2011



USER GUIDE

Cascading Lookups

Cascading Lookups

ASP.NET web applications created with *Code On Time Generator* offer impressive lookup capabilities. Numerous lookup styles allow configuring sophisticated data lookup scenarios, such as cascading lookups. Cascading lookups occur when there is a data lookup scenario involving more than one lookup field.

Example of Cascading Lookups

Consider the fragment of Adventure Works LT database presented below.

Table SalesOrderHeader has three lookup fields. Field CustomerID references table Customer, while fields ShipToAddressID and BillToAddressID are referencing the table Address. Shipping and billing addresses may be represented by the same or different rows in the table Address. The many-to-many table CustomerAddress links a Customer and an Address.

If a new *Sales Order Header* is created and a customer is identified and associated with that header, then it will be logical to assist end users of your application in selecting a customer address by limiting the list of all addresses to those that are matching the selected customer. Selection of one lookup value (*CustomerID*) in a row must cascade as a filter to other dependent lookups (*ShipToAddressID* and *BillToAddressID*).



Configuring Cascading Lookups

If you generate a new *Web Site Factory* application from the database and start creating a new *Sales Order Header* then you will see a page similar to the one presented below. The screen shot shows that a customer has been selected, but the shipping and billing addresses are blank.

Sales Order Header - W	Vindows Internet Explorer				
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Customer Address	Complete the form. Make	sure to enter all required f	fields.		
	Revision Number *				
	Order Date *				
	Due Date *				
	Ship Date				
	Status *				
	Online Order Flag *	(select) 💌			
	Purchase Order Number				
	Account Number	1			
	Customer Company Name *	Bicycle Accessories	and Kits 🦉 📾		
	Ship To Address Line 1	(select)			
	Bill To Address Line 1	(select)			
	Ship Method *				
	Credit Card Approval Code				
	Sub Total *				
	Tax Amt*				
	Freight *	I			
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Click on *(select)* link in *Ship To Address Line1* or *Bill To Address Line1*. You will be presented with lookup window that allows address selection. All addresses stored in the database are available for selection.

The screen shot shows that the application user has activated the search bar to find the right address and is trying to find an address using predictive input.

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	7943 Walnut Ave		n/a	Renton	5650 West 88th Ave.	98055	8/1/2006	
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Let's make the task of selecting an address easier and limit the list of addresses to those that are associated with the user account.

First we will examine lookup configuration of ShipToAddressID and BillToAddressID fields.

Run the web application generator, select the project name and click *Design* to activate the project *Designer*. Select *All Controllers* tab and locate *SalesOrderHeader* data controller. Click on the controller name and select *Fields* tab. Select the *ShipToAddressID* field. Scroll to the *Lookup* section of the field properties. Change Items Data Controller to "Address". This will instruct the generated web application to show the first grid view of *Address* data controller when a user clicks on the *(select)* link of the lookup field.

🕑 Data Controllers - Code OnTime 📃 💻 💷				
 Lookup Lookup settings can be based on another data controller or defined as static items. Follow the link to learn more about lookup item styles. You can list static lookup items on the <i>Items</i> tab. Property <i>Copy</i> specifies the fields that must be copied from the lookup data row when a lookup value is selected. Specify one copy source per line in format <i>FieldName=LookupFieldName</i>. Items style <i>Check Box List</i> allows to configure the field as many-tomany if you set the data type to <i>String</i>, indicate that the value of the field is <i>computed at runtime</i> and select a <i>Target Controller</i>. Lookup is rendered in search mode if <i>Search on Start</i> is checked. The lookup window can be activated automatically in edit/new mode if the field value is blank. 	Items Style Lookup Items Data Controller Address Items Data View (select) Data Value Field (select) Data Text Field (select) New Data View createForm1 Copy Search on Start Activate If Blank Lookup window description			
Dynamic Properties Context fields may be listed to limit the lookup records by values of other fields of this controller. You can list multiple fields separated by comma. Field configuration can be used to provide dynamic values for the field properties. The values are derived from other fields in the same data row. List one property per line in format Property=FieldName.	Context Fields Dynamic Configuration			
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If you inspect configuration of *BillToAddressID* field then you will find that it is exactly the same. This type of configuration is automatically performed by *Code On Time* web application generator when the baseline application is constructed.

While the table *Address* does not offer any information that will help us to identify the relevant addresses, table *CustomerAddress* has a pointer to *Customer* and provides a perfect replacement for *Address* data controller.

By default only the first mandatory field from master table *Address* is included by the application generator in the data controller *CustomerAddress*. We suggest defining the following de-normalization map for your project to expand available fields borrowed from master tables in tables CustomerAddress and SalesOrderHeader.

SalesLT.SalesOrderHeader => SalesLT.Customer LastName FirstName CompanyName

SalesLT.CustomerAddress => SalesLT.Customer CompanyName LastName FirstName

SalesLT.CustomerAddress => SalesLT.Address AddressLine1 AddressLine2 City StateProvince CountryRegion PostalCode

The application shown in the screenshots was generated with this de-normalization map. For more information on de-normalization maps, read this article: <u>http://codeontime.com/Documents/UGP1-BLL-P2.pdf</u>.

