



ENT301

# Salesforce Concepts and Architecture

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# Objectives

1. Register for a Developer account
2. Create a Custom Object
3. Create a Connected App





# Register for a Developer account



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# Tasks

1. Register for a Salesforce Developer Edition account
2. View the Standard Objects using the Salesforce web interface



# What is Salesforce?

- ❖ Salesforce offers Software-as-a-Service (SaaS) products to help you run your business

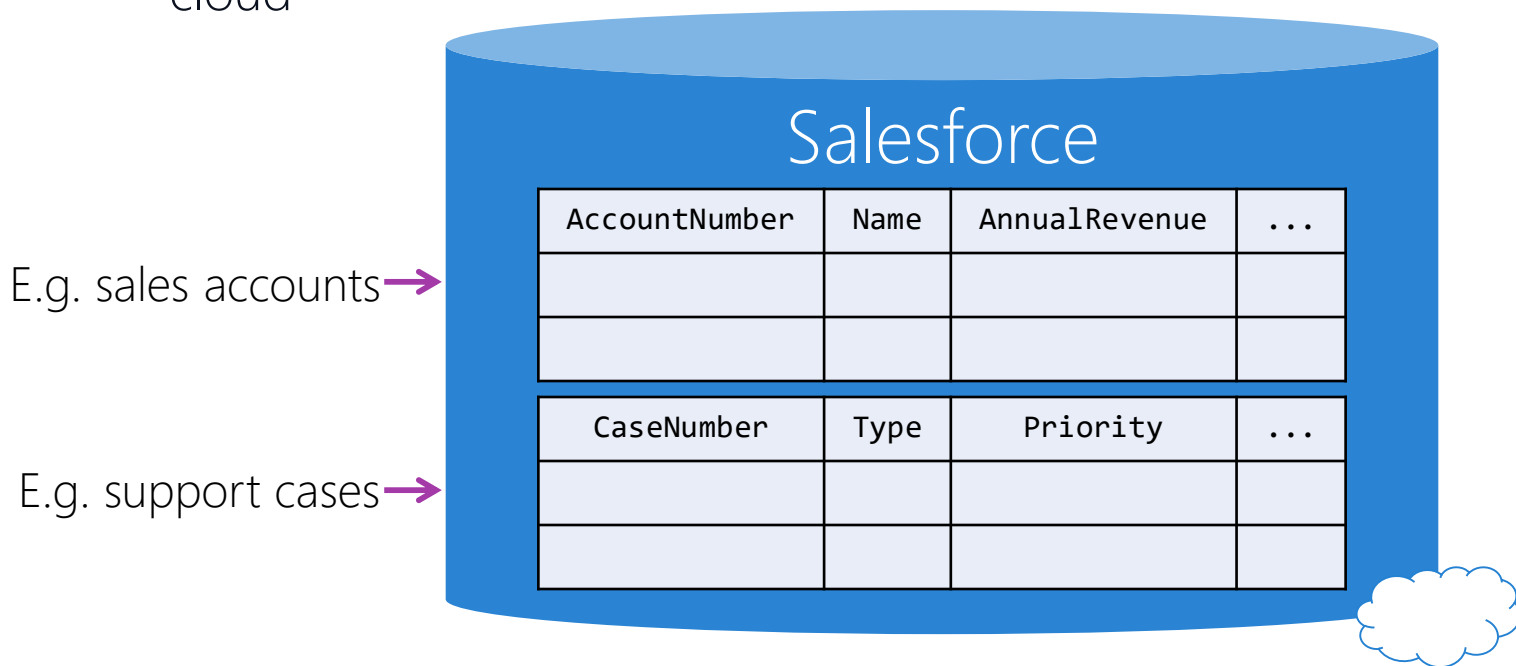
Primarily known for CRM,  
but has a wide range of  
cloud-hosted products

A blue-outlined cloud shape with the word 'Salesforce' written inside in a blue sans-serif font.

Salesforce

# Salesforce data

- ❖ Salesforce is (roughly) a relational database that stores your data in the cloud

