# Identificando atributos disponibles



Explicaremos ahora la definición de tabla base y tabla extendida.

Son 2 conceptos muy sencillos, y es importante entenderlos, ya que se usan mucho en el uso de la herramienta en general.

Veamos la ventana Knowledge Base Navigator.

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Hasta ahora nos hemos concentrado en el nodo Objects

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ya que bajo el mismo vamos creando los objetos GeneXus que definen a la aplicación.

Observemos el nodo Tables.

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Bajo este nodo, podemos observar cuáles tablas físicas

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GeneXus ha determinado crear en la base de datos, a partir de las estructuras de las transacciones que definimos.

Si abrimos por ejemplo la tabla Category



vemos que la tabla física contiene exactamente los mismos atributos definidos en la estructura de la transacción Category.

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que los referenciados en la transacción Attraction.

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Esto se debe a que en la transacción Attraction hay varias llaves foráneas

y por lo tanto, a través de las mismas, hay valores de atributos

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que se obtienen cuando se ejecuta la aplicación, de aquellas tablas en las que se encuentran.

Veamos también que bajo el nodo Tables figura una tabla de nombre CountryCity



## Esta tabla física

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fue creada por GeneXus en la base de datos, basándose en la definición del 2do nivel que hicimos en la transacción Country:

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Tal como habíamos visto, cuando definimos un nivel anidado a otro en una transacción, se crea una tabla de llave compuesta

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que en este caso es la tabla CountryCity:

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Ahora bien...

hemos observado el nodo Tables

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bajo el cual podemos visualizar las tablas físicas creadas en la base de datos y su composición.

Veamos ahora que podemos crear un **diagrama de tablas**, para visualizarlas en un esquema que muestre **además de su composición, cómo se relacionan entre ellas**.

Seleccionamos File / New / Object



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Elegimos crear un objeto de tipo **Diagram** y dejamos el nombre ofrecido por defecto: **Diagram1** 

Seleccionamos Create:



y arrastramos desde el nodo Tables a todas las tablas hacia el diagrama...



Ahora presionamos el botón derecho del mouse y seleccionamos "Arrange nodes" logrando que se distribuyan las tablas en el diagrama y se vean claramente las flechas que representan como se relacionan entre sí:



Observando este diagrama de tablas, explicaremos a qué denominamos tabla base y tabla extendida en GeneXus.

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### Llamamos tabla base

a cualquier tabla de la base de datos en la cual estemos posicionados en determinado momento, por ejemplo para desplegar sus datos o modificarlos.

Podría ser ésta...



#### o ésta...

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CustomerName	
Customerid     Customerid	
CustomerId     CustomerName     CustomerName	
	AttractionId     AttractionName     CategoryId     CountryId     CityId      Customer     Customerd     Customerd

o cualquiera de las tablas del diagrama.

Cuando ejecutamos una transacción de 1 nivel, la misma tiene una tabla base asociada

Page 11

	CountryCity	Attraction	Category	(*)
	♥ Countryld ♥ Cityld CityName	AttractionId     AttractionName     CountryId     CategoryId     AttractionPhoto     CityId	CategoryId     CategoryNa	ame
・ る Diagram * 圏 Docu	Country			
S Diagram *)  Docu Category ×  □ Category ×	Country mentation	E Attraction X	CountryCity ×	untry X
A Diagram * Docu	Country mentation Category X Attrac	E Attraction X Description	CountryCity × II Co	untry × Nullable
Category × Category	Country mentation Category X Attrac Type Category	E Attraction X Description Category	CountryCity × Co	untry X Nullable
Diagram * Doccu Category × Category CategoryId	Country mentation Category × Attrac Type Category Id	Etion X Attraction X Description Category Category Id	CountryCity × II Co	untry X Nullable

es decir, una tabla física, en la cual se realizan las inserciones, modificaciones y eliminaciones que operamos por ejemplo, a través de la pantalla de la transacción, en forma interactiva.

