



MALLA REDDY UNIVERSITY

R-22

III YEAR B.TECH. (CSE) / I – SEM

MR22-1CS0148

Salesforce Platform Developer

UNIT- I

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MRU**

UNIT-I

Salesforce Platform Basics: Understand the Salesforce Architecture,

Data Modeling : Understand Custom & Standard Objects, Create Object Relationships, Work with Schema Builder,

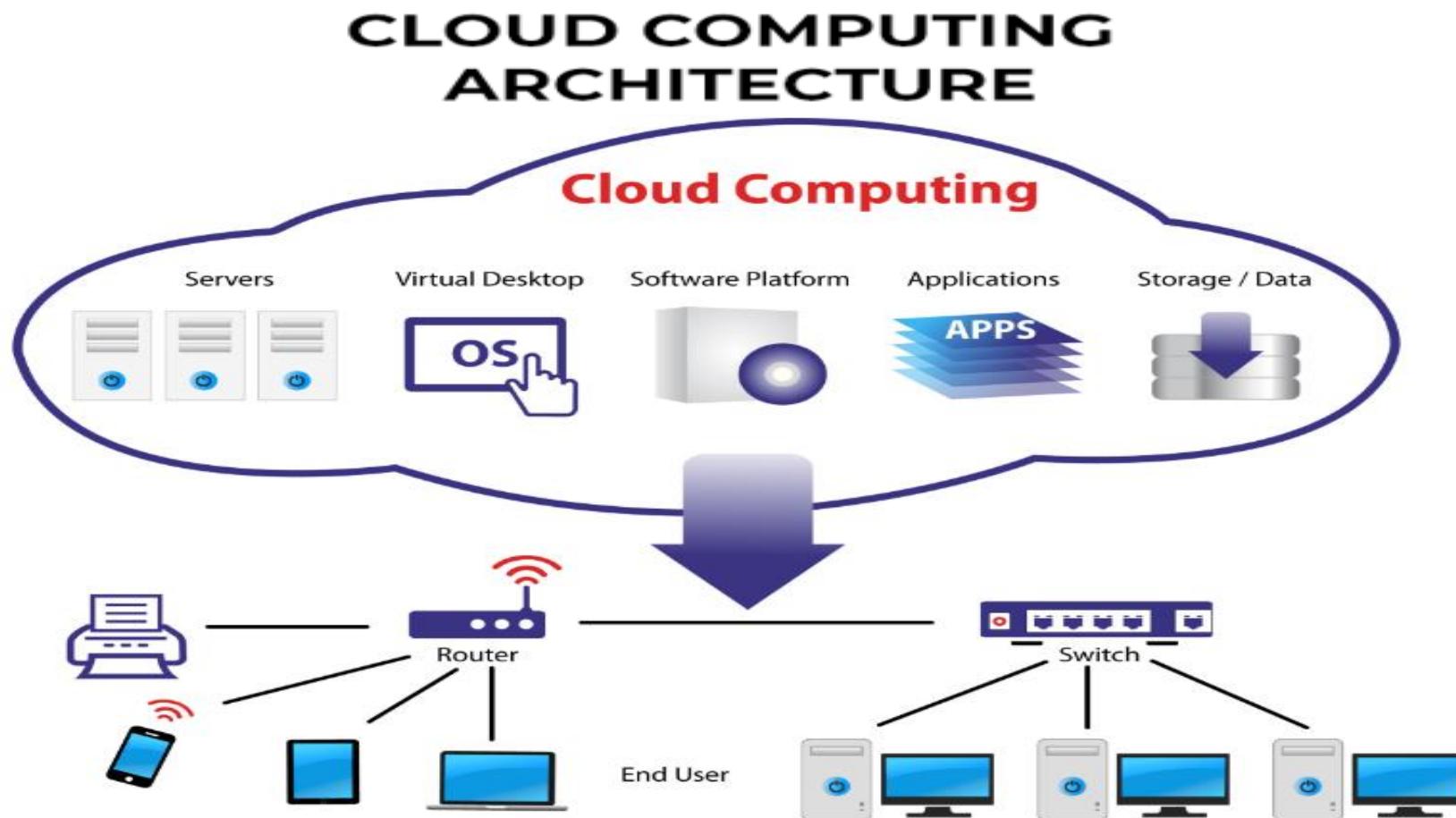
Data Management : Import Data, Export Data,

Picklist Administration: Get Started with Picklists, Manage Your Picklist Values, Share Values with Global Value Sets.

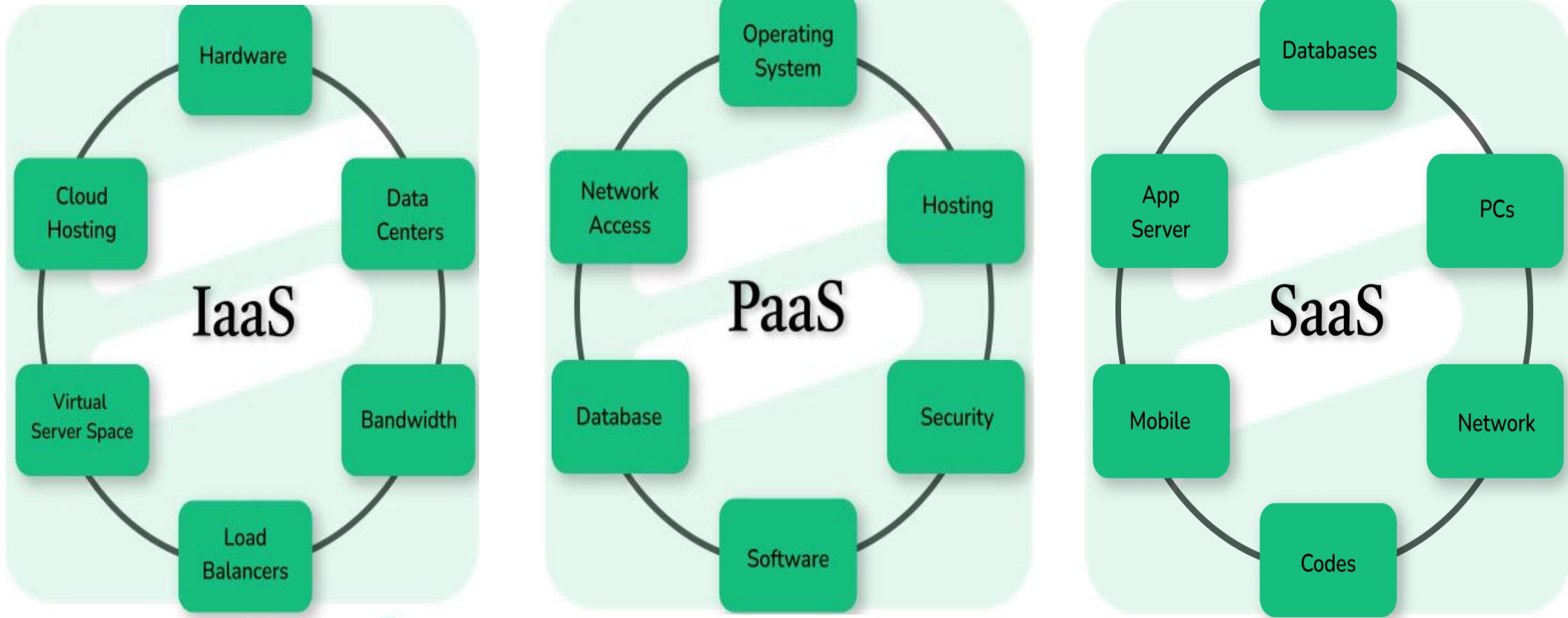
Formulas and Validations: Use Formula Fields, Implement Roll-Up Summary Fields, Create Validation Rules.