Let's change the configuration of field *ShipToAddressID* as follows:

- 1. Set Data Controller property to "CustomerAddress".
- 2. Set Data Value Field property to "AddressID".
- 3. Set Data Text Field property to "AddressAddressLine1".
- 4. Set Content Fields under Dynamic Properties section to "CustomerID=CustomerID".

Data Controllers - Code OnTime		. 🗆	x
 Lookup Lookup settings can be based on another data controller or defined as static items. Follow the link to learn more about lookup item styles. You can list static lookup items on the <i>Items</i> tab. Property <i>Copy</i> specifies the fields that must be copied from the lookup data row when a lookup value is selected. Specify one copy source per line in format <i>FieldName=LookupFieldName</i>. Items style <i>Check Box List</i> allows to configure the field as many-to-many if you set the data type to <i>String</i>, indicate that the value of the field is <i>computed at runtime</i> and select a <i>Target Controller</i>. Lookup is rendered in search mode if <i>Search on Start</i> is checked. The lookup window can be activated automatically in edit/new mode if the field value is blank. 	Items Style Lookup Items Data Controller CustomerAddress Generation Items Data View (select) Data Value Field AddressID Data Text Field AddressAddressLine1 New Data View CreateForm1 Copy Search on Start Activate If Blank Lookup window description	4	E
Dynamic Properties Context fields may be listed to limit the lookup records by values of other fields of this controller. You can list multiple fields separated by comma. Field configuration can be used to provide dynamic values for the field properties. The values are derived from other fields in the same data row. List one property per line in format <i>Property=FieldName</i> .	Context Fields CustomerID=CustomerID Dynamic Configuration	4	
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The text inserted in *Context Fields* will instruct the data controller *CustomerAddress* to filter data by field *CustomerID* (field on the left hand side of the equal sign) with the value stored in field *CustomerID* (field on right hand side of the equal sign) in the current row of *Sales Order Header* data controller.

This change does not affect the command text of the data controller *SalesOrderHeader* in any practical way. The lookup configuration will be taken into account only when a user selects a value for *ShipToAddressID* or *BillToAddressID* field.

Save the changes and modify the field *BillToAddressID* with the same settings as before.

Once completed, close the *Designer* and regenerate your application.

When the web page loads, navigate to the *Sales Order Header* page. Start creating a new *Sales Order Header* record. For *Customer Company Name* field, select "Family's Favorite Bike Shop". Try to select shipping or billing address by using the *(select)* link. Only two records will be available for selection. Both records match the selected customer.



Try changing a customer and observe that a different selection of addresses is presented each time.

Lookup Styles

You can change the style of lookups using the *Items Style* property. If you change the style of *CustomerID, ShipToAddressID*, and *BillToAddressID* then the cascading lookup behavior will still take place.

Lookup field *CustomerID* is presented as Lookup and the two address reference fields are presented as *Auto-Complete* below.

Account Number	
Customer Company Name *	Family's Favorite Bike Shop 🥢 🚔
Ship To Address Line 1	25981 College Street
Bill To Address Line 1	▼
Ship Method *	N/A
Credit Card Approval	25981 College Street
Code	26910 Indela Road
Sub Total *	\$320.60
Tax Amt*	\$0.00

A combination of Auto-Complete, List Box and Radio Button List lookup styles is shown next.

Account Number			
Customer Company	Family's Favorite Bike Shop 🔹		
Name			
Ship To Address Line 1	N/A		
	25981 College Street		
	20910 Indela Road		
Bill To Address Line 1	© N/A		
	25981 College Street		
	26910 Indela Road		
Ship Method *	Mail		
Credit Card Approval			
Code			
Sub Total *	\$320.60		
Tax Amt*	\$0.00		

Clearing Dependent Lookup Fields

Most scenarios of cascading lookups will require a particular combination of master and detail selections in the lookup fields. If a master value has changed then a cascading clearing of dependent lookup fields may be called for. In fact, inconsistent selection of master and detail lookup fields may cause data integrity issues. An extra step is involved in clearing dependent cascading lookup field values.

Select *CustomerID* master field in Designer and set its "Copy" property as follows:

ShipToAddressID=null ShipToAddressAddressLine1=null BillToAddressID=null BillToAddressAddressLine1=null

The primary purpose of "Copy" property is to allow specifying multi-field copy instructions executed upon lookup selection. Read about multi-field lookup at <u>http://blog.codeontime.com/2010/02/multi-field-lookup.html</u>.

If you enter "null" on the right-hand side of the equal sign then the field value will be cleared when the value of the lookup field has changed. In this particular case any changes to *CustomerID* field must cause clearing of fields *ShipToAddressID* and *BillToAddressID*. Both fields are aliased with *ShipToAddressLine1* and *BillToAddressAddressLine1* fields accordingly. If you configure only the foreign key fields to be reset upon changes of the master field *CustomerID* then fields will get cleared but their visual representations will remain intact. Therefore we require clearing of alias fields as well.

Property "Copy" provides surgical level of control over resetting of dependent fields in a cascading lookup field groups. If you have more than one level of dependency then make sure to configure clearing of fields on all levels.