiffel Tower"

```
AttractionId = 5  
CategoryId = 3
```

**endfor**

**For each** Attraction  
Where AttractionName = "Eiffel Tower"

```
new  
  AttractionId = 5  
  CategoryId = 3  
endnew
```

Delete

**endfor**

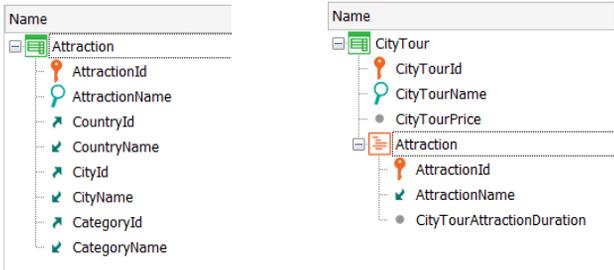
En el video sobre actualización con For each en un procedimiento vimos un caso en el que necesitábamos modificar el valor de la clave primaria de un registro, para lo cuál teníamos que crear uno nuevo con el nuevo valor de clave y eliminar el viejo.

Y esto lo hacíamos posicionándonos sobre el registro en cuestión, creando uno nuevo con new; e inmediatamente ejecutando el comando Delete para eliminar el registro del for each en el que estábamos posicionados.

Así será en general la eliminación. Utilizando for each para elegir registro y ejecutando Delete para eliminarlo.

Delete

Estudiemos los detalles de la eliminación.



**City Tours** INSERT

| Tour Id | Tour Name           | Country Name | City Name |
|---------|---------------------|--------------|-----------|
| 2       | Beijing attractions | China        | Beijing   |
| 1       | Paris               | France       | Paris     |

< CITY TOURS

**Paris**

General **Attraction**

| Attraction Id | Attraction Name | Country Id | City Id | Country Name | City Name | Duration (min) |
|---------------|-----------------|------------|---------|--------------|-----------|----------------|
| 1             | Louvre Museum   | 2          | 1       | France       | Paris     | 200            |
| 3             | Eiffel Tower    | 2          | 1       | France       | Paris     | 120            |

Recordemos las transacciones que veníamos utilizando para estudiar la inserción y actualización de la base de datos por procedimientos.

Aquí teníamos CityTour, donde podíamos especificar por qué atracciones turísticas iba a realizarse el tour actual. Por ejemplo, si vemos en ejecución, teníamos este tour por París, que recorrería las atracciones museo Louvre y Torre Eiffel.

The screenshot displays the GeneXus IDE interface. On the left, a tree view shows the 'Attraction' entity with its attributes: AttractionId, AttractionName, CountryId, CountryName, CityId, CityName, CategoryId, and CategoryName. The main window shows a data table for 'Attraction' with the following data:

| Id | Name         | Country Id | City Name | Category Id |
|----|--------------|------------|-----------|-------------|
| 3  | Eiffel Tower | 2          | Paris     | 2           |
| 1  | France       | 1          |           |             |

Below the table, there are 'DELETE' and 'CANCEL' buttons. An arrow points to the 'DELETE' button. A red error message at the top of the table reads: 'Attraction with no empty name must not be deleted'. In the bottom left, a 'Rules' editor window shows the following code:

```
1 Error("Attraction with no empty name must not be deleted")
2 if not AttractionName.IsEmpty() and Delete;
3
```

Por otro lado, teníamos la transacción que registra las atracciones. Y hemos agregado esta regla de error para no permitir la eliminación de una atracción con nombre ingresado.

Entonces, veamos que si intentamos eliminar la atracción Torre Eiffel a través de la transacción, no se nos permitirá.

## ¿Eliminación por Procedimiento?

Ahora, ¿qué pasa si intentamos eliminarla a través de un procedimiento?