Cloud Computing

- remote servers on the internet to store, manage, and access data online rather than local drives.



Cloud Computing

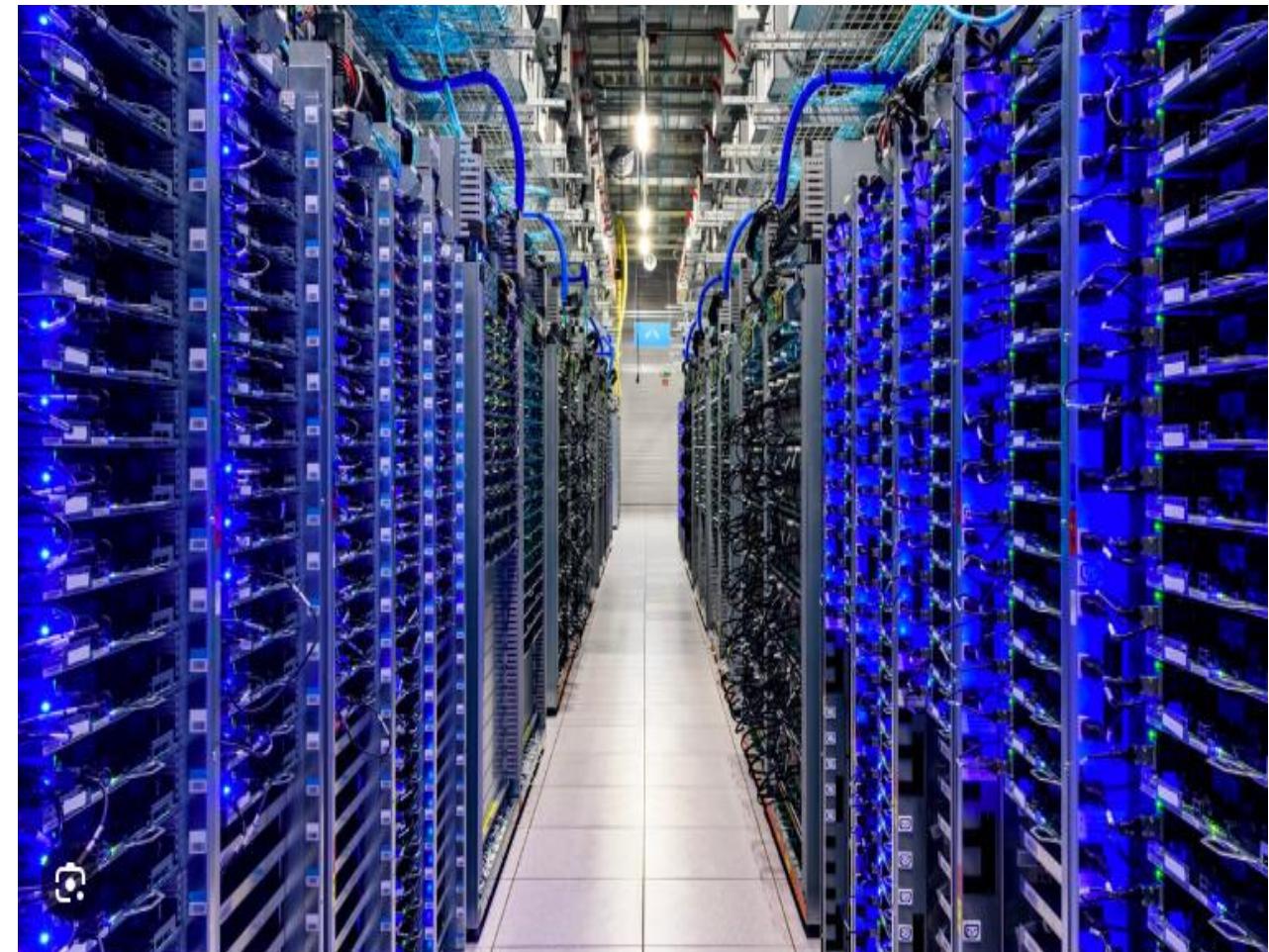




Cloud service providers

Data Center

- a physical location that is equipped with computing resources such as servers, storage systems, networking equipment, and cooling infrastructure



CRM (Customer Relationship Management)

- employees managed manually data
- As years passed by with the advent of computers, companies made use of Excel sheets and documents for managing their data.
- store prospect/customer information, track interactions, and manage these relationships.

The software keeps all the interactions done with

- customers,
- complaints registered by the customer,
- resolutions provided by the executive, and
- other customer activities with the particular business or product.



List of Various CRM providers



Salesforce Platform Basics

What is Salesforce?

Salesforce is a cloud-based software company.

Salesforce is a popular CRM tool provides **customer relationship management (CRM) services** that helps **companies manage** their

- **sales,**
 - **marketing,**
 - **customer service, and**
 - **other business operations in an integrated manner.**
-
- Salesforce is known for its flexibility, scalability, and ability to customize to meet the specific needs of different industries and businesses.