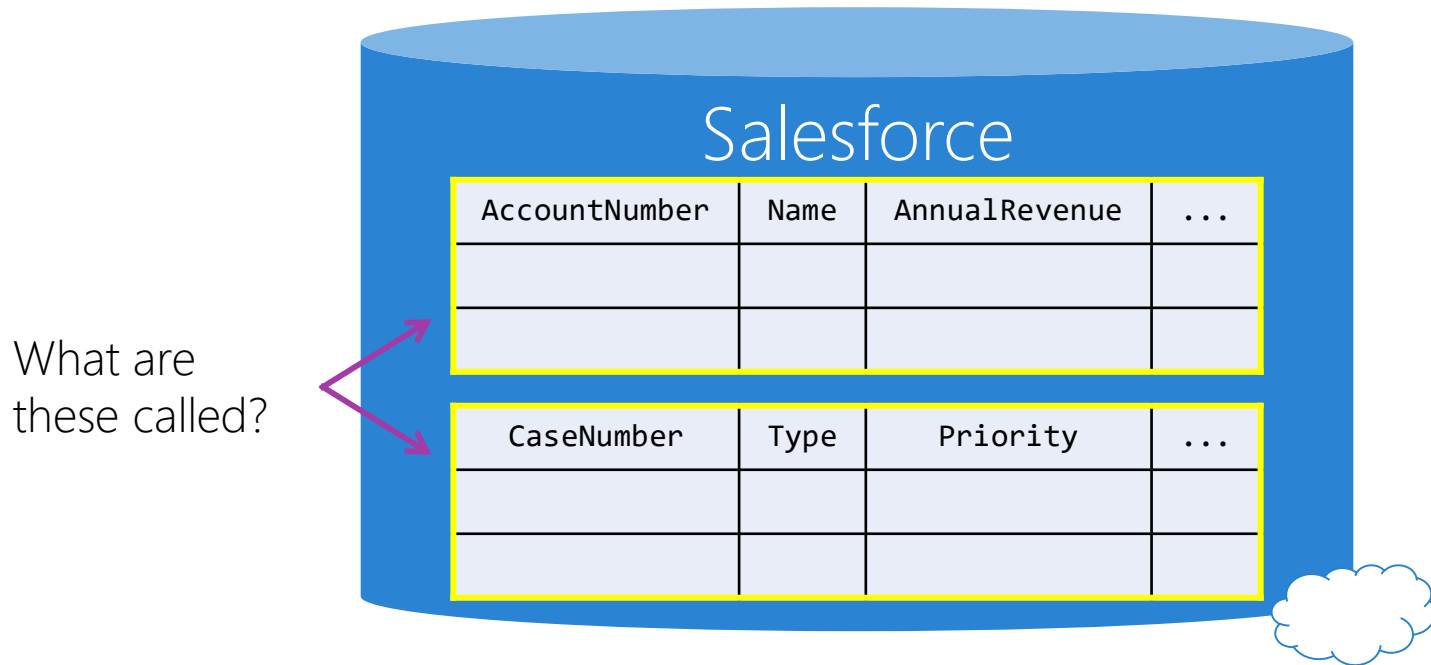


# Flash Quiz



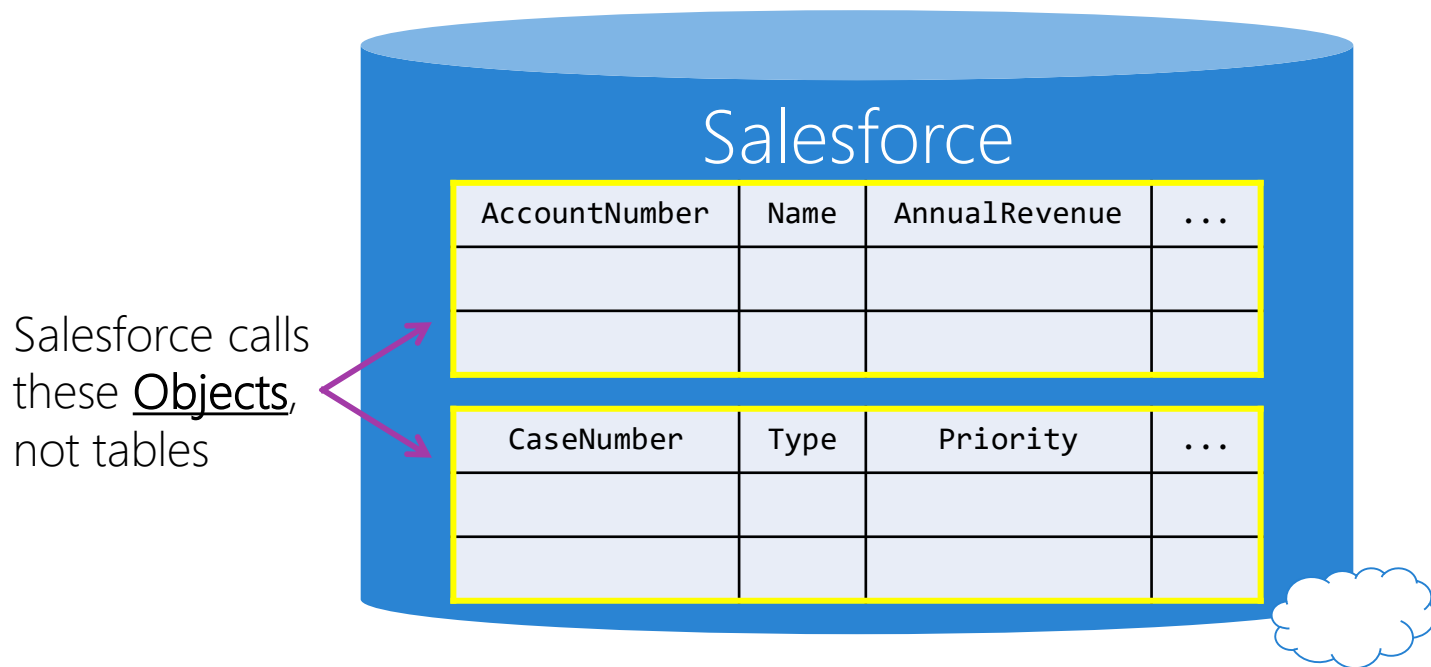
# Flash Quiz

① Terminology quiz: the highlighted items in the diagram are \_\_\_\_\_



# Flash Quiz

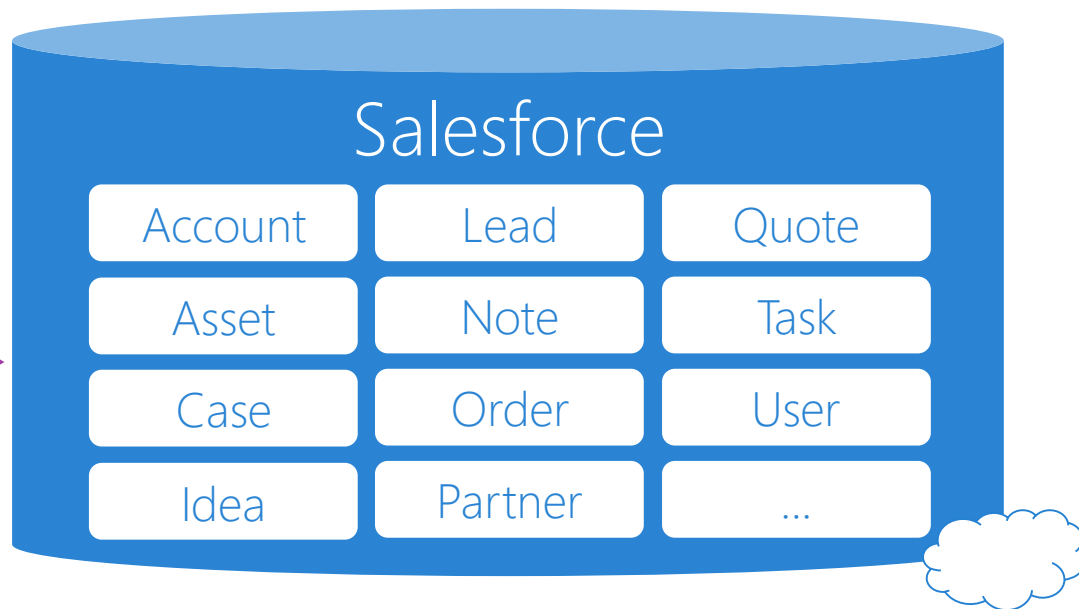
① Terminology quiz: the highlighted items in the diagram are Objects



# Standard Objects

- ❖ Salesforce creates a set of *Standard Objects* for you that cover many common business scenarios

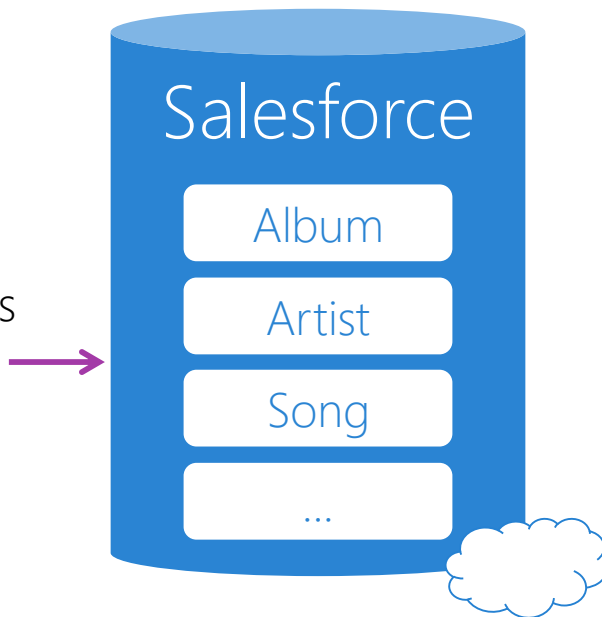
Standard Objects  
save you time since  
you don't need to  
build them yourself



# Custom Objects

- ❖ You can create *Custom Objects* for your business

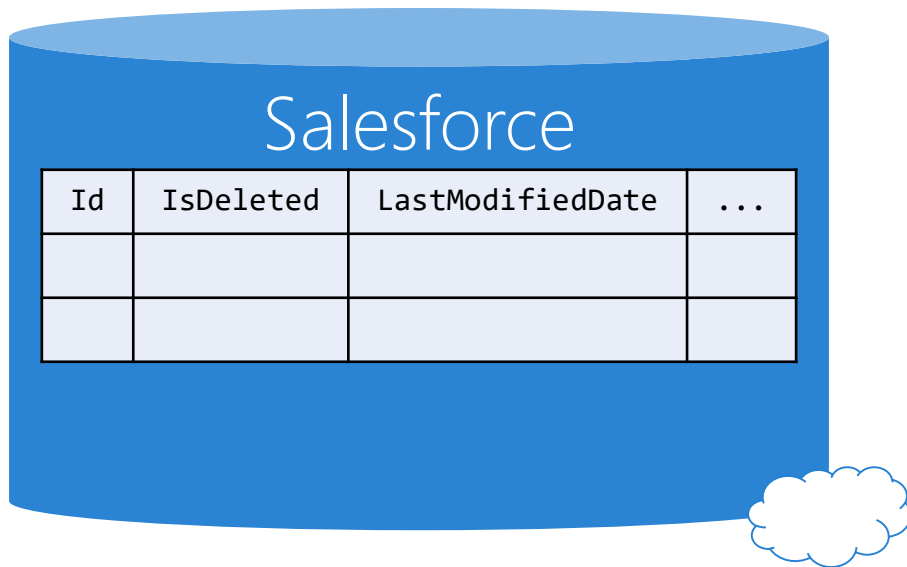
You define Objects  
that are specific  
to your company



