

## Object Relationship

Object relationships are of 6 types.

1. Lookup
2. Master Detail
3. Many to Many
4. Hierarchical
5. External Lookup
6. Internal Lookup

Relationships types can be used for external objects

External Object is the one helps to connect the external data source with Salesforce Org.

### What is External Object?

External objects are supported in API version 32.0 and later. External objects are similar to custom objects, but external object record data is stored outside your Salesforce organization.

External objects support standard lookup relationships, which use the 18-character Salesforce record IDs to associate related records with each other. However, data that's stored outside your Salesforce org often doesn't contain those record IDs. Therefore, two special types of lookup relationships are available for external objects: external lookups and indirect lookups.

Before creating the external object, we need to create external data sources as below

### STEPS TO CONNECT EXTERNAL SOURCE WITH SALESFORCE

In a real production system, you would use Salesforce Connect to access data in a back-end system, such as SAP or Microsoft SharePoint. In this task, you connect to a sample data source running on Heroku.

1. From **Setup | Develop | External Data Sources**, select **New External Data Source**.

Home Chatter Accounts Contacts Cases Solutions Reports Dashboards Entitlements +

Quick Find / Search... ?

Expand All | Collapse All

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## External Data Sources

Access data in other Salesforce orgs as well as third-party databases and content systems.

View: All Create New View

Name ↑
External Data Source

No records to display.

New External Data Source

2. Name the data source **OrderDB**, and select **Salesforce Connect: OData 2.0** as the type.
3. Enter **<http://orderdb.herokuapp.com/orders.svc>** as the URL. Leave the other fields with their default values, and click **Save**.

## New External Data Source

Connect to another Salesforce org or a third-party database or content system.

Save Save and New Cancel

External Data Source

Name

Type

Parameters

URL

Connection Timeout (Seconds)

Writable External Objects

High Data Volume

Request Row Counts

Enable Search

Format

Server Driven Pagination

Compress Requests

Custom Query Option for Salesforce Search

Special Compatibility

Authentication

4. On the next screen, click **Validate and Sync**. Salesforce Connect retrieves the schema from the external system.

## External Data Source: OrderDB

Connect to another Salesforce org or a third-party database or content system.

[« Back to External Data Sources](#)

Edit Validate and Sync Delete

External Data Source OrderDB

Name OrderDB

Type Salesforce Connect: OData 2.0

Parameters

URL

Connection Timeout (Seconds)

5. Select both the **Orders** and **OrderDetails** tables, and click **Sync**.

## Validate External Data Source: OrderDB

Confirm that you can connect to the external system, and synchronize its schema with your Salesforce org.

[← Back to External Data Source: OrderDB](#)

Name	OrderDB
External Data Source	OrderDB
Status	Success

Select	Table Name	Table Label	Synced
<input type="checkbox"/>	Categorys	Categorys	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OrderDetails	OrderDetails	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Orders	Orders	<input type="checkbox"/>
<input type="checkbox"/>	PaymentMechanisms	PaymentMechanisms	<input type="checkbox"/>
<input type="checkbox"/>	Payments	Payments	<input type="checkbox"/>
<input type="checkbox"/>	Subcategorys	Subcategorys	<input type="checkbox"/>

This is an example scenario where we need only the above two tables to be synced with external objects. The sync processes will create the corresponding **external objects** automatically in salesforce as below.

Action	Label	Namespace Prefix	Description	Table Name
<a href="#">Edit</a>   <a href="#">Erase</a>   <a href="#">Validate</a>	<a href="#">OrderDetails</a>		OrderDetails	OrderDetails
<a href="#">Edit</a>   <a href="#">Erase</a>   <a href="#">Validate</a>	<a href="#">Orders</a>		Orders	Orders

The same objects can be located under setup -> Build -> Develop -> External Objects as below

The screenshot shows the Salesforce Setup interface. The left sidebar has 'Build' expanded and 'Develop' selected, with 'External Objects' highlighted. The main content area is titled 'External Objects' and includes a 'New External Object' button. Below the button is a table with the following data:

Action	Label	Deployed	External Data Source
<a href="#">Edit</a>   <a href="#">Erase</a>	<a href="#">OrderDetails</a>	<input type="checkbox"/>	<a href="#">OrderDB</a>
<a href="#">Edit</a>   <a href="#">Erase</a>	<a href="#">Orders</a>	<input type="checkbox"/>	<a href="#">OrderDB</a>

Use external objects to virtually represent external data as Salesforce objects. External objects map to a table in a data source outside the Salesforce org and enable access to that data via custom tabs and search.