Top 12 companies are using Salesforce CRM in USA

List of prominent companies
using **Salesforce CRM**



Spotify



T-Mobile

ALDO



**American
Red Cross**



**AMERICAN
EXPRESS**

Canon

HERSHEY
THE HERSHEY COMPANY

L'ORÉAL
PARIS



NEW YORK POST

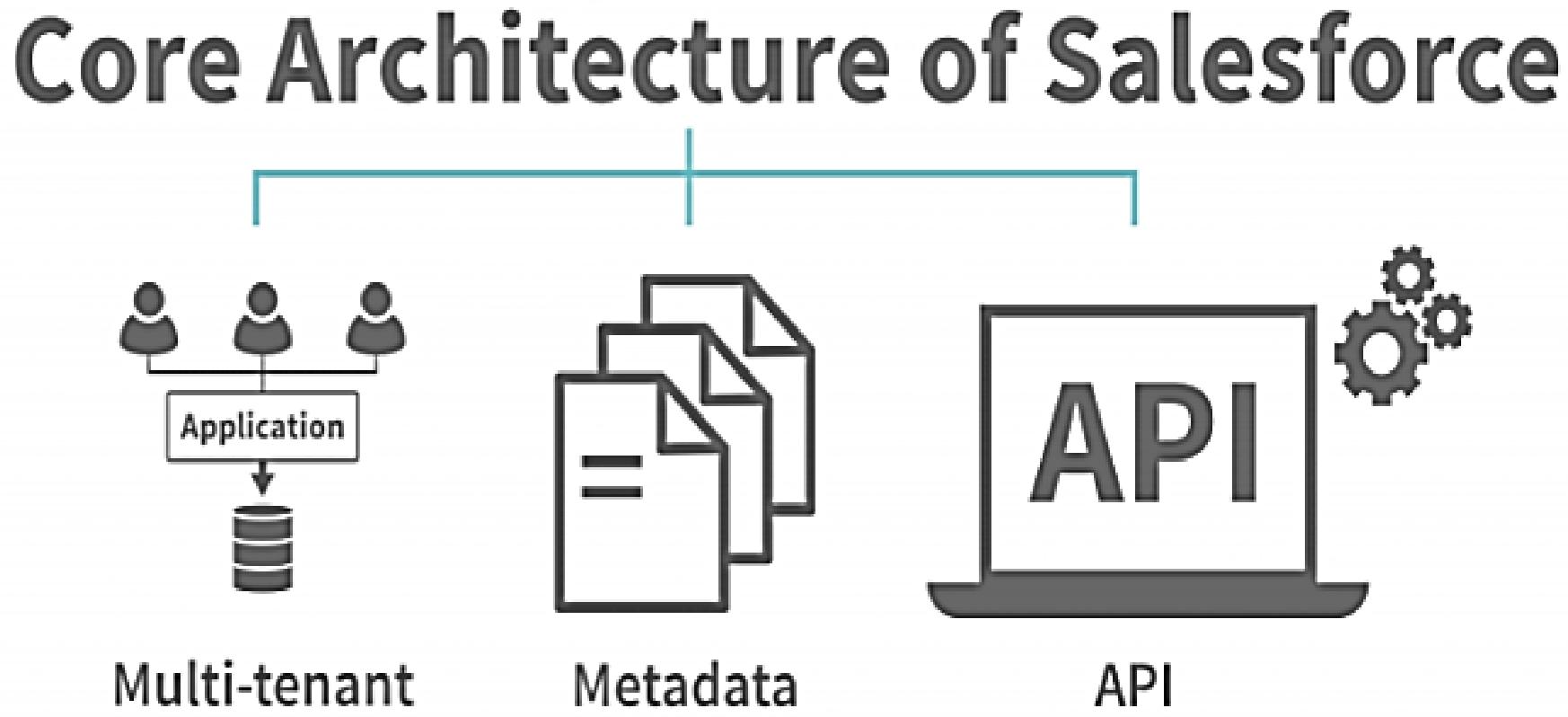


usbank



Core Architecture of Salesforce

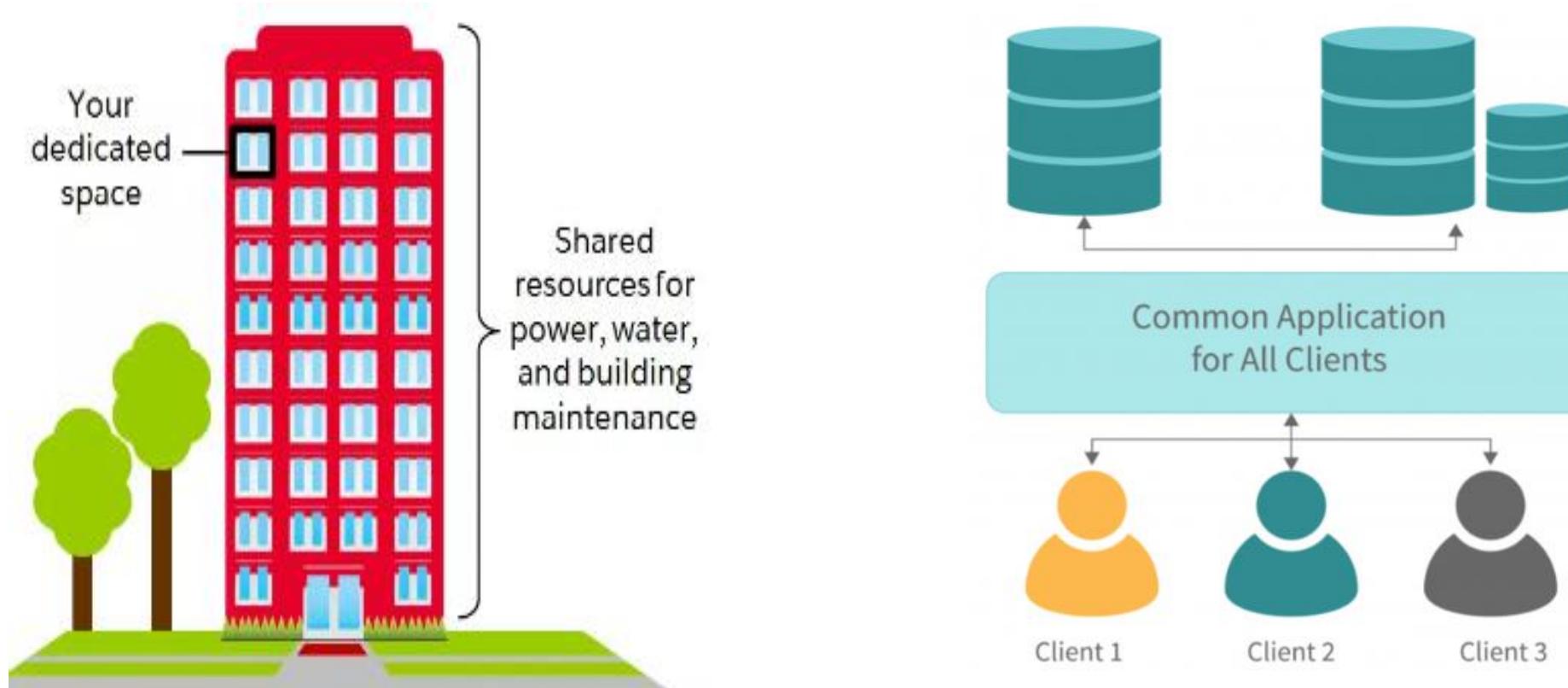
The Salesforce architecture is composed of numerous layers that are stacked on top of one another. The diagram below illustrates these layers.