# System Fields

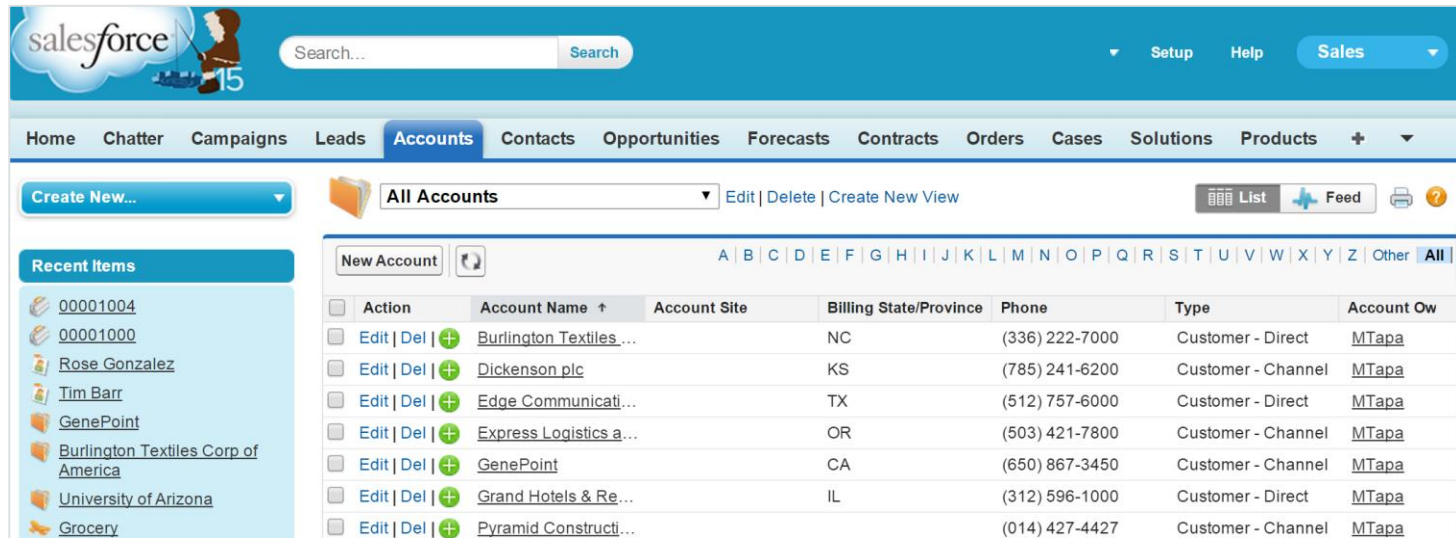
- ❖ Most Objects have some *System Fields* that are included automatically

System Fields provide a unique Id and support for modification tracking →



# Web access

- ❖ You can interact with your data using the Salesforce web interface



The screenshot shows the Salesforce web interface for the 'Accounts' section. The top navigation bar includes 'Setup' and 'Help' links. The main navigation bar has tabs for 'Home', 'Chatter', 'Campaigns', 'Leads', 'Accounts', 'Contacts', 'Opportunities', 'Forecasts', 'Contracts', 'Orders', 'Cases', 'Solutions', and 'Products'. The 'Accounts' tab is selected. Below the navigation bar, there is a 'Create New...' button and a search bar. The main content area displays a list of accounts with columns for 'Action', 'Account Name', 'Account Site', 'Billing State/Province', 'Phone', 'Type', and 'Account Ow'. A purple arrow points to the 'Edit' link in the 'Action' column of the first account row.

Action	Account Name	Account Site	Billing State/Province	Phone	Type	Account Ow
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Burlington Textiles...</a>		NC	(336) 222-7000	Customer - Direct	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Dickenson plc</a>		KS	(785) 241-6200	Customer - Channel	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Edge Communicati...</a>		TX	(512) 757-6000	Customer - Direct	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Express Logistics a...</a>		OR	(503) 421-7800	Customer - Channel	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">GenePoint</a>		CA	(650) 867-3450	Customer - Channel	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Grand Hotels &amp; Re...</a>		IL	(312) 596-1000	Customer - Direct	<a href="#">MTapa</a>
<a href="#">Edit</a>   <a href="#">Del</a>   <a href="#">+</a>	<a href="#">Pyramid Constructi...</a>			(014) 427-4427	Customer - Channel	<a href="#">MTapa</a>

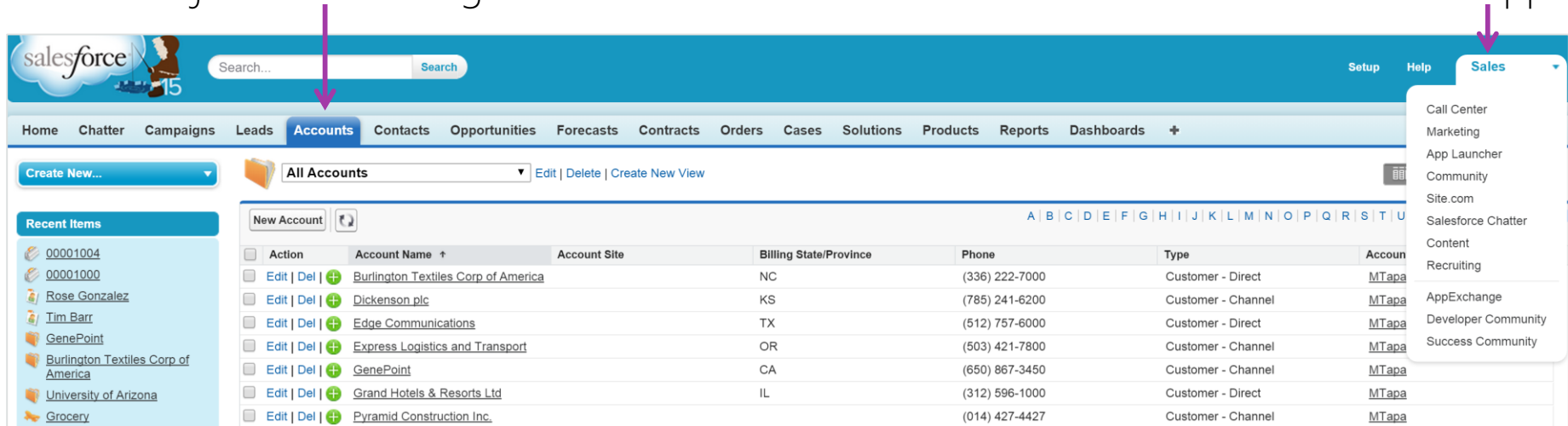
View/modify data

# What is a Salesforce App?

- ❖ An *app* is a grouping of UI and data that meets a business need

Tabs navigate within the app, generally map to data Objects or views e.g. Dashboards