Now the external objects can be viewed as custom objects with fields and related list such as standard field, custom field & dependencies, page layout, search layout similar to custom object definition page. But there are feature not available for external objects such as triggers, validation rules etc.,

**External Object Definition Detail** Edit Delete

Singular Label	OrderDetails	Description	OrderDetails
Plural Label	OrderDetails	Enable Reports	<input type="checkbox"/>
Object Name	OrderDetails	Name Field	External ID
API Name	OrderDetails__x	Deployment Status	In Development
External Data Source	OrderDB	Allow Search	<input checked="" type="checkbox"/> If selected, also enable source.
Table Name	OrderDetails		
Display URL Reference Field			
Created By	Capital Info Solutions, 3/17/	Modified By	Capital Info Solutions, 3/17/

**Standard Fields**

Action	Field Label	Field Name	Data Type
	Display URL	DisplayUrl	URL(1000)
	External ID	ExternalId	External Lookup

**Custom Fields & Relationships** New

Action	Field Label	API Name	Data Type	External Alias	Modified By
<a href="#">Edit</a>   <a href="#">Del</a>	orderID	orderID__c	Number(18, 0)	orderID	Capital Info Solutions, 3/17/2017 5:33 PM
<a href="#">Edit</a>   <a href="#">Del</a>	orderLine	orderLine__c	Number(18, 0)	orderLine	Capital Info Solutions, 3/17/2017 5:33 PM
<a href="#">Edit</a>   <a href="#">Del</a>	product	product__c	Text(255)	product	Capital Info Solutions, 3/17/2017 5:33 PM
<a href="#">Edit</a>   <a href="#">Del</a>	quantity	quantity__c	Number(18, 0)	quantity	Capital Info Solutions, 3/17/2017 5:33 PM
<a href="#">Edit</a>   <a href="#">Del</a>	unitPrice	unitPrice__c	Number(10, 8)	unitPrice	Capital Info Solutions, 3/17/2017 5:33 PM

External objects are similar to custom objects, except that they map to data that's stored outside your Salesforce organization. Each external object relies on an external data source definition to connect with the external system's data. Each external object definition maps to a data table on the external system. Each of the external object's fields maps to a table column on the external system. External objects enable your users and the Force.com platform to search and interact with the external data.

**Note:**

- Each org can have up to 200 external objects. External objects don't count toward the limit for custom objects.
- If the external system allows it, we recommend that you [sync](#) the external data source to automatically create related external objects. You can instead choose to manually define external objects to customize the external object names and manually create the custom fields.

**Details about fields as part of external data source creation:**

External Data Source Edit: OrderDB

connect to another Salesforce org or a third-party database or content system.

Save Save and New Cancel

External Data Source: OrderDB

Name: OrderDB

Type: Salesforce Connect: OData 2.0

**Parameters**

URL: http://orderdb.herokuapp.com/orders.svc

Connection Timeout (Seconds): 120

Writable External Objects:

High Data Volume:

Request Row Counts:

Enable Search:

Format: AtomPub

Server Driven Pagination:

Compress Requests:

Custom Query Option for Salesforce Search:

Special Compatibility: None

Field	Description
Label	A user-friendly name for the external data source. The label is displayed in the Salesforce user interface, such as in list views. If you set Identity Type to Per User, this label appears when your users view or edit their authentication settings for external systems.

Field	Description
Name	A unique identifier that's used to refer to this external data source definition through the API. The name can contain only underscores and alphanumeric characters. It must be unique, begin with a letter, not include spaces, not end with underscore, and not contain two consecutive underscores.
Type	Select <b>Salesforce Connect: OData 2.0</b> or <b>Salesforce Connect: OData 4.0</b> .
URL	The OData service root URL. Make sure that you escape all special characters.
Connection Timeout	Number of seconds to wait for a response from the external system before timing out. By default, the value is set to the maximum of 120 seconds.

**TO CREATE AN EXTERNAL OBJECT RELATIONSHIP**, create a custom field on the child object with one of the following field types

1. Lookup Relationship
2. External Lookup Relationship
3. Indirect Lookup Relationship

Step 1. Choose the field type

Specify the type of information that the custom field will contain.

**Data Type**

**None Selected** Select one of the data types below.

**Lookup Relationship** Creates a relationship that links this object to another object in the system. The other object is the source of the value.

**External Lookup Relationship** Creates a relationship that links this object to an external data source.

**Indirect Lookup Relationship** Creates a relationship that links this external object to an external data source.

External objects support standard lookup relationships, which use the 18-character Salesforce record IDs to associate related records with each other. However, data that's stored outside your Salesforce org often doesn't contain those record IDs.