Core Architecture of Salesforce

Multi-tenant:

- Multiple tenants use the same application.
- Each customer's data is isolated and stored in a separate “tenant”.
- One customer's data cannot be accessed by another customer.



Core Architecture of Salesforce

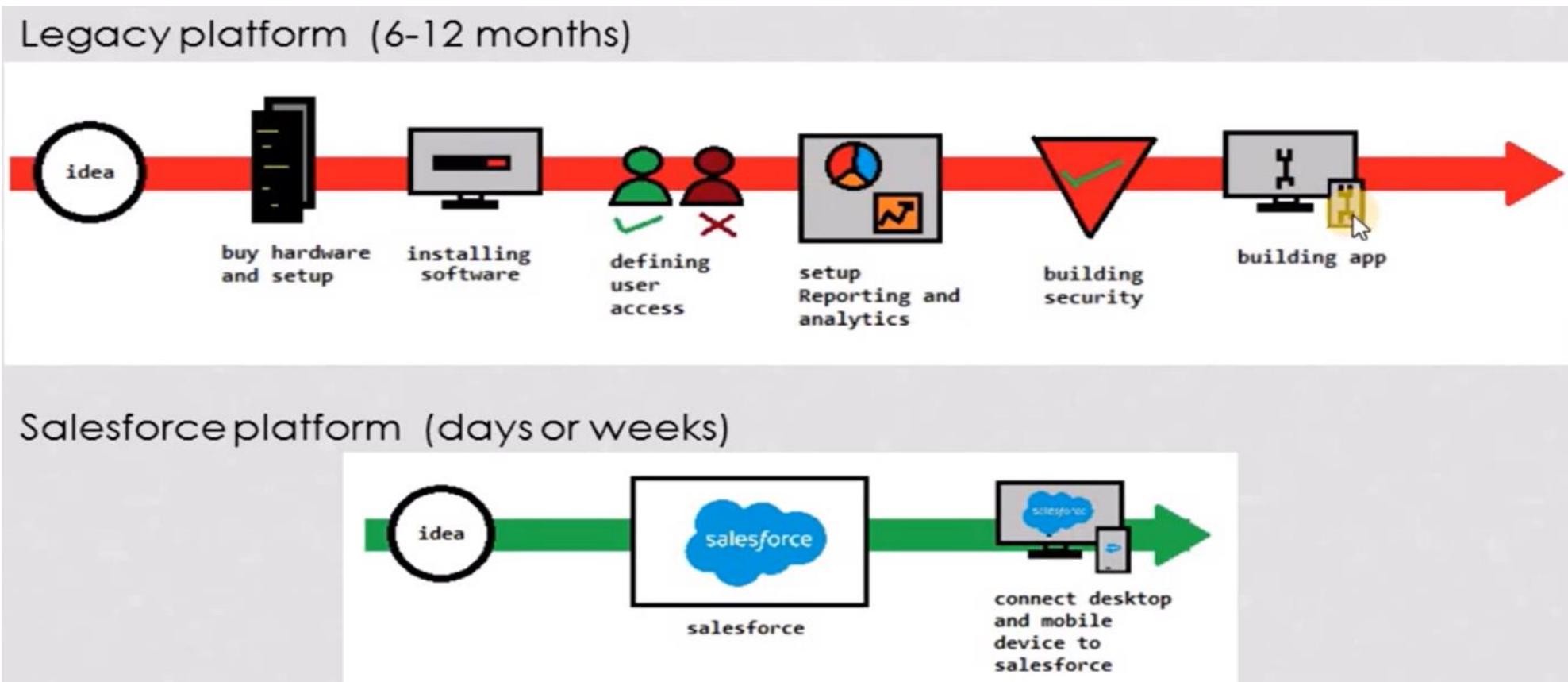
Metadata:

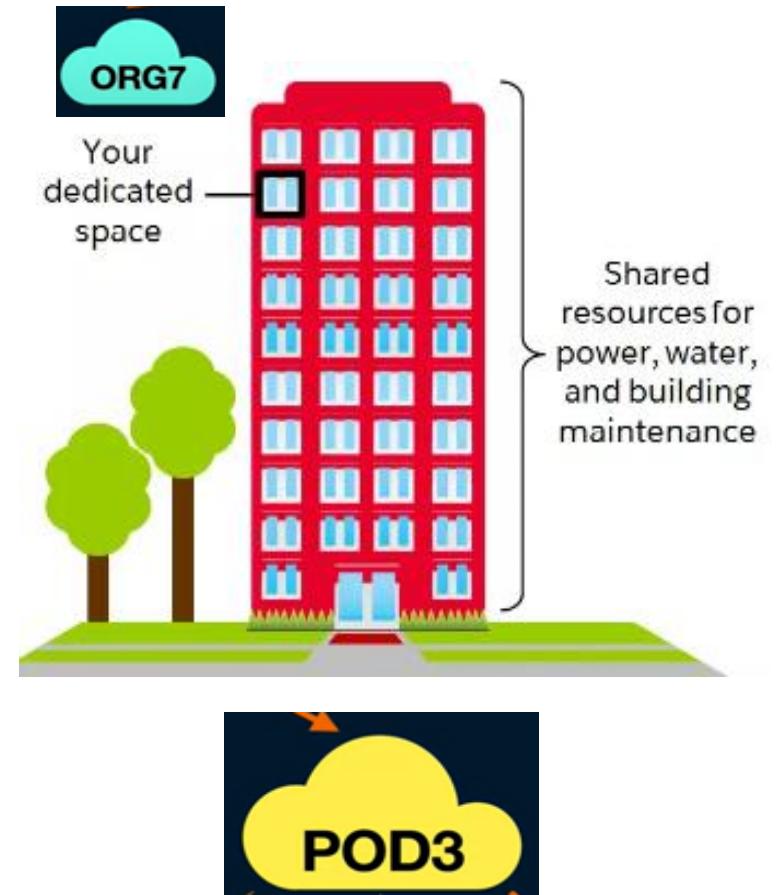
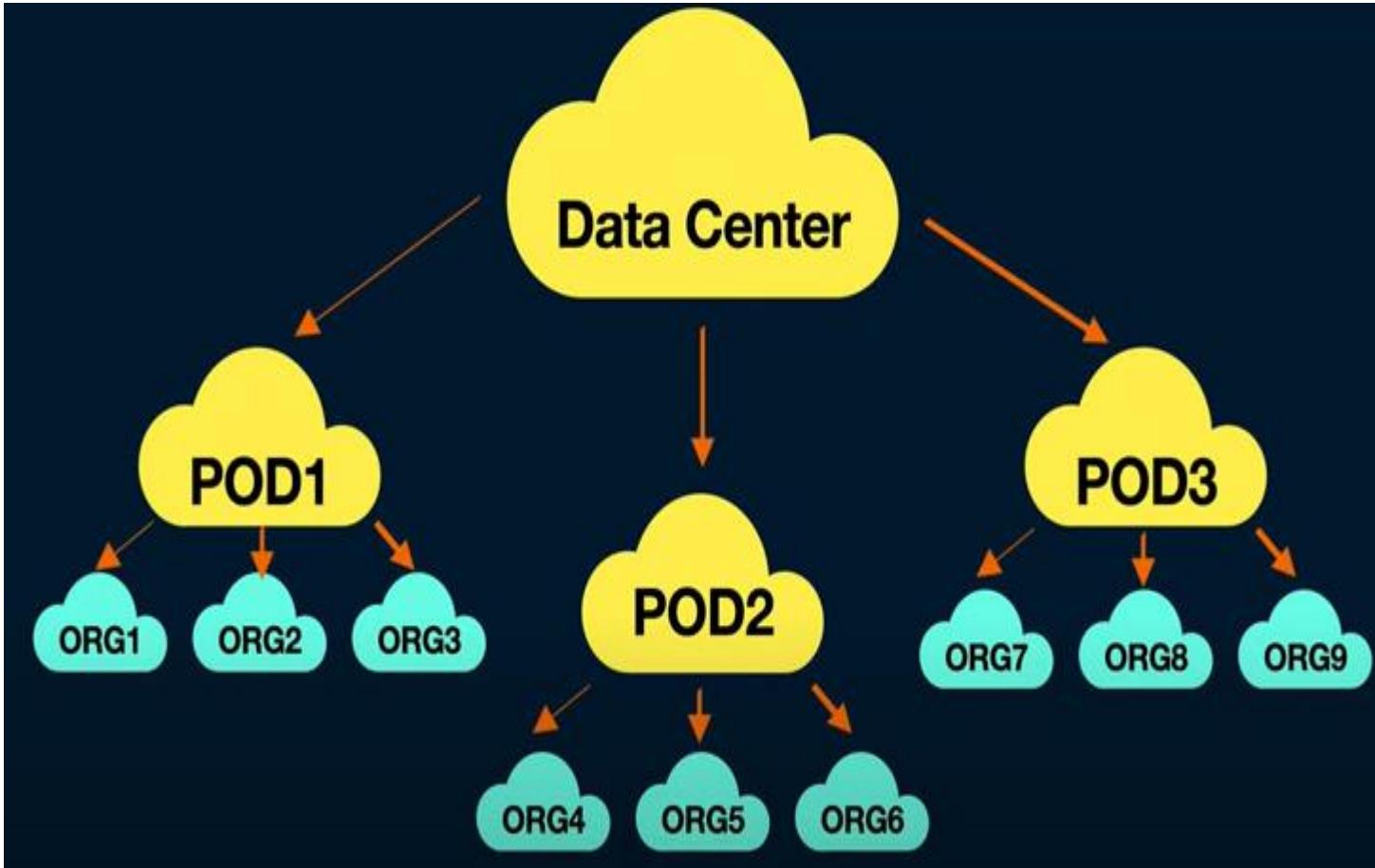
- **data about the data.**
- defines how objects behave and how your record looks.

API Services:

- helps the developers to customize the Salesforce application.
- helps to access apps from any location, using any programming language that supports Web services, like Java, PHP, C#, or .NET.

SALESFORCE CRM IS DIFFERENT FROM LEGACY CRM?





Create Trailhead Developer Account in Salesforce

1. Go to <https://trailhead.salesforce.com/users/trjha3/trailmixes/salesforce-developer-catalyst-v-3-0> and signup
2. Fill all the necessary details with **MRU Email Address**.
3. An Email will be sent to your Email Address.
4. Now click the **link provided in Email**.
5. **Set your password** to your account.
6. Now you are able to login with [Trailhead salesforce developer](#) account.
7. Go to <https://login.salesforce.com>.
8. Enter your Username and Password click on LogIn.
9. Make sure that you are logged in [Salesforce Developer Catalyst- V3.0](#) course

Create free Developer Account in Salesforce

1. Go to <http://developer.salesforce.com/signup>
2. Fill all details with valid **Email Address**.
3. An Email will be sent to your Email Address.
4. Now click the **link provided in Email**.
5. **Set your password** to your account.
6. Now you are able to login with [salesforce developer](#) account.
7. Go to <https://login.salesforce.com>.
8. Enter your Username and Password click on LogIn.

The screenshot shows the 'Sign up for your Salesforce Developer Edition' page. The page has a dark blue header with the Salesforce logo and the tagline 'Build enterprise-quality apps fast to bring your ideas to life'. Below the header is a list of benefits: 'Build apps fast with drag and drop tools', 'Customize your data model with clicks', 'Go further with Apex code', 'Integrate with anything using powerful APIs', 'Stay protected with enterprise-grade security', and 'Customize UI with clicks or any leading-edge web framework'. The main form area has fields for First Name*, Last Name*, Email*, Role*, Company*, Country/Region*, and Postal Code*. There is also a Username* field containing 'jane@company.sandbox'. A note below the username field states: 'Your username must be in the form of an email address (it does not have to be real). It must be unique and cannot be associated with another Salesforce login credential.' A link 'Read more about username recommendations' is provided. A checkbox for 'I agree to the Main Services Agreement – Developer Services and Salesforce Program Agreement' is checked. At the bottom is a large blue 'Sign me Up' button.