Menu switches between apps

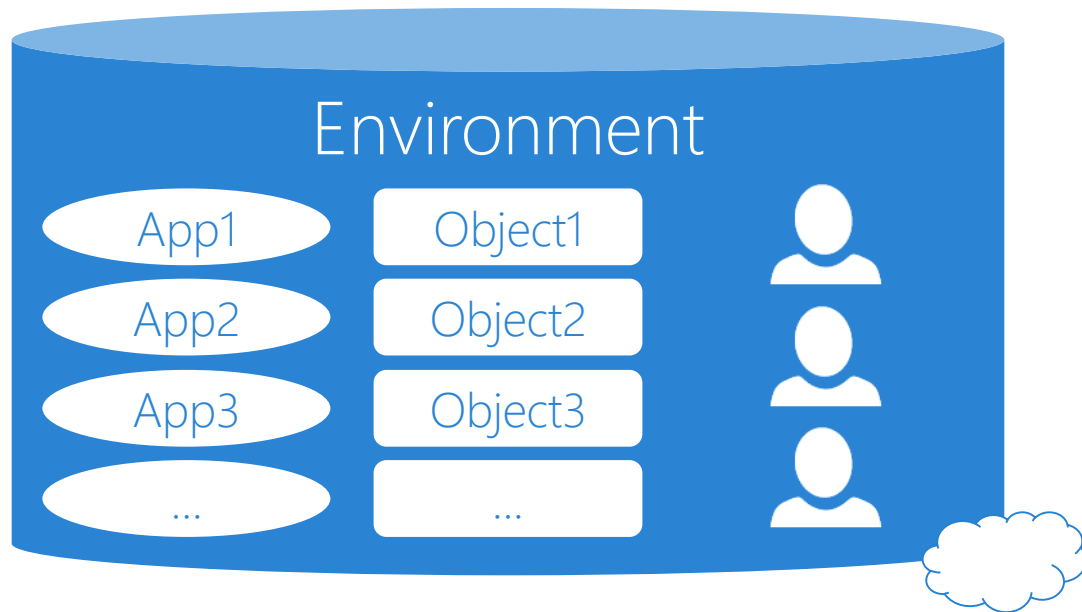


The screenshot shows the Salesforce user interface. At the top, there is a search bar and navigation links for Setup, Help, and Sales. Below this is a horizontal tab bar with various tabs: Home, Chatter, Campaigns, Leads, Accounts (selected), Contacts, Opportunities, Forecasts, Contracts, Orders, Cases, Solutions, Products, Reports, and Dashboards. A purple arrow points to the 'Accounts' tab. Below the tabs, there is a 'Create New...' button and a dropdown menu for 'All Accounts'. A 'Recent Items' sidebar on the left lists recent records. The main content area displays a table of account records. A purple arrow points to the 'Sales' menu in the top right corner, which is open, showing a list of applications including Call Center, Marketing, App Launcher, Community, Site.com, Salesforce Chatter, Content, Recruiting, AppExchange, Developer Community, and Success Community.

Action	Account Name ↑	Account Site	Billing State/Province	Phone	Type	Account
<input type="checkbox"/> Edit   Del   +	Burlington Textiles Corp of America		NC	(336) 222-7000	Customer - Direct	MTapa
<input type="checkbox"/> Edit   Del   +	Dickenson plc		KS	(785) 241-6200	Customer - Channel	MTapa
<input type="checkbox"/> Edit   Del   +	Edge Communications		TX	(512) 757-6000	Customer - Direct	MTapa
<input type="checkbox"/> Edit   Del   +	Express Logistics and Transport		OR	(503) 421-7800	Customer - Channel	MTapa
<input type="checkbox"/> Edit   Del   +	GenePoint		CA	(650) 867-3450	Customer - Channel	MTapa
<input type="checkbox"/> Edit   Del   +	Grand Hotels & Resorts Ltd		IL	(312) 596-1000	Customer - Direct	MTapa
<input type="checkbox"/> Edit   Del   +	Pyramid Construction Inc.			(014) 427-4427	Customer - Channel	MTapa

# What is an Environment?

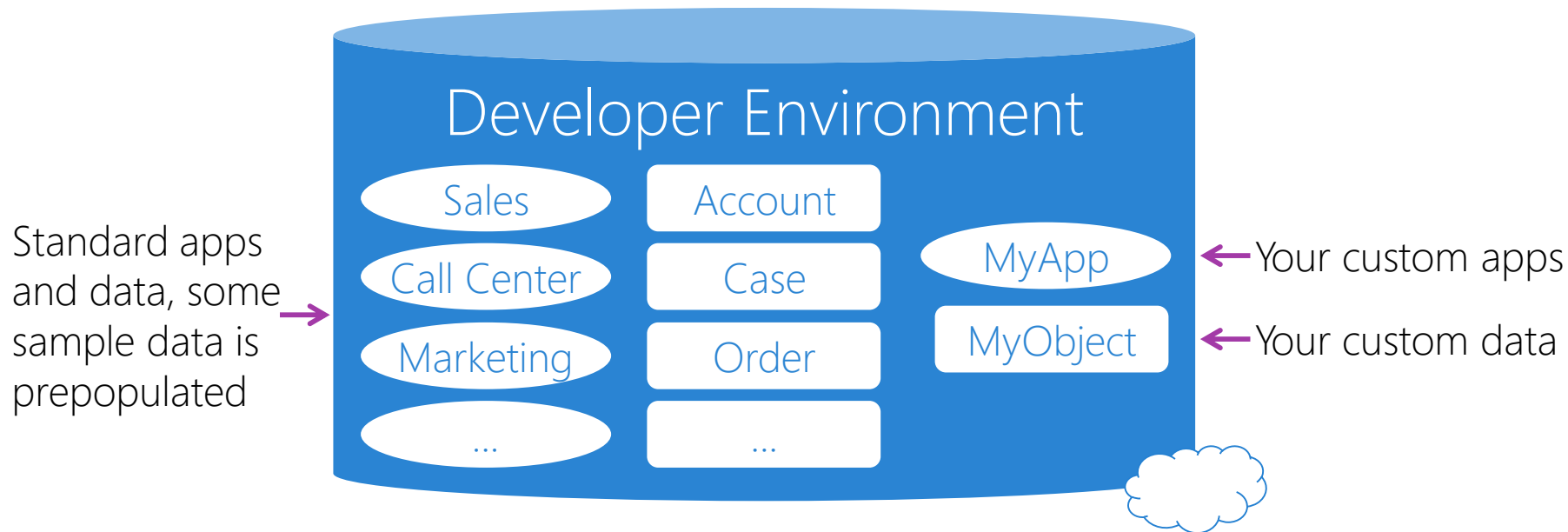
- ❖ Your Salesforce *environment* is the collection of your apps, data, and users (also called your *organization* or *org*)





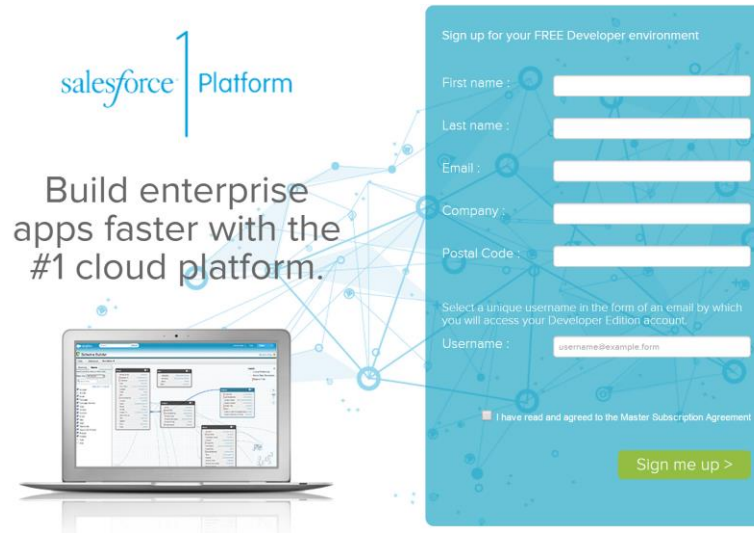
# Salesforce Developer Edition

- ❖ The *Developer Edition* Environment lets you develop/test Salesforce components at no cost (but with limited disk space and licenses)



# Salesforce Developer account

- ❖ Register for a Developer environment and your new account will be provisioned with Apps and Standard Objects automatically



# Group Exercise

Register for a Developer account



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# Summary

1. Register for a Salesforce Developer Edition account
2. View the Standard Objects using the Salesforce web interface



# Create a Custom Object

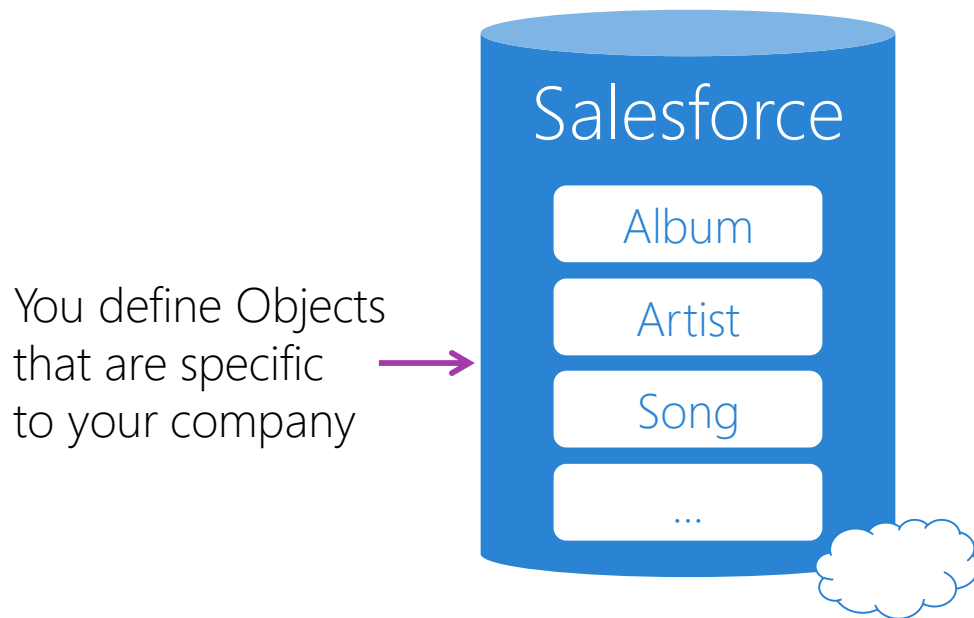
# Tasks

1. Register a namespace for your org
2. Create a Custom Object
3. Create a Custom Field



# Motivation

- ❖ Custom Objects store your company's domain-specific data



# What is a namespace prefix?

- ❖ Your *namespace prefix* is a string that helps provide a unique identity to your Custom Objects and Fields