Therefore, two special types of lookup relationships are available for external objects: They are

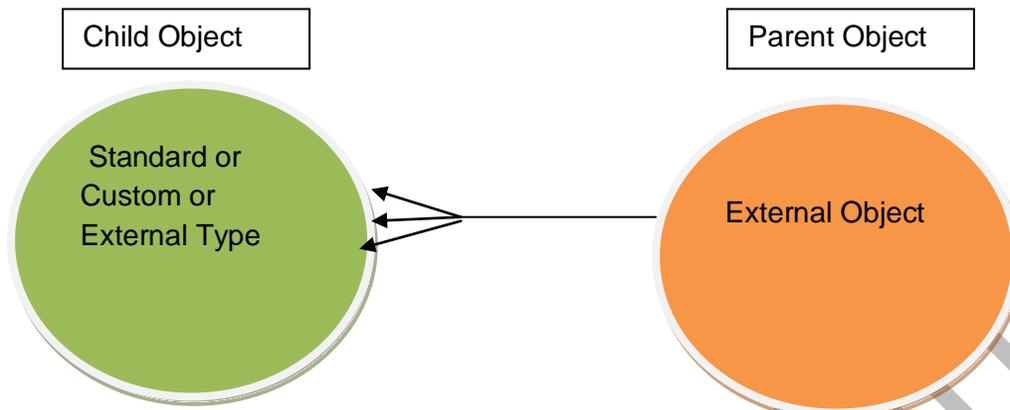
1. External lookups
2. Indirect lookups.

External lookups and indirect lookups compare a specific field's values on the parent object to the relationship field's values on the child object. When values match, the records are related to each other.

## ABOUT EXTERNAL LOOKUPS

Use an external lookup relationship when the parent is an external object.

An external lookup relationship links a child **standard**, **custom**, or **external** object to a **parent external** object.



**Note:** External Lookup relationship field has to be created in child object. The values of the standard External ID field on the parent external object are matched against the values of the external lookup relationship field. For a child external object, the values of the external lookup relationship field come from the specified External Column Name.

Now we are going to establish external look up relationship between two external objects Order and Order Details that we created earlier.

Both the tables had already data related to each other since they come from external data source and we are using them for demo. Order is the parent and OrderDetails is the child which contains line items for each order.

Now it is time to create External Lookup relationship field in orderDetails so that we can see the line items on an order's page in your org.

1. From Setup, enter External Objects in the Quick Find box, then select **External Objects**.
2. Click the **OrderDetails** external object.

## External Objects

Use external objects to virtually represent external data as Salesforce objects. External objects map to a table in a data source via custom tabs and search. Each external object requires an [external data source](#) definition for connection details.

New External Object				
Action	Label	Deployed	External Data Source	
<a href="#">Edit</a>   <a href="#">Erase</a>	<b>OrderDetails</b>	<input type="checkbox"/>	<a href="#">OrderDB</a>	
<a href="#">Edit</a>   <a href="#">Erase</a>	<b>Orders</b>	<input type="checkbox"/>	<a href="#">OrderDB</a>	

3. Click the **Edit** link next to Order ID.

Standard Fields					
Action	Field Label	Field Name	Data Type		
	<a href="#">Display URL</a>	DisplayUrl	URL(1000)		
	<a href="#">External ID</a>	ExternalId	External Lookup		

Custom Fields & Relationships <span style="float: right;">New</span>					
Action	Field Label	API Name	Data Type	External Alias	Modified By
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">orderID</a>	orderID__c	Number(18, 0)	orderID	<a href="#">Capital Info Solutions, 3/17/</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">orderLine</a>	orderLine__c	Number(18, 0)	orderLine	<a href="#">Capital Info Solutions, 3/17/</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">product</a>	product__c	Text(255)	product	<a href="#">Capital Info Solutions, 3/17/</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">quantity</a>	quantity__c	Number(18, 0)	quantity	<a href="#">Capital Info Solutions, 3/17/</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">unitPrice</a>	unitPrice__c	Number(10, 8)	unitPrice	<a href="#">Capital Info Solutions, 3/17/</a>

4. Click the **Change Field Type** button.

Edit OrderDetails Custom Field  
orderID

**Custom Field Definition Edit** Change Field Type Save Cancel

**Field Information**

Field Label:  Data Type: Number  
 Field Name:   
 Description:   
 Help Text:   
 External Column Name:

**General Options**

Filtering Disabled   
 Sorting Disabled

**Number Options**

Length:   
 Decimal Places:

Change Field Type Save Cancel

5. Select **External Lookup Relationship** and click **Next**. An external lookup relationship can link any object to an external object.

Edit OrderDetails Custom Field  
orderID

**Step 1. Choose the field type**

Specify the type of information that the custom field will contain.