Terminologies in Salesforce

Org in Salesforce:

- **Org** is an abbreviation for **organization**.
- A salesforce org is a unique version of Salesforce for a specific tenant, containing their data and configuration.
- Every org will have a unique ID
- We can find your own org id in the Company Information page within Salesforce.

POD in Salesforce:

- A **Point of Deployment** is also known as an **Instance**.
- A cluster of infrastructure (servers, software, networking equipment, etc.) that hosts many orgs.
- It is a self contained unit containing all that is required to run Salesforce.
- Each customer is allocated to one and only POD and that is where their data resides.

Data Modelling

Database

It is an organized collection of information.

ID	First Name	Last Name	Email	Year of Birth
1	Peter	Lee	plee@university.edu	1992
2	Jonathan	Edwards	jedwards@university.edu	1994
3	Marilyn	Johnson	mjohnson@university.edu	1993
6	Joe	Kim	jkim@university.edu	1992
12	Haley	Martinez	hmartinez@university.edu	1993
14	John	Mfume	jmfume@university.edu	1991
15	David	Letty	dletty@university.edu	1995

Table: Students

In a **relational database**:

- Data is stored in tables.
- Each table comprises a number of columns of particular data type such as text, number or date.
- Information is stored in the rows of table.
- Tables can be related to other tables using the concept of primary key and foreign key.

Whereas in **Salesforce**:

- Salesforce uses **objects** to store data.
- Each object comprises a number of **fields** which corresponds to **column** in a database.
- Data is Stored in **records** of objects which corresponds to **rows** in a database.
- Objects can be related to other objects using relationship fields.

Fields

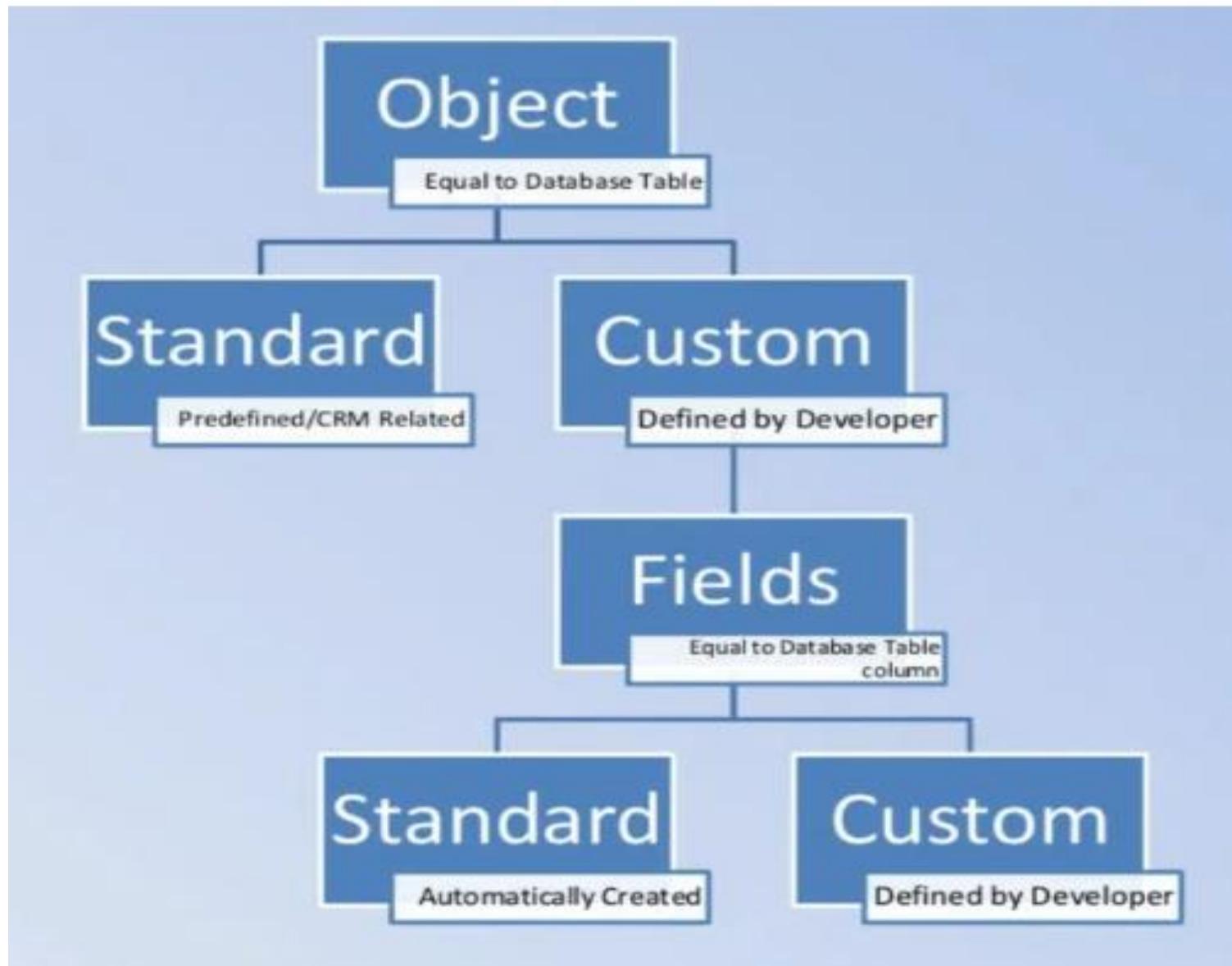
Records

+  Invoices ▾



Object

Types of Object & Fields in Salesforce



Standard Objects

- Standard objects are **already created by Salesforce to use.**
- Once you log into Salesforce, you can see the available standard objects.
- These include **account, contact, opportunity, lead, campaign**, and so on.
- The most commonly referred standard object is the **Account Object**.
- It is the object that **stores the preliminary information** about a *customer, partner, competitor, or another organization.*

Users cannot delete standard objects instead, salesforce allows users to create custom fields on standard objects.