γx	Sh Diagram1* ★				
		CountryCity	Attraction	Category	8
		♥ Countryld ♥ Cityld CityName	AttractionId     AttractionName     CountryId     CategoryId     Attractioname	Categoryld     CategoryNar	ne
	A Diagram * ) Diagram	Country			
ш	Category ×	Categor Attr	action × Attraction ×	CountryCity × Cour	ntry X
1	Name	Туре	Description	Formula	Nullable
	- Category	Category			
	- 💡 CategoryId	Id	Category Id		No
	- 🔑 CategoryName	Name	Category Name		No
Ļ					Ca .

Cuando trabajamos con una transacción de más de 1 nivel, cada nivel tiene una tabla base asociada

🖧 Diagram1 * 🗙			
	CountryCit (2) CountryId CityName	Attraction AttractionId AttractionId AttractionId AttractionId CategoryId CategoryId CategoryId CategoryName CategoryName	
T	Country (R) CountryId CountryName	Custorer (2)	
중 Diagram * 🖺	ation		
Category	Category X Attraction X	Attraction × CountryCity × Country ×	
Name	Type	Description Formula	Nullable
Country Country	TH IN	Country	hio
- D Countrylo	Name	Country Name	No
City City	City	City	
- Citvid	Id	City Id	No
CityName	Name	City Name	No

& Diagram1\* ×

## en la cual se realizan las inserciones, modificaciones y eliminaciones que procesamos a través de dicho nivel.

Ca	xuntryCity	AL N	traction	8	-	Category		
ŀ	Countryld Cityld CityName		AttractionId AttractionName CountryId CategoryId AttractionPhoto		Ę	Categor Categor	ryld ryName	
	CountryId	0						
	CountryName		Customer	(A)	]			
Locumentat	CountryName		Customer	*		-	Country	~
cumentat	CountryName	raction ×	Customer	(R)	ntryCity	x ii	Country	×
cumentat	CountryName	raction ×	Customer	(È)	ntryCity Fe	× a	Country	×
cumentat	CountryName	raction ×	Customer	(R)	ntryCity Fc	x ii	Country	×
Cates	CountryName	raction ×	Customer	Cour	ntryCity Fe	× i	Country	×
d lame	CountryName	raction ×	Attraction × escription pountry Id pountry Vame ty	Cour	ntryCity Fc	× ii	Country	x
yId yId yId	CountryName	raction ×	Customer Attraction × escription suntry suntry Id sountry Name ty ty Id	Cour	ntryCity Fr	x i	Country	×

También cuando definamos consultas (por ejemplo un listado), estaremos navegando cierta tabla base.

La tabla base entonces, es cualquier tabla física de la base de datos, en la cual estemos posicionados trabajando en determinado momento.

<u>Veamos ahora el concepto de tabla extendida.</u> Este concepto surge para simplificar la tarea de saber <u>a cuáles</u> <u>tablas tenemos alcance</u> cuando estamos posicionados en cierta tabla base.

Intuitivamente, ya hemos accedido a la tabla extendida de cierta tabla base

Por ejemplo, la transacción "Attraction" tiene por tabla base, o tabla física asociada, a la tabla ATTRACTION.