**Namespace Prefix:**

**Check Availability**



Your namespace is globally unique across Salesforce organizations and cannot be changed once created



# How to register your namespace prefix

- ❖ Use the Salesforce web interface to register your namespace prefix (Setup → Build → Create → Packages → Edit your Developer Settings)

**AppExchange For Developers**Help for this Page ?

## Change Developer Settings

1

**Register a namespace prefix:**

A namespace prefix is a 1-15 character alphanumeric ID beginning with a letter that distinguishes your package from those of other developers. Your namespace prefix must be globally unique across salesforce.com and is automatically prepended, followed by two underscores ("\_\_"), to all components in your development organization. Enter your desired namespace prefix in the box below and click Check Availability to see if it is already used.  
[More Information](#)

Namespace Prefix:

Check Availability

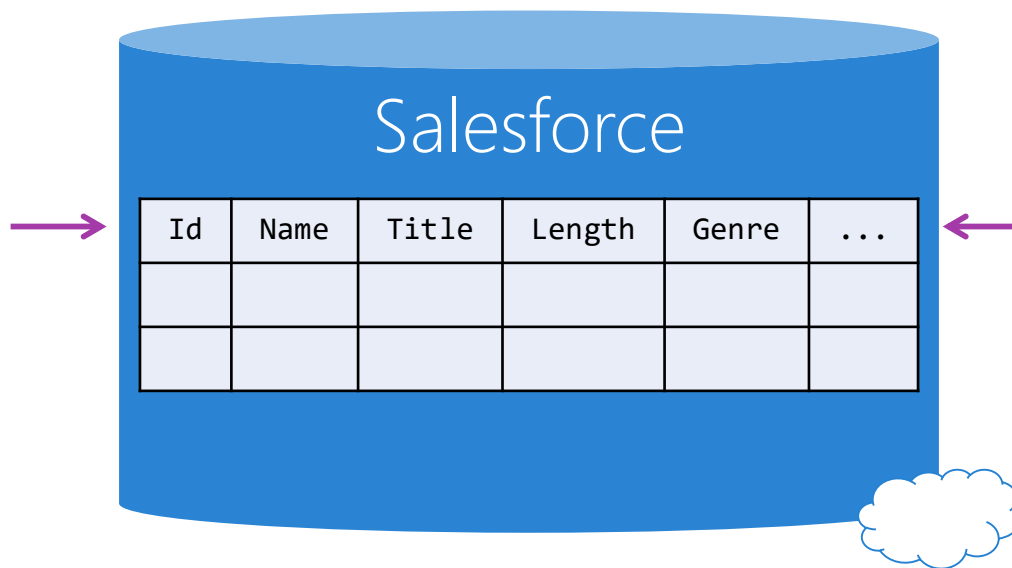


Must find an unused prefix

# What is a Custom Object?

- ❖ A *Custom Object* is a table you define within Salesforce, there are extensive customization options for fields and metadata

Your Music app could define a table to store data about Songs



Automatically gets Standard Fields like Id (unique across Salesforce) and Name (typically unique within this table), can also add your own fields

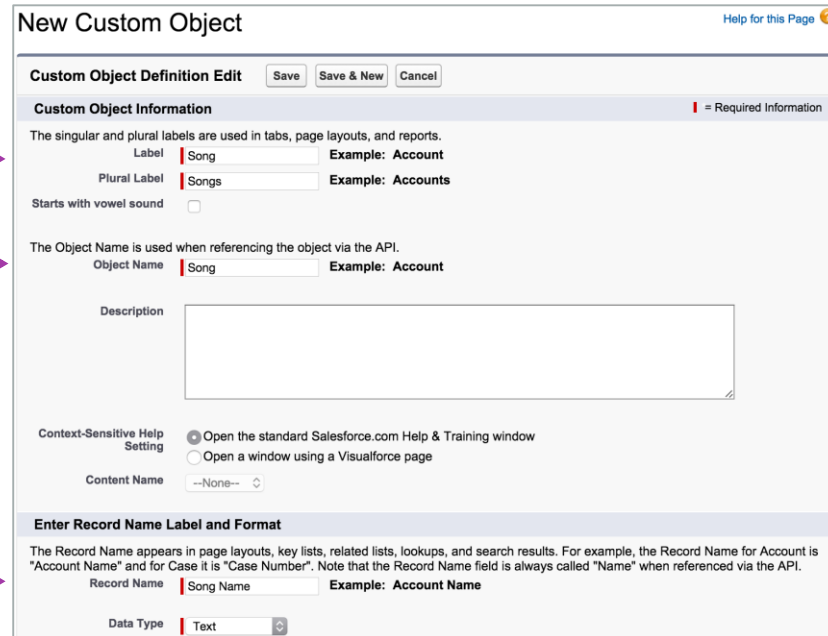
# How to create a Custom Object

- ❖ Use the Salesforce web interface to create a Custom Object (Setup → Build → Create → Objects → New Custom Object)

Descriptive names →

Name for API calls →

Descriptive name  
for the required  
Name field →



**New Custom Object** [Help for this Page](#)

**Custom Object Definition Edit** [Save](#) [Save & New](#) [Cancel](#)

**Custom Object Information** ! = Required Information

The singular and plural labels are used in tabs, page layouts, and reports.

Label | Song **Example: Account**

Plural Label | Songs **Example: Accounts**

Starts with vowel sound ☐

The Object Name is used when referencing the object via the API.

Object Name | Song **Example: Account**

Description

Context-Sensitive Help Setting ☒ Open the standard Salesforce.com Help & Training window ☐ Open a window using a Visualforce page

Content Name | --None--

**Enter Record Name Label and Format**

The Record Name appears in page layouts, key lists, related lists, lookups, and search results. For example, the Record Name for Account is "Account Name" and for Case it is "Case Number". Note that the Record Name field is always called "Name" when referenced via the API.

Record Name | Song Name **Example: Account Name**

Data Type | Text

# How to create a Custom Field

- ❖ Use the Salesforce web interface to add Custom Fields to your Custom Objects (Setup → Build → Create → Objects → click the object label)

Descriptive  
field name

Name used  
in API calls



The screenshot shows the 'New Custom Field' page for a 'Song' object in Salesforce. The page is titled 'New Custom Field' and has a 'Help for this Page' link. It is divided into four steps, with 'Step 2. Enter the details' being the current step. The form contains the following fields:

- Field Label:** A text input field containing 'Title'. A purple arrow points from the 'Descriptive field name' text to this field.
- Length:** A text input field containing '100'. Above this field is the text 'Please enter the maximum length for a text field below.'
- Field Name:** A text input field containing 'Title'. A purple arrow points from the 'Name used in API calls' text to this field.
- Description:** A large text area for entering a description.
- Help Text:** A large text area for entering help text, with an information icon to its right.

Navigation buttons 'Previous', 'Next', and 'Cancel' are located at the top right of the form.