List of Standard Objects

- 1.Account:** Refers to a business or organization that you have a business relationship with, such as a customer or partner.
- 2.Contact:** This object represents an individual who is associated with an account, like a customer, partner, or vendor contact.
- 3.Lead:** Refers to a possible sales opportunity. If a lead is deemed qualified, it can be converted into an account, a contact, or an opportunity.
- 4.Opportunity:** Refers to a possible sale that is linked to a particular account. It contains details such as the stage of the sales process, the likelihood of it actually happening, the amount of the sale, and when it is expected to be completed.
- 5.Case:** This object indicates that there is an issue or inquiry from a customer that needs to be resolved.
- 6.Task:** This object describes an item that can be assigned to a user for action, such as a call, email, or meeting.

7. Event: Refers to a type of entry in a calendar, such as a meeting or appointment, which can be linked to other Salesforce items like accounts, contacts, and opportunities.

8. Campaign: Represents a marketing initiative such as an email campaign, trade show, or webinar. It is used to generate leads and drive sales.

9. Quote: Describes a sales proposal that is closely linked to an opportunity. It contains information about the products being sold, their prices, and the terms of the sale.

10. Product: This refers to a product or service that is available for sale to customers and can be linked to opportunities, quotes, and orders.

11. Pricebook: A collection of products and prices for those products. They can be used to manage pricing for different customers or sales channels.

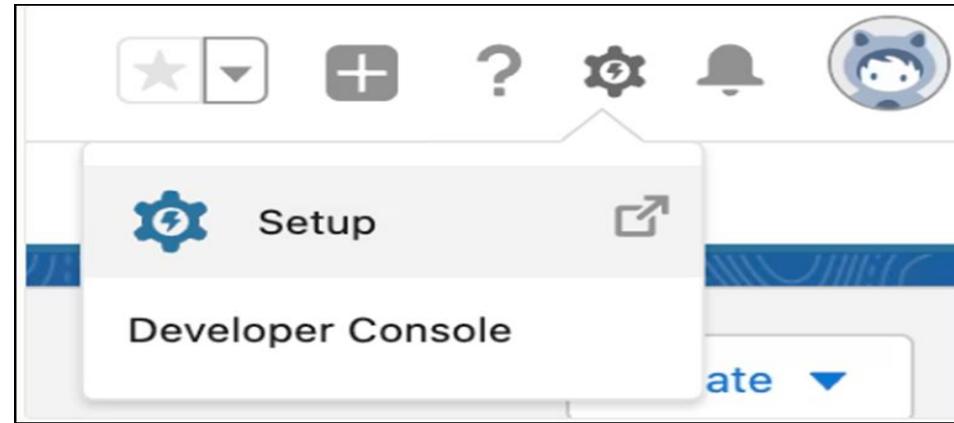
12. Contract: A binding agreement between your organization, a customer, or a partner. It can be associated with accounts and opportunities.

Custom Objects

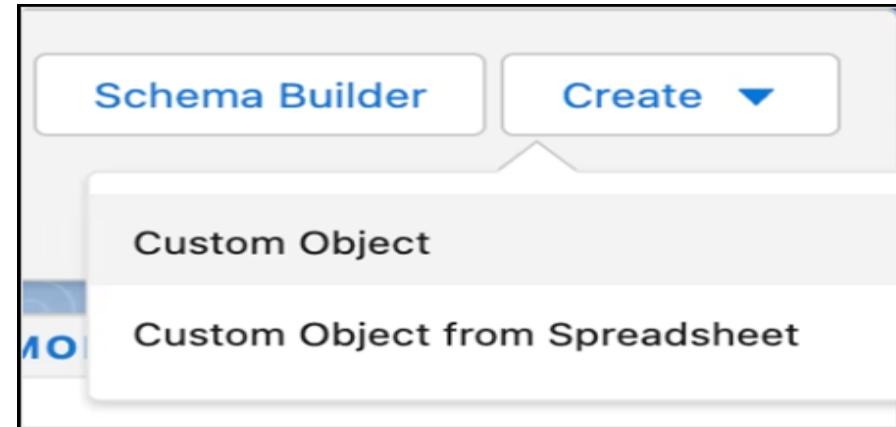
- **customized object** created to store information specific to your organization's requirements and processes.
- It is developed to capture unique data and precise data for your business.
- Contradictory to standard objects, it is **manually created by the user and adds data per the requirement.**
- Custom objects are usually identified by **`_ _c` suffix.**
- **For example**, a courier company can create a custom object to store the schedule and dispatch details for every week.
- So these objects store the data that is unique to the business.

Steps to Create a custom object in Salesforce

1. In your Salesforce org, click the gear icon, and select Setup.



2. Click the **Object Manager** tab.
3. Click **Create > Custom Object** in the top-right corner.



Steps to Create a custom object in Salesforce

4. In the **Label** section, enter whatever you want to call your custom object. The **Object Name** and **Record Name** fields will **auto-fill** with the same name.