	CountryCity (2)	Attraction	Category	(*)
	<ul> <li>Countryld</li> <li>Cityld</li> <li>CityName</li> </ul>	AttractionId AttractionName CountryId CategoryId AttractionPhoto CityId	CategoryId CategoryName	
	Country CountryId CountryName	Customer		
		A.C	4	
Diagram * Docum	entation   Category 🗙 🔽 💷 Attraction	Attraction X Cour	ntryCity × El Country	×
B Diagram * Docum	Category × Attraction	Attraction X Cour Description	tryCity X Country Formula	× Nullab
Diagram * Docum     Category ×      ame     Attraction	Category X I Attraction Type Attraction	Attraction X Coun Description Attraction	tryCity × E Country Formula	× Nullab
Category × 3 Category × 3 ame Attraction AttractionId	Category × 2 Attraction Type Attraction Id	Attraction X Court Description Attraction Attraction Id	tryCity X E Country Formula	× Nullat
Diagram     Diagram     Docum     Category     X     ane     Attraction     AttractionId     AttractionName	Category × I Attraction Type Attraction Id Name	Attraction X Cour Description Attraction Id Attraction Name	tryCity X E Country Formula	× Nullab
Diagram     Diagram     Docum     Category     X     Diagram     Category     X     Traction     Attraction     AttractionName     CountryId	Category × C Attraction Type Attraction Id Name Id	Attraction X Country Id	tryCity X E Country Formula	× Nullab No No No
Diagram     Diagram     Diagram     Docum     Category     X     Diagram     Countryl     AttractionName     CountrylAame     CountryName	Category × Attraction Type Attraction Id Name Id Name	Attraction X Cour Description Attraction Id Attraction Name Country Id Country Name	tryCity × E Country Formula	X Nullat No No No
Diagram Docum Category Category Category Category Category Category CategoryId CountryName CategoryId Categor	entation Category × Cal Attraction Type Attraction Id Name Id Name Id Id	Attraction X Cour Description Attraction Id Attraction Name Country Id Country Name Category Id	tryCity × E Country Formula	Nullat No No Yes
Diagram Docum Category Category Category Category CountryId CountryId CategoryId Catego	Category X Attraction Type Attraction Id Name Id Name Id Name Id Name	Attraction X Cour Description Attraction Id Attraction Name Country Id Country Name Category Id Category Id Category Id Category Id	tryCity × E Country Formula	X Nullab No No Yes
	Category X 2 Attraction Type Attraction Id Name Id Name Id Name Id Name Id	Attraction × Count Description Attraction Id Attraction Id Attraction Id Attraction Vame Country Id Country Name Category Id Category Id Category Name Attraction Photo Other	ItryCity × Country Formula	X Nullab No No Yes No

Y como hemos visto anteriormente, como CategoryId

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Category	Name	Type	Description	Formula	Nullable
Country	Attraction	Attraction	Attraction		
CountryCity	- 9 Attractionid	1d	Attraction Id		745
Customer	- P AttractionName	Name	Attraction Name		No
P. P. Danmarket av	- # Countryld	16	Country 1d		No
The Real Procession of the State of the Stat	- Countryfiame	Name	Country Name		
- rober rate	CategoryId	Id	Category Id		Yes
Category View	V CategoryName	Tuble .	Category name		

es un atributo llave foránea en la transacción "Attraction", podemos referenciar al atributo CategoryName

Knowledge Base Navigator	φ×	& Diagram1* X				
Folder View		00 biogramme				
S Quick Access			CountryCity	Attraction	Category	*
SmartDevicesApi     SmartDevicesApi     SwartDevicesApi     S			CountryId     CityId     CityName	AttractionId     AttractionName     CountryId     CategoryId     AttractionPhoto     CityId	Categoryld     CategoryName	
Gx0000     Gx0001     Gx0001     Gx0001     Gx0000     Gx0000     Gx0000     Gx0080     Wessages     Domains	н	・ 参 Diagram * ) 違 Docum	Country CountryId CountryName	Customer		
🕀 🔛 Tables		Category X	Category × Attrac	tion × Attraction ×	CountryCity × Country	x
Category		Name	Type	Description	Formula	Nullable
Country		Attraction	Attraction	Attraction		Contraction of the
CountryCity		AttractionId	Id	Attraction Id		No
Customer		- D AttractionName	Name	Attraction Name		No
E Customization	-	- # CountryId	Id	Country Id		No
		- 2 CountryName	Name	Country Name		
Folder View		- 🗧 CategoryId	Id	Category Id		Yes
Category View	_	-	Name	Category Name		
🗟 Latest Changes View		- AttractionPhoto	Image	Attraction Photo		No
3.0.6		- • CityId	Id	City Id		Yes
2 Preferences		└─ ✔ CityName	Name	City Name		

CategoryName no pertenece a la tabla base asociada a la transacción "Attraction"





pero podemos obtener su valor, porque se encuentra en la tabla extendida.