Sabemos que esa atracción, Torre Eiffel, es parte de un city tour, y además tiene un nombre asignado, que es, justamente, Eiffel Tower. Entonces, ¿nos permitirá eliminarla?

|                    | Uniqueness check | Referential Integrity check | Rules/Events execution |
|--------------------|------------------|-----------------------------|------------------------|
| Delete in For each | ✗                | ✗                           | ✗                      |

| CityTourId | AttractionId | CityTourAttractionDuration |
|------------|--------------|----------------------------|
| 1          | 1            | 200                        |
| 1          | 3            | 120                        |
| 2          | 2            | 240                        |
| 2          | 4            | 240                        |

| AttractionId | AttractionName | CountryId | CityId | CategoryId |
|--------------|----------------|-----------|--------|------------|
| 1            | Louvre Museum  | 2         | 1      | 1          |
| 2            | The Great Wall | 3         | 1      | 2          |
| 3            | Eiffel Tower   | 2         | 1      | 2          |
| 4            | Forbidden city | 3         | 1      | 2          |

For each Attraction  
 Where AttractionName = "Eiffel Tower"  
 Delete  
 endfor

```

Attraction X
Structure | Web Layout | Rules | Events | Variables | Help | Documentation | Patterns
1 Error("Attraction with no empty name must not be deleted")
2 if not AttractionName.IsEmpty() and Delete;
3
  
```

Si pensamos en todo lo que vimos hasta el momento relativo a los comandos de actualización de la base de datos por procedimientos, podemos contestar que SÍ, que nos permitirá eliminar la atracción, porque:

- **No** se realizan chequeos de integridad referencial programáticos, es decir, no chequeará que no exista ningún city tour que esté referenciando a la atracción a ser eliminada.
- Y además, **no** se ejecutan reglas de la transacción asociada a la tabla de la que se está eliminando un registro.

The screenshot displays the GeneXus IDE interface for developing a 'DeleteAttraction' program. On the left, a design view shows three buttons: 'New attraction', 'Update attraction', and 'Delete attraction'. The 'Delete attraction' button is connected to an event 'Delete attraction' which triggers the 'DeleteAttraction()' subroutine. Below this, a separate window shows the source code for the 'DeleteAttraction' subroutine:

```

1 For each Attraction
2   where AttractionName = "Eiffel Tower"
3   Delete
4 endfor
5

```

The right-hand pane provides program details for 'DeleteAttraction':

- Name:** DeleteAttraction
- Description:** Delete Attraction
- Output Devices:** None
- Environment:** Default (C#)
- Spec. Version:** 17\_0\_3-148529
- Form Class:** Graphic
- Program Name:** DeleteAttraction

A warning message is displayed: **sps0060** The program may be called by another program and the Commit on Exit property is set to YES. The 'LEVELS' section shows a 'For Each Attraction (Line: 1)' loop with the following configuration:

- Order:** AttractionId
- Index:** IATTRACTION
- Navigation filters:** Start from: FirstRecord, Loop while: NotEndOfTable
- Constraints:** AttractionName = "Eiffel Tower"
- Optimizations:** Delete

The SQL command shown is: `DELETE FROM Attraction`. The bottom status bar indicates 0 Errors, 1 Warnings, and 0 Success.

Entonces si vamos a GeneXus y vemos que programamos este botón que invoca a este procedimiento... que recorre con un for each las atracciones filtrando por la de nombre "Eiffel Tower" y para los registros encontrados (en nuestro caso será uno solo), los elimina con el comando Delete...

Attraction x The DELETE statement conflicted: x +

trialapps3.genexus.com/Id3f243fe13aa80f1928be5c145295849e/crud\_attraction.aspx

## Server Error in '/Id3f243fe13aa80f1928be5c145295849e' Application.

*The DELETE statement conflicted with the REFERENCE constraint "ICITYTOURATTRACTION1". The conflict occurred in database "Id3f243fe13aa80f1928be5c145295849e", table "dbo.CityTourAttraction", column 'AttractionId'. The statement has been terminated.*

**Description:** An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originated in the code.

**Exception Details:** System.Data.SqlClient.SqlException: The DELETE statement conflicted with the REFERENCE constraint "ICITYTOURATTRACTION1". The conflict occurred in database "Id3f243fe13aa80f1928be5c145295849e", table "dbo.CityTourAttraction", column 'AttractionId'. The statement has been terminated.