5. For **Plural Label**, enter the plural form of your custom object name.

Custom Object Definition Edit

Save Save & New Cancel

Custom Object Information

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

Label Example: Account

Plural Label Example: Accounts

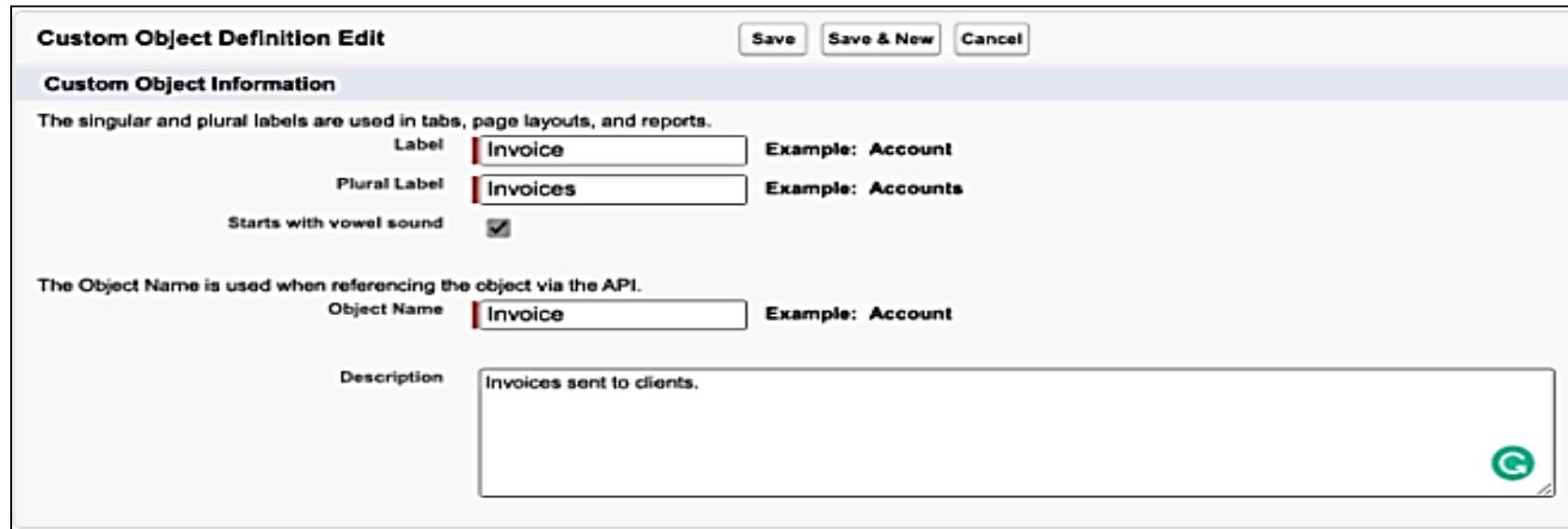
Starts with vowel sound

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

Object Name Example: Account

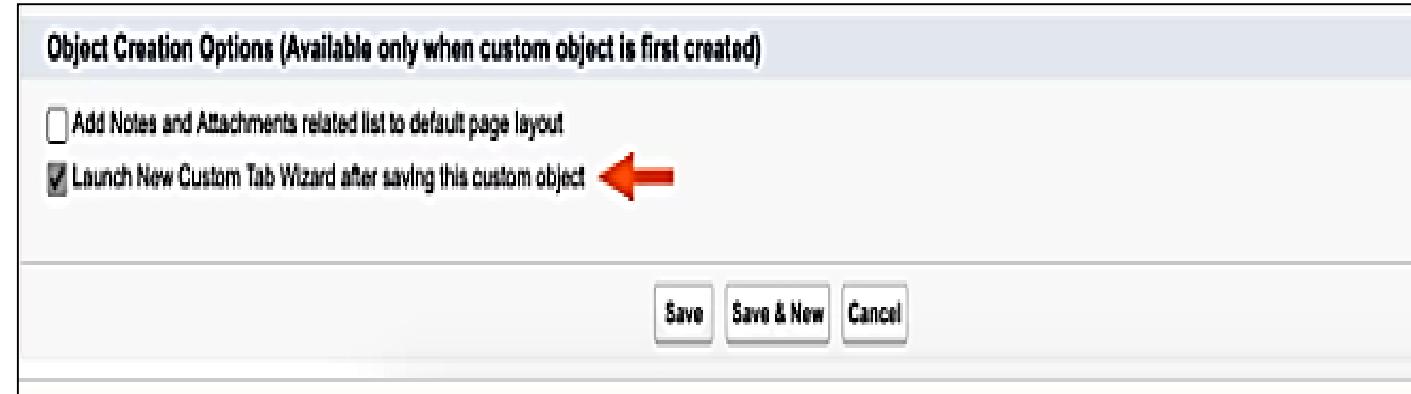
Description

G



Steps to Create a custom object in Salesforce

6. Scroll to the bottom of the page, and **select the checkbox *Launch New Custom Tab Wizard after saving this custom object***. Selecting this box will add your custom object as a tab in Salesforce.



7. Click **Save**.

8. On the *New Custom Object Tab* page, click the **Tab Style** field, and choose a style. The style sets the icon to display in the UI for the object.

9. Click **Next**, **Next**, and **Save**.

Standard Fields

- Fields that are already present in Salesforce for standard and custom objects by default and cannot be deleted or edited.
- Salesforce provides four standard fields in every custom object by default that are:
 - Created By
 - Last Modified By
 - Owner and
 - Created at the time of the creation of an object.

Custom Fields

- The Custom fields are added by the user according to the business requirements of any organization.
- They may or may not be required.
- Users can add different kinds of data depending on the requirements with help of fields data type which is available on field creation.

Field Types in Salesforce

- Every standard and custom object has fields attached to it.
- Each field in Salesforce has a defined data type.
- A data type indicates what kind of information the field stores.
- When these fields are created in Salesforce, the User has to choose their data type such as Text, Text Area, Number, PickList, etc.
- Salesforce supports a bunch of different data types.
- In the following table, we categorized some of the fields' data type and their properties.

Field Types in Salesforce

Data Type	Property
Lookup Relationship	Create a relationship that links an object to another object.
Master-Details Relationship	Create a special type of parent-child relationship between two objects.
Checkbox	Allows users to select a True or False value.
Date	Allows users to enter or pick a date from a popup calendar.
Date/Time	Allows users to enter or pick a date with the current time from a popup calendar.
Email	Allow user to enter email.

Text	Allows users to enter any combination of letters and numbers.
Text Area	Allows users to enter up to 255 characters on separate lines.
Text Area (Rich)	Allows users to enter formatted text, and add images and links. Up to 131,072 characters on separate lines.
Formula	A read-only field that derives its value from a formula expression you define.
Currency	Allows users to enter a dollar or other currency amount and automatically formats.
Geolocation	Allows users to define locations. Includes latitude and longitude components.
Phone	Allows users to enter any phone number.

Picklist

Allows users to select a value from a list you define.

URL

Allows users to enter any valid website address.

Roll-Up Summary

A read-only field that displays the sum, minimum, or maximum value of a field in a related list or the record count of all records listed in a related list.

Picklist (Multi-Select)

Allows users to select multiple values from a list you define.

How To Create Custom Fields In Salesforce

- From Setup, go to **Object Manager**.
- Select the **Object** on which you wanted to create a field.
- In the sidebar, click **Fields & Relationships**. Notice that there are already some fields there. There's a name field and some of the system fields you learned about earlier.
- Click **New** in the top right.
- For data type, select **any data type** based on the requirement.
- Click **Next**.
- **Fill out the following:**
 - **Field Label:**
 - **Description:**
- Check the Required box.
- Click Next, Next again, and then Save.

Object & Tab, Fields, Records in Salesforce

The screenshot shows the Salesforce interface for the Accounts object. The top navigation bar includes tabs for Sales, Home, Chatter, Opportunities, Leads, Tasks, Files, and Accounts. The 'Accounts' tab is highlighted with a red box. Below the navigation is a secondary header with an 'ACCOUNTS' icon, the text 'All Accounts ▾', and a 'Tab & Object' callout box. The main