# API names

- ❖ The names you use in API calls for Custom Objects and Fields includes your unique Namespace Prefix and the suffix "\_\_c"

Separator is two underscores

```
string q = "SELECT Id, mynamespace__Title__c FROM mynamespace__Song__c";
```

Your namespace    Field name

Object name

# Individual Exercise

Create a Custom Object

# Summary

1. Register a namespace for your org
2. Create a Custom Object
3. Create a Custom Field





# Create a Connected App



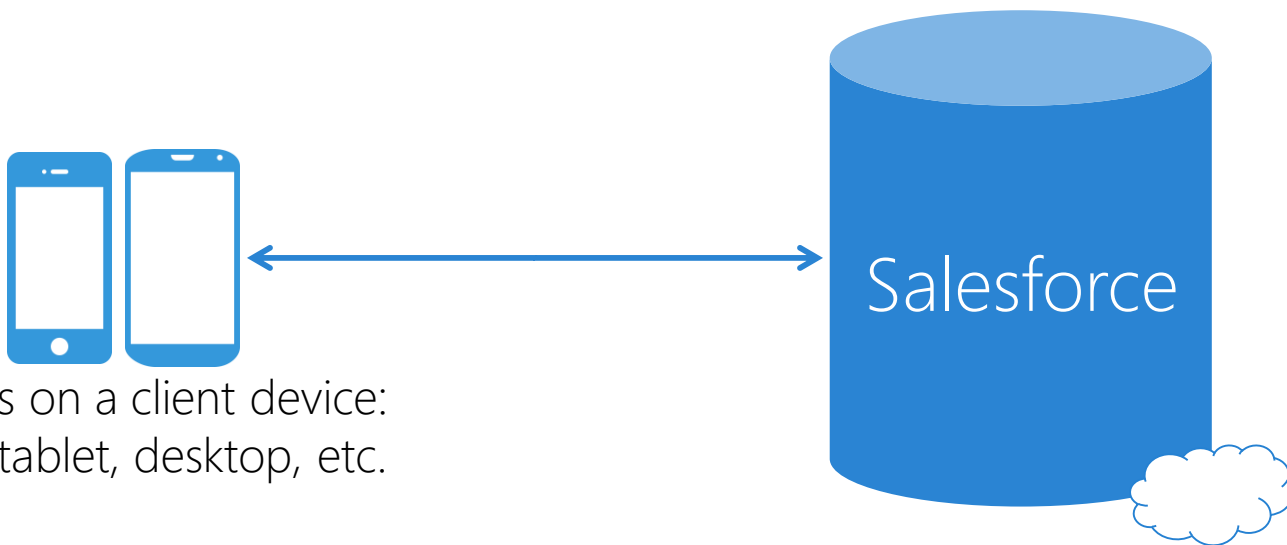
# Tasks

1. Create a Connected App
2. Generate app identity values
3. Assign OAuth scopes



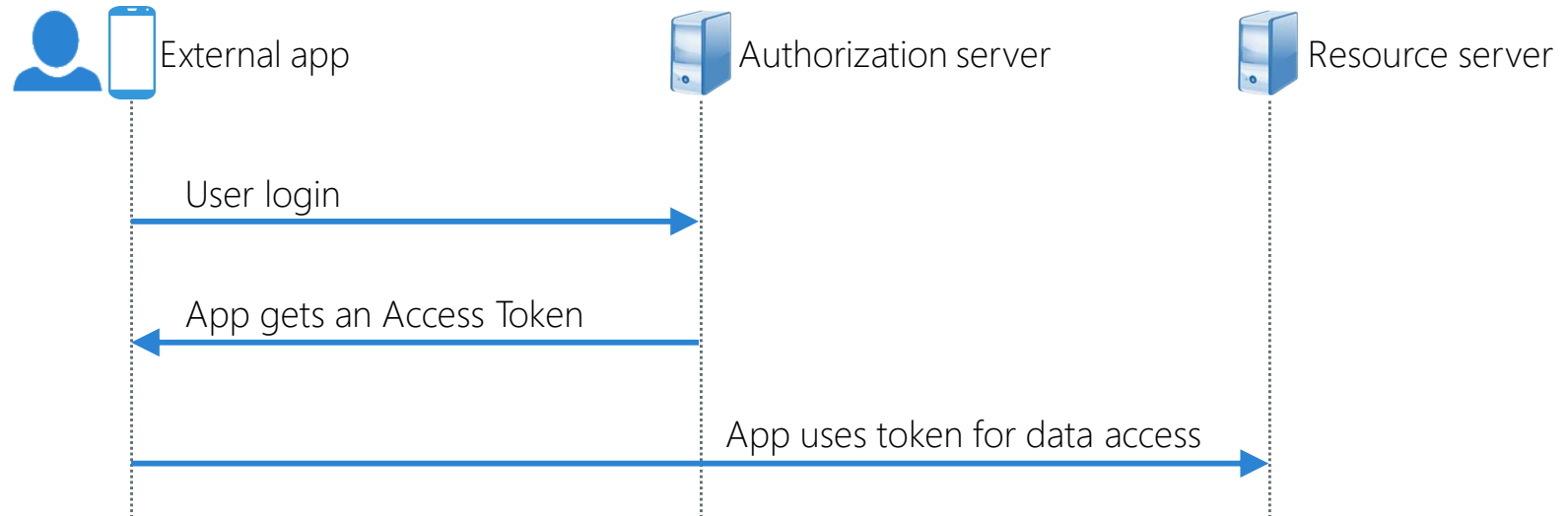
# What is an external app?

- ❖ An *external app* is an app running outside of the Salesforce cloud that accesses Salesforce data