Generalizando, siempre a partir de una llave foránea –como lo son CategoryId, CountryId y CityId en "Attraction"-

Category ×	ategory 🗙 🕅 Attraction	× Attraction ×	CountryCity 🗙 🗍 Country 🗙	
Name	Туре	Description	Formula	Nullable
Attraction	Attraction	Attraction		
- 💡 AttractionId	Id	Attraction Id		No
- 🔑 AttractionName	Name	Attraction Name		No
- 🛃 CountryId	Id	Country Id		No
- 🖌 CountryName	Name	Country Name		
- ← ₹ CategoryId	Id	Category Id		Yes
→ CategoryName	Name	Category Name		
AttractionPhoto	Image	Attraction Photo		No
- 🗧 CityId	Id	City Id		Yes
-	Name	City Name		

podemos obtener los valores de sus atributos secundarios de las tablas en las cuales se encuentran.

ime	Туре	Description Formula	Nullab
Attraction	Attraction	Attraction	
- 💡 AttractionId	Id	Attraction Id	No
- 🔑 AttractionName	Name	Attraction Name	No
- 7 CountryId	Id	Country Id	No
✓ CountryName	Name	Country Name	
- 🛃 CategoryId	Id	Category Id	Yes
<ul> <li>CategoryName</li> </ul>	Name	Category Name	
AttractionPhoto	Image	Attraction Photo	No
- r CityId	Id	City Id	Yes
CityName	Name	City Name	

Y si en dichas tablas **hay a su vez otra u otras llaves foráneas**, la cadena sigue y se pueden obtener sus datos relacionados también.

Ahora, una vez que entendimos intuitivamente el concepto, formalmente decimos que:

Dada cierta tabla cualquiera que consideremos tabla base en determinado momento, su **tabla extendida** es el conjunto de **todos los atributos de la propia tabla base <iluminarla>, más todos los atributos de las tablas que tengan relación N-1 directamente o indirectamente con ella**.

Si volvemos ahora a observar el diagrama de tablas que habíamos creado, veremos otra forma de determinar la tabla extendida de cierta tabla base.

Si tomamos como tabla base a ATTRACTION



su tabla extendida comprende a la tabla ATTRACTION misma y si seguimos la doble flecha vemos que a CATEGORY también queda incluída..

CountryCity 💿 🖣 🛶	Attraction 🚯 👫	Category
CountryId     CityId     CityName	AttractionId AttractionName CountryId CategoryId AttractionPhoto CityId	Categoryld CategoryName
Country R Countryld CountryName	Customer	
	CustomerId CustomerName CustomerAatName CustomerAddress CustomerPhone CustomerEMail	

Para el otro lado hay una doble flecha que indica que COUNTRYCITY también está incluida.. y desde COUNTRYCITY hay una doble flecha, de modo que COUNTRY también pertenece a la tabla extendida de la tabla base ATTRACTION.

CountryCity 🛞 👞	Attraction 🛞 🙀	Calegory
Country'ld Cityld CityName	V AttractionId AttractionName CountryId CategoryId AttractionPhoto CityId	CategoryId CategoryName
Country R CountryId CountryName	Customer	
	CustomerId CustomerName CustomerLastName CustomerAddress CustomerFhone CustomerEMail	

Así, observando un diagrama de tablas, para obtener la tabla extendida de cierta tabla base, podemos partir de

la misma y seguir las flechas que tienen punta doble desde la tabla base y punta simple en el otro extremo, y la tabla a la que lleguemos también será parte de su tabla extendida... y todas las tablas a las cuales se pueda llegar siguiendo flechas dobles, formarán parte de la tabla extendida.

En definitiva, estaremos navegando en el sentido de las relaciones N a 1.

Volviendo al diagrama, observemos que si COUNTRYCITY es la tabla base en la cual estamos posicionados en determinado momento,



su tabla extendida comprende a ella misma, a la tabla COUNTRY y a ninguna más.



Y dada la tabla base COUNTRY,



CountryCity	Maraction (1) m	Calegory
Country/id     City/id     City/id     City/Name	Attractionid     Attraction/Name     Country/Id     Category/Id     Attraction/Noto     City/Id	CategoryName     CategoryName
Country (R) CountryId CountryName	Custom	
	Customerid Customerilastikame Customerilastikame Customerilastikame Customerilasti	

vemos que su tabla extendida está comprendida por solamente ella misma,



ya que no tiene ninguna doble flecha que podamos seguir.

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