**Data Type**

None Selected Select one of the data types below.

Lookup Relationship Creates a relationship that links this object to another list. The other object is the source of the values in

**External Lookup Relationship** Creates a relationship that links this object to an e

Indirect Lookup Relationship Creates a relationship that links this external object associate records in this relationship.

6. Select **Orders** as the related object and click **Next**.

Edit Relationship  
OrderDetails

Step 2. Choose the related external object

Select the external object to which this object is related.

Related To

- 7. Enter 18 as the length and click **Next**.
- 8. To make the relationship visible to all profiles, select the **Visible** option and click **Next**. (In a real production deployment, you would only enable access to required profiles).

Edit Relationship  
OrderDetails

Step 4. Establish field-level security for reference field

Field Label    orderID  
Data Type    External Lookup  
Field Name    orderID  
Description    orderID

Select the profiles to which you want to grant edit access to this field via field-level security. The field will be hidden from all profiles if you do not select any profiles.

Field-Level Security for Profile	<input checked="" type="checkbox"/> Visible
Analytics Cloud Integration User	<input checked="" type="checkbox"/>
Analytics Cloud Security User	<input checked="" type="checkbox"/>
Contract Manager	<input checked="" type="checkbox"/>
Cross Org Data Proxy User	<input checked="" type="checkbox"/>
Custom: Marketing Profile	<input checked="" type="checkbox"/>
Custom: Sales Profile	<input checked="" type="checkbox"/>

- 9. Click **Save** to accept the defaults—you definitely want an OrderDetails related list on the Orders page layout!
- 10. Create custom tab as “Order” and include to any APP and view the list view of the tab.
- 11. Click the External ID of an order in the Recent Orders list.

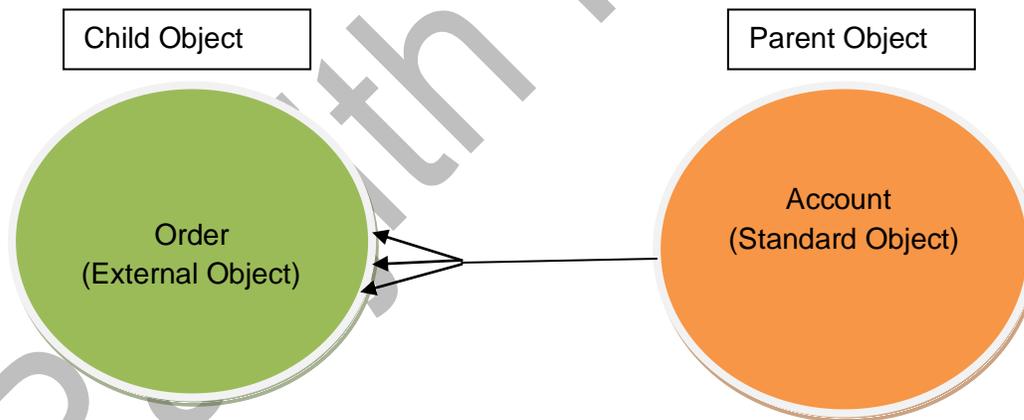
External ID ↑	Display URL
6	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
9	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
10	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
11	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
12	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
13	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
14	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
19	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>
30	<a href="https://orderdb.herokuapp.com">https://orderdb.herokuapp.com</a>

## ABOUT INDIRECT LOOKUP RELATIONSHIPS.

Use an indirect lookup relationship when the external data doesn't include Salesforce record IDs.

An indirect lookup relationship links a child external object to a parent standard or custom object.

Now we are going to configure an indirect lookup relationship between **orders** and **accounts**. This relationship enables your users to see which account a given order is associated with and all the orders for a given account.



A field on an external object (customerId on Orders) corresponds to a unique, external ID field on a custom or standard object (Customer\_ID\_\_c on Account). It's an indirect lookup because it references a field other than the standard ID field.

So before creating Indirect Look up in Order object we need to create a custom field in Account object to match with customer id in order object. This field must also be populated with id of account and hence when user clicks on customer id field in order would be navigated to account detail. To accomplish this, let us install a package that would configure the new field and populates it with data.

Here's the link - <https://trailhead.salesforce.com/en/content/learn/projects/quickstart-lightning-connect/quickstart-lightning-connect1>

## Introduction

Salesforce Connect lets you seamlessly access data from legacy systems such as SAP, Microsoft and Oracle in real time, without making a copy of the data in Salesforce. In this Quick Start, you'll integrate data from a sample external data source into Salesforce using Salesforce Connect. You'll start by setting up an external data source and creating some external objects. You'll then create relationships between the external objects and the Account standard object.