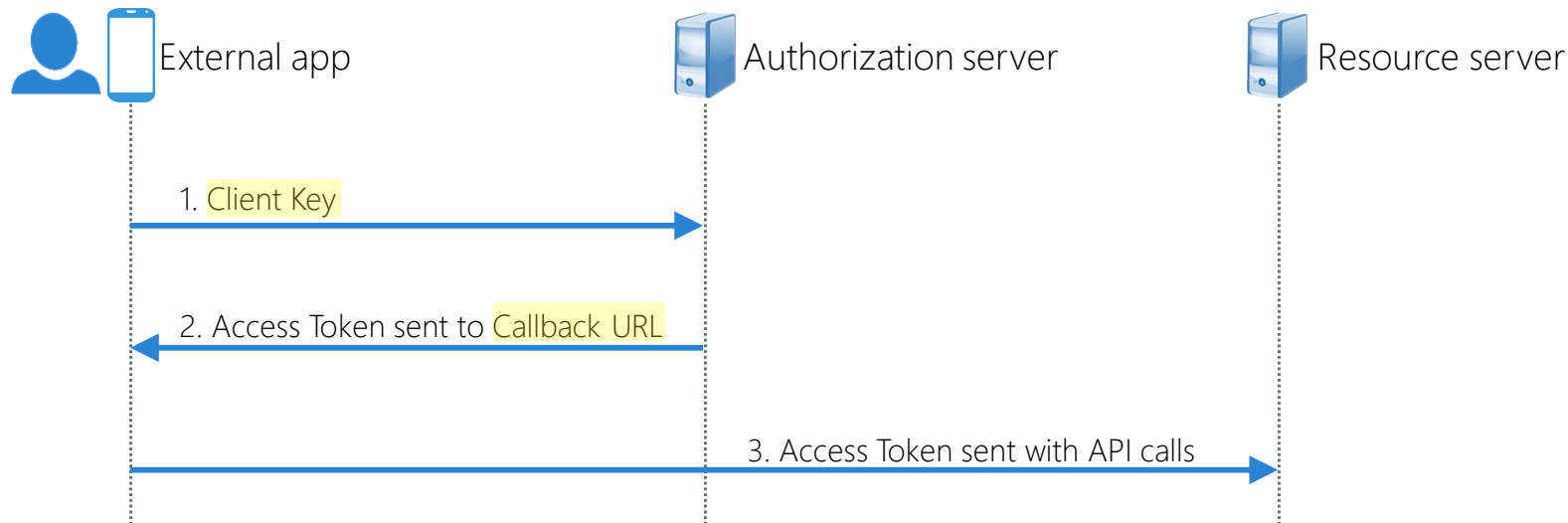
# External app authorization

- ❖ Salesforce uses OAuth to authorize external apps for API access



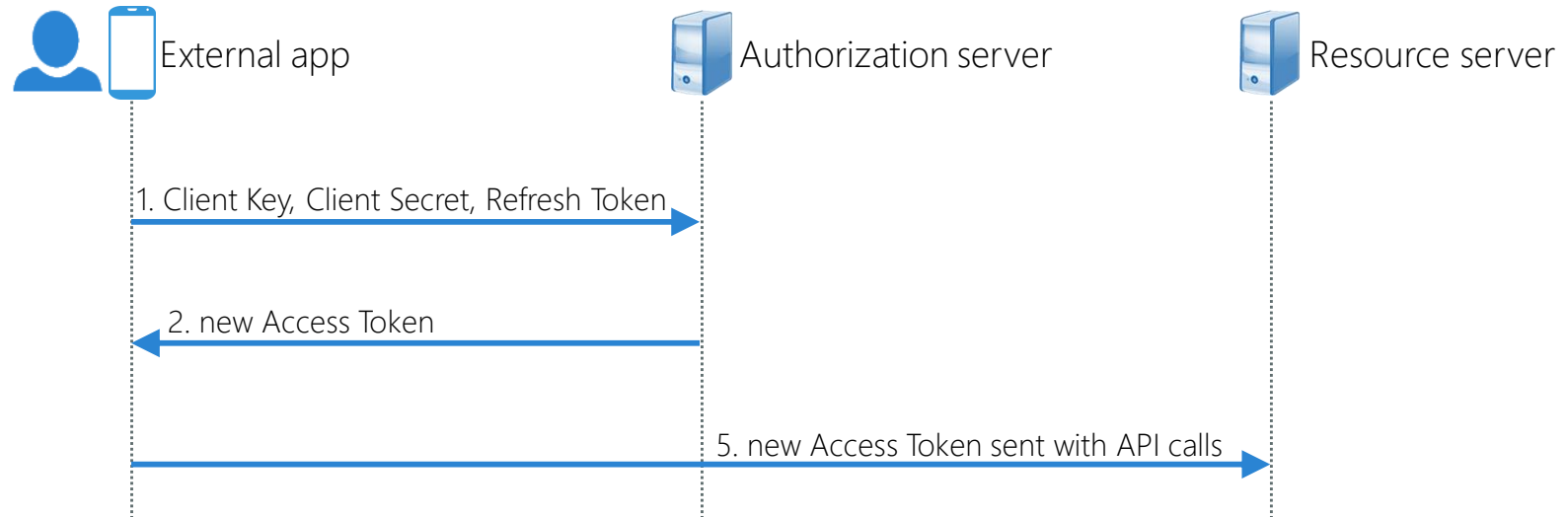
# OAuth 2.0 User-Agent Flow

- ❖ We will use the OAuth 2.0 User-Agent Flow which requires the external app to **embed two items** used for authorization



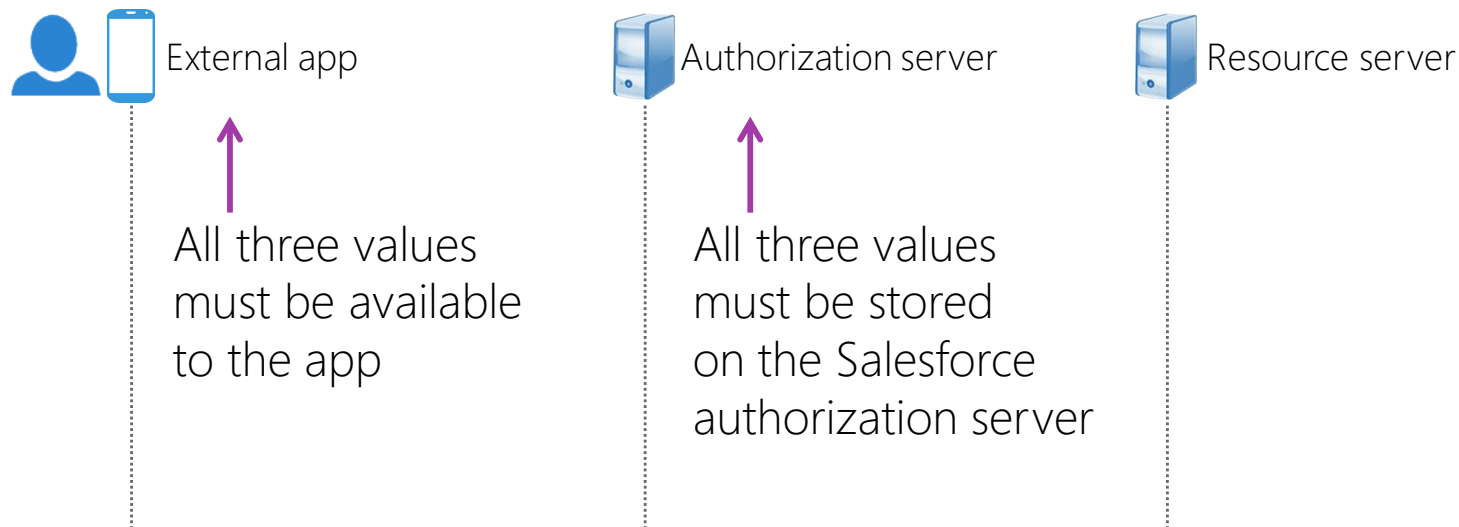
# OAuth 2.0 Refresh Token Flow

- ❖ The OAuth 2.0 Refresh Token Flow grants a new Access Token so the user does not need to login again when their original token expires



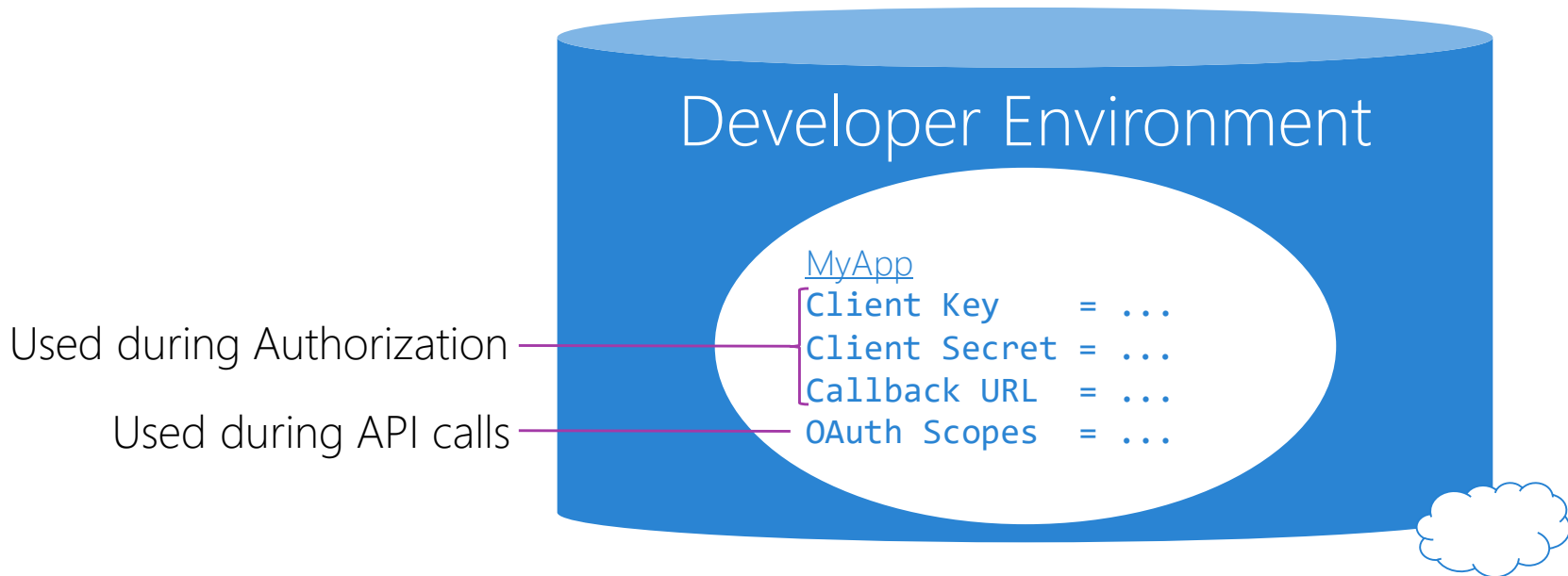
# External app authorization data

- ❖ The Client Key and Client Secret are generated by Salesforce, you choose the CallbackURL



# What is a Connected App?

- ❖ A Salesforce *Connected App* is the server-side part of an external app, it includes identity info and data-access permissions



# Client Key and Secret

- ❖ Salesforce generates the Client Key and Client Secret, you need to copy them into your external app

Generated when  
you create a new  
Connected App

## Developer Environment

MyApp

[Client Key = ...  
Client Secret = ...  
Callback URL = ...  
OAuth Scopes = ...