**Source Error:**

An unhandled exception was generated during the execution of the current web request. Information regarding the origin and location of the exception can be identified using the exception stack trace below.

**Stack Trace:**

```
[SqlException (0x80131904): The DELETE statement conflicted with the REFERENCE constraint "ICITYTOURATTRACTION1". The conflict occurred in database "Id3f243fe13aa80f1928be5c145295849e", The statement has been terminated.]
  System.Data.SqlClient.SqlConnection.OnError(SqlException exception, Boolean breakConnection, Action`1 wrapCloseInAction) +3306108
  System.Data.SqlClient.TdsParser.ThrowExceptionAndWarning(TdsParserStateObject stateObj, Boolean callerHasConnectionLock, Boolean asyncClose) +736
  System.Data.SqlClient.TdsParser.TryRun(RunBehavior runBehavior, SqlCommand cmdHandler, SqlDataReader dataStream, BulkCopySimpleResultSet bulkCopyHandler, TdsParserStateObject stateObj)
  System.Data.SqlClient.SqlCommand.RunExecuteNonQueryTds(String methodName, Boolean async, Int32 timeout, Boolean asyncWrite) +1293
  System.Data.SqlClient.SqlCommand.InternalExecuteNonQuery(TaskCompletionSource`1 completion, String methodName, Boolean sendToPipe, Int32 timeout, Boolean& usedCache, Boolean asyncWrite)
  System.Data.SqlClient.SqlCommand.ExecuteNonQuery() +380
  GeneXus.Data.ADO.GxCommand.ExecuteNonQuery() +432

[GxADODataException: The DELETE statement conflicted with the REFERENCE constraint "ICITYTOURATTRACTION1". The conflict occurred in database "Id3f243fe13aa80f1928be5c145295849e", table "dbo.CityTourAttraction", column 'AttractionId'. The statement has been terminated.]
  GeneXus.Data.ADO.GxCommand.ExecuteNonQuery() +826
  GeneXus.Data.ADO.GxCommand.execStat() +121

[GxADODataException: Type:System.Data.SqlClient.SqlException.DBMS Error Code:547.The DELETE statement conflicted with the REFERENCE constraint "ICITYTOURATTRACTION1". The conflict occurred in database "Id3f243fe13aa80f1928be5c145295849e", table "dbo.CityTourAttraction", column 'AttractionId'. The statement has been terminated.]
  GeneXus.Data.ADO.GxCommand.execStat() +615
  GeneXus.Data.ADO.GxCommand.ExecuteNonQuery() +57
  GeneXus.Data.NTier.ADO.UpdateCursor.execute() +172
  GeneXus.Data.NTier.DataStoreProvider.execute(Int32 cursor, Object[] parms, Boolean batch) +1097
  GeneXus.Data.NTier.DataStoreProvider.execute(Int32 cursor) +15
  GeneXus.Programs.deleteattraction.executePrivate() +33
  GeneXus.Programs.crud_attraction.E130B2() +65
```

Si ejecutamos... se nos cae el programa. ¿Por qué?

Por lo mismo que ya vimos antes.

|                    | Uniqueness check | Referential Integrity check | Rules/Events execution |
|--------------------|------------------|-----------------------------|------------------------|
| Delete in For each | ✗                | ✗                           |                        |

| CityTourId | AttractionId | CityTourAttractionDuration |
|------------|--------------|----------------------------|
| 1          | 1            | 200                        |
| 1          | 3            | 120                        |
| 2          | 2            | 240                        |
| 2          | 4            | 240                        |

| AttractionId | AttractionName | CountryId | CityId | CategoryId |
|--------------|----------------|-----------|--------|------------|
| 1            | Louvre Museum  | 2         | 1      | 1          |
| 2            | The Great Wall | 3         | 1      | 2          |
| 3            | Eiffel Tower   | 2         | 1      | 2          |
| 4            | Forbidden city | 3         | 1      | 2          |

```
For each Attraction
  Where AttractionName = "Eiffel Tower"
  Delete
endfor
```



El Delete no chequea integridad referencial pero por defecto la base de datos sí, y no estamos capturando la excepción que arroja.

The screenshot displays the GeneXus IDE interface. On the left, a sidebar shows a pattern named 'DeleteAttraction'. The main workspace is divided into two sections: 'For Each CityTourAttraction (Line: 1)' and 'For Each Attraction (Line: 5)'. The first section shows the following configuration and code:

- Order: `CityTourId, AttractionId`
- Index: `ICITYTOURATTRACTION`
- Navigation filters: Start from: `FirstRecord`, Loop while: `NotEndOfTable`
- Constraints: `AttractionName = "Eiffel Tower"`
- Join location: `Server`
- Code: `CityTourAttraction ( CityTourId, AttractionId ) INTO AttractionId` and `-Attraction ( AttractionId ) INTO AttractionName`
- Command: `DELETE FROM CityTourAttraction`

The second section shows:

- Order: `AttractionId`
- Index: `IATTRACTION`
- Navigation filters: Start from: `FirstRecord`, Loop while: `NotEndOfTable`
- Constraints: `AttractionName = "Eiffel Tower"`
- Optimizations: `Delete`
- Code: `-Attraction ( AttractionId ) INTO AttractionName`
- Command: `DELETE FROM Attraction`

On the right, a 'DeleteAttraction \*' window shows the source code in a 'Source' view:

```
1 For each CityTour.Attraction
2   where AttractionName = "Eiffel Tower"
3   Delete
4 -endfor
5 For each Attraction
6   where AttractionName = "Eiffel Tower"
7   Delete
8 -endfor
9
```

Entonces, si queremos eliminar esa atracción, antes deberíamos eliminarla de todos los city tours en los que se encuentre. Así... Ejecutemos.

Como observación obvia, el comando Delete solo elimina el registro de la tabla base del For each en el que nos encontremos posicionados. No elimina registros de la tabla extendida. En este sentido funciona como el new.

```

DeleteAttraction * X
Source * Layout | Rules | Conditions | Variables | Help | Documentation
Subroutines
1 For each CityTour.Attraction
2   where AttractionName = "Eiffel Tower"
3   Delete
4   endfor
5 For each Attraction
6   where AttractionName = "Eiffel Tower"
7   Delete
8   endfor
9

```

```

CRUD_Attraction * X
Web Layout | Rules | Events * | Conditions | Variables | Help | Documentation
'Delete attraction'
7   endif
8   msg(&text)
9   Endevent
10
11 Event 'Update attraction'
12   UpdateAttraction()
13   Endevent
14
15 Event 'Delete attraction'
16   For each CityTour.Attraction
17     where AttractionName = "Eiffel Tower"
18     Delete
19   endfor
20   For each Attraction
21     where AttractionName = "Eiffel Tower"
22     Delete
23   endfor
24   Endevent
25
26

```

Output

Show: General

```

error src0206: 'Delete' command is out of scope (Web Panel 'CRUD_Attr
error src0206: 'Delete' command is out of scope (Web Panel 'CRUD_Attr

```

Y otra cosa que ya hemos resaltado muchas veces, pero que es importante volver a destacar: el comando Delete solamente puede utilizarse dentro de un for each y en un procedimiento. No podríamos haber programado la eliminación directamente dentro del evento, por ejemplo.

A diferencia de lo que ocurre cuando eliminamos a través de Business Component.

|                    | Uniqueness check | Referential Integrity check | Rules/Events execution |
|--------------------|------------------|-----------------------------|------------------------|
| Delete in For each | ✗                | ✗                           | ✗                      |

| CityTourId | AttractionId | CityTourAttractionDuration |
|------------|--------------|----------------------------|
| 1          | 1            | 200                        |
| 1          | 3            | 120                        |
| 2          | 2            | 240                        |
| 2          | 4            | 240                        |

| AttractionId | AttractionName | CountryId | CityId | CategoryId |
|--------------|----------------|-----------|--------|------------|
| 1            | Louvre Museum  | 2         | 1      | 1          |
| 2            | The Great Wall | 3         | 1      | 2          |
| 3            | Eiffel Tower   | 2         | 1      | 2          |
| 4            | Forbidden city | 3         | 1      | 2          |

```

For each CityTour.Attraction
  Where AttractionName = "Eiffel Tower"
  Delete
endfor
For each Attraction
  Where AttractionName = "Eiffel Tower"
  Delete
endfor
Commit

```

COMMIT?

Transaction integrity

|                |     |
|----------------|-----|
| Commit on exit | Yes |
|----------------|-----|

Por último, en este procedimiento estamos eliminando dos registros.  
¿Cuándo queda esta operación commiteada en la base de datos?

Sucede lo mismo que vimos con el new y la actualización con for each. Si la propiedad Commit on exit queda con su valor default, que es Yes, como GeneXus encuentra que se está queriendo realizar una eliminación sobre la base de datos, automáticamente agrega al final del Source del procedimiento un comando Commit.

**Procedure DeleteAttraction Navigation Report**

|                        |                   |                       |                  |
|------------------------|-------------------|-----------------------|------------------|
| <b>Name:</b>           | DeleteAttraction  | <b>Environment:</b>   | Default (C#)     |
| <b>Description:</b>    | Delete Attraction | <b>Spec. Version:</b> | 17_0_3-148529    |
| <b>Output Devices:</b> | None              | <b>Form Class:</b>    | Graphic          |
|                        |                   | <b>Program Name:</b>  | DeleteAttraction |

**Warnings**

▲ spc0080 The program may be called by another program and the Commit on Exit property is set to YES

**LEVELS**

For Each CityTourAttraction (Line: 1)

```

Order      CityTourId  AttractionId
Index: ICITYTOURATTRACTION
Navigation filters: Start from: FirstRecord
                  Loop while:  NotEndOfTable
Constraints:   AttractionName = "Eiffel Tower"
Join location: Server

[CityTourAttraction ( CityTourId, AttractionId ) INTO AttractionId]
[Attraction ( AttractionId ) INTO AttractionName]

DELETE FROM CityTourAttraction

```

For Each Attraction (Line: 5)

```

Order      AttractionId
Index: IATTRACTION
Navigation filters: Start from: FirstRecord
                  Loop while:  NotEndOfTable
Constraints:   AttractionName = "Eiffel Tower"
Optimizations: Delete

[Attraction ( AttractionId ) INTO AttractionName]

DELETE FROM Attraction

```

**Properties: DeleteAttraction**

|                              |                                |
|------------------------------|--------------------------------|
| <b>Name</b>                  | DeleteAttraction               |
| <b>Description</b>           | Delete Attraction              |
| <b>Module/Folder</b>         | Root Module                    |
| <b>Main program</b>          | False                          |
| <b>Call protocol</b>         | Internal                       |
| <b>Execute in new LUW</b>    | False                          |
| <b>Qualified Name</b>        | DeleteAttraction               |
| <b>Object Visibility</b>     | Public                         |
| <b>Interoperability</b>      |                                |
| Expose as Web Serv.          | False                          |
| <b>Network</b>               |                                |
| Connectivity Support         | Inherit                        |
| <b>Reporting Options</b>     |                                |
| Report output                | Only To File                   |
| Customizable Layout          | Use Environment property value |
| Confirmation                 | Use Environment property value |
| Allow user to cancel         | Yes                            |
| Footer on last page          | Yes                            |
| Autocenter objects           | Use Environment property value |
| <b>Transaction integrity</b> |                                |
| Commit on exit               | Yes                            |
| <b>Compatibility</b>         |                                |
| Standard Functions           | Only standard functions        |
| Initialize not referer       | Use Environment property value |
| Generate null for null       | Use Environment property value |

Y es por ello que el listado de navegación nos muestra una advertencia que nos lo indica, para que sepamos que aunque no hayamos especificado explícitamente un commit, GeneXus lo agregará.

|                    | Uniqueness check | Referential Integrity check | Rules/Events execution |
|--------------------|------------------|-----------------------------|------------------------|
| Delete in For each | ✗                | ✗                           | ✗                      |

| CityTourId | AttractionId | CityTourAttractionDuration |
|------------|--------------|----------------------------|
| 1          | 1            | 200                        |
| 1          | 3            | 120                        |
| 2          | 2            | 240                        |
| 2          | 4            | 240                        |

| AttractionId | AttractionName | CountryId | CityId | CategoryId |
|--------------|----------------|-----------|--------|------------|
| 1            | Louvre Museum  | 2         | 1      | 1          |
| 2            | The Great Wall | 3         | 1      | 2          |
| 3            | Eiffel Tower   | 2         | 1      | 2          |
| 4            | Forbidden city | 3         | 1      | 2          |

```
→ For each CityTour.Attraction
    Where AttractionName = "Eiffel Tower"
    Delete
Endfor
Commit
→ For each Attraction
    Where AttractionName = "Eiffel Tower"
    Delete
Endfor
Commit
```

→

```
For each CityTour.Attraction
    Where AttractionName = "Eiffel Tower"
    Delete
Commit
Endfor
For each Attraction
    Where AttractionName = "Eiffel Tower"
    Delete
Commit
Endfor
```

Por supuesto, podríamos programar nosotros un commit luego de cada for each.

O incluso, luego de cada Delete (porque en nuestro caso el for each recuperará un solo registro, pero podría tratarse de varios).

Summary

```

For each BaseTransaction
  skip expression1 count expression2
  order att11, att12, ... att1n [when condition]
  order att21, att22, ... att2n [when condition | otherwise]
  using DataSelector(parm1, ..., parmn)
  unique att1, ..., attn
  where condition [when condition]
  where condition [when condition]
  where att in DataSelector(parm1, ..., parmn)

```

|        | Uniqueness check | Referential Integrity check |
|--------|------------------|-----------------------------|
| Delete | ✗                | ✗                           |

```

blocking NumericExpression

```

Delete

```

...
When duplicate
...
When none
...
endfor

```

COMMIT

|                       |     |
|-----------------------|-----|
| Transaction integrity |     |
| Commit on exit        | Yes |

En suma, para eliminar registros específicamente por procedimiento contamos con el comando Delete que debe utilizarse dentro del comando For each.

La eliminación es del registro de la tabla base de for each en el que éste se encuentre posicionado en cada iteración.

En el caso de la eliminación no tiene sentido un control de unicidad de claves, porque no se está insertando ni actualizando nada. Y al igual que vimos con la inserción y la actualización, el Delete no realiza programáticamente control de integridad referencial alguno. Esto, otra vez, es por motivos de performance. Sin embargo las bases de datos en general sí lo realizan, a menos que apaguemos esa funcionalidad; por lo que, de no apagarla y fallar la integridad, arrojarán una excepción.

Por último: para que el registro quede commiteado en la base de datos, es decir, quede eliminado de forma permanente, debemos asegurarnos de que el comando Commit se ejecute. En un procedimiento, por defecto, se coloca un Commit implícito al final (siempre y cuando se entienda que en el Source se está accediendo en algún lado a la base de datos para actualizarla). Pero podemos escribir explícitamente Commits en el Source, donde nos convenga.

Otra vez, no lo veremos aquí, pero opcionalmente puede especificarse una cláusula Blocking, que lo que hace es permitir hacer eliminaciones

en bloque, en lugar de registro a registro. Es decir, procesará los registros en bloques de a N para reducir los accesos y mejorar la performance.

Tanto para la inserción, como para la actualización como para la eliminación las redundancias no son mantenidas automáticamente cuando se hacen por procedimiento. Es responsabilidad del desarrollador mantenerlas.

Sobre todo esto podemos ver más en nuestro wiki.

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