## Install the Schema Package

Your hands-on org (Trailhead Playground or Developer Edition) needs the custom field Customer ID on the Account object. This field allows you to link orders from an external data source to accounts in Salesforce. This package configures the new field and populates it with data. If you have trouble installing the package, follow the instructions in [this article](#).

1. **Install this package**, accepting the defaults at each step.
2. From the app menu in the top right, select the **External Orders** app.
3. Click **Set Customer IDs** to assign customer IDs to account records in your hands-on org. Return to the **Sales** app via the app menu.

You need to set the customer id as below

The screenshot shows the 'Install Lightning Connect Quickstart' app page. At the top, there is a green download icon and the text 'Install Lightning Connect Quickstart By salesforce.com'. Below this, an information icon (i) is followed by the text 'Installation Complete! Please review the instructions below to properly configure this app. View in another browser'. A section titled 'Lightning Connect Quickstart' contains the message: 'Customer IDs have been successfully assigned to Account records. You can now do the Lightning Connect Quick Start.'

1. In Setup, use the Quick Find box to go to the External Objects
2. Click the Order object, then click **Fields and Relationships**.
3. Click **Edit** next to Customer ID.

The screenshot shows the 'Setup External Objects' page. At the top, there is a 'SETUP' icon and the text 'External Objects'. Below this, there is a 'Created By' field with the value 'Capital Info Solutions, 3/17/2019 9:48 PM' and a 'Modified By' field with the value 'Capital...'. The page is divided into two sections: 'Standard Fields' and 'Custom Fields & Relationships'. The 'Standard Fields' section contains a table with the following data:

Action	Field Label	Field Name	Data Type
	<a href="#">Display URL</a>	DisplayUrl	URL(1000)
	<a href="#">External ID</a>	ExternalId	External Lookup

The 'Custom Fields & Relationships' section contains a table with the following data:

Action	Field Label	API Name	Data Type	External Alias	Modified By
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">customerID</a>	customerID__c	Number(18, 0)	customerID	<a href="#">Capital Info Solutions</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">orderDate</a>	orderDate__c	Date/Time	orderDate	<a href="#">Capital Info Solutions</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">orderID</a>	orderID__c	Number(18, 0)	orderID	<a href="#">Capital Info Solutions</a>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">shippedDate</a>	shippedDate__c	Date/Time	shippedDate	<a href="#">Capital Info Solutions</a>

4. Click the **Change Field Type** button.
5. Select **Indirect Lookup Relationship** and click **Next**. An indirect lookup relationship links an external object, such as orders, to a standard object, such as account, or even a custom object.

SETUP  
External Objects

Edit Orders Custom Field  
customerID

Step 1. Choose the field type

Specify the type of information that the custom field will contain.

Data Type

- None Selected Select one of the data types below.
- Lookup Relationship Creates a relationship that links this obje  
The other object is the source of the valu
- External Lookup Relationship Creates a relationship that links this obje
- Indirect Lookup Relationship Creates a relationship that links this exte  
associate records in this relationship.

6. Select **Account** as the related object and click **Next**.

SETUP  
External Objects

Edit Relationship  
Orders

Step 2. Choose the related object

Select the standard or custom object to which this external object is related.

Related To

- None--
- Account

7. Select **Customer\_ID\_\_c** as the value of Target Field and click **Next**.

8. Enter 18 as the length and click **Next**.

9. To make the relationship visible to all profiles, select the **Visible** option and click **Next**.

10. Click **Save** to accept the defaults—you want the Orders related list on the Account page layout!

## Ranjith Krishnan

11. If the app menu (top right) is not already showing External Orders, click the app menu and select it.
12. Click the **Orders** tab.
13. Click the External ID of an order in the Recent Orders list.

External ID	Display URL
1012	<a href="https://orderdb.herokuapp.com/orders.svc/Orders...">https://orderdb.herokuapp.com/orders.svc/Orders...</a>
6	<a href="https://orderdb.herokuapp.com/orders.svc/Orders(6)">https://orderdb.herokuapp.com/orders.svc/Orders(6)</a>
11	<a href="https://orderdb.herokuapp.com/orders.svc/Orders...">https://orderdb.herokuapp.com/orders.svc/Orders...</a>

14. Confirm that the order shows a link in the customerID field.

customerID	2
orderDate	2/10/2020 4:00 PM
orderID	1,012
shippedDate	2/18/2020 4:00 PM

15. Click the customerID link. You're taken to the corresponding account page. Scroll to the bottom to see a list of orders. (Edit the Account pagelayout and drag the related lists "Orders" (External Object) then save the changes.