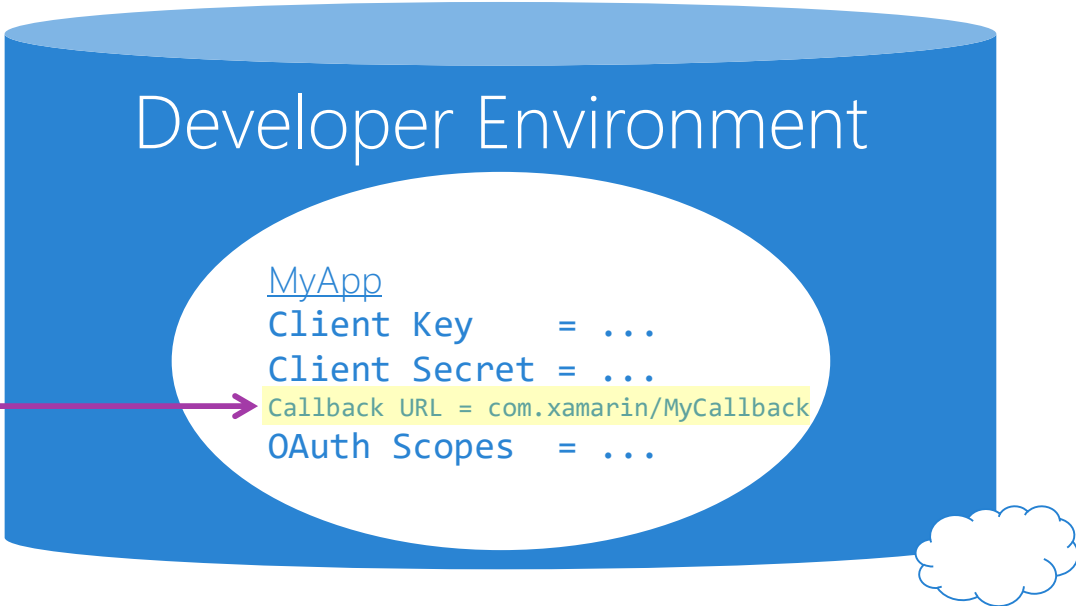


# Callback URL

- ❖ You choose a Callback URL; for an app running on a device, it does not need to be a functioning URL

The URL in the external app must match the one stored on the Salesforce server

## Developer Environment



A blue cylinder representing the Developer Environment contains a white oval with app configuration details. A purple arrow points from the text on the left to the Callback URL line in the oval. A small white cloud is at the bottom right of the cylinder.

```
MyApp  
Client Key      = ...  
Client Secret   = ...  
Callback URL    = com.xamarin/MyCallback  
OAuth Scopes    = ...
```

# OAuth scopes

- ❖ OAuth scopes determine what your external app can do with your data, e.g. api access, profile access, ability to get a refresh token, etc.

Used to determine if a REST API call should be allowed, i.e. does the external app have access to the requested data?

## Developer Environment

MyApp  
Client Key = ...  
Client Secret = ...  
Callback URL = ...  
OAuth Scopes = api

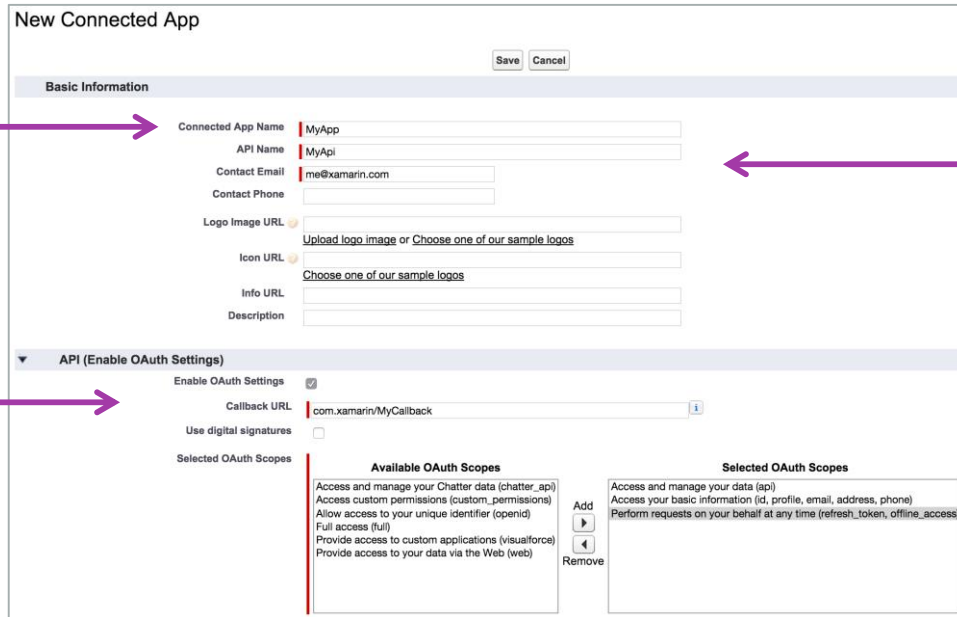


# How to create a Connected App

- ❖ Use the Salesforce web interface to create a Connected App (Setup → Build → Create → Apps → Connected Apps)

Choose the App name

Choose your Callback URL



**New Connected App**

Save Cancel

**Basic Information**

Connected App Name: MyApp

API Name: MyApi

Contact Email: me@xamarin.com

Contact Phone:

Logo Image URL: Upload logo image or Choose one of our sample logos

Icon URL: Choose one of our sample logos

Info URL:

Description:

**API (Enable OAuth Settings)**

Enable OAuth Settings: ☒

Callback URL: com.xamarin/MyCallback

Use digital signatures: ☐

Selected OAuth Scopes:

**Available OAuth Scopes**

- Access and manage your Chatter data (chatter\_api)
- Access custom permissions (custom\_permissions)
- Allow access to your unique identifier (openid)
- Full access (full)
- Provide access to custom applications (visualforce)
- Provide access to your data via the Web (web)

Add Remove

**Selected OAuth Scopes**

- Access and manage your data (api)
- Access your basic information (id, profile, email, address, phone)
- Perform requests on your behalf at any time (refresh\_token, offline\_access)


API Name and Contact Email are required but are not used for REST API access

Define the access you want to grant, typically will want these three

# How to find Client Key and Secret

- ❖ The listing for your Connected App in your Salesforce environment will show the Client Key and Secret that Salesforce generated for you

▼ API (Enable OAuth Settings)			
Consumer Key	3MVG9xOCXq4ID1uEGNAXB_lykvLuaq6nij1CFkQcqEHyerj4zTmCOQraZCOUfE_T85tKPIKk_MRyT0rMg7Tiv		Consumer Secret <a href="#">Click to reveal</a>

  
*Note: the term "Consumer" is from OAuth 1.0, we will use the term "Client" as it is preferred in OAuth 2.0*

 You will need to copy these two values so you can embed them in your external app 

# Group Exercise

Create a Connected App



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# Summary

1. Create a Connected App
2. Generate app identity values
3. Assign OAuth scopes



# Thank You!

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[university.xamarin.com/profile](https://university.xamarin.com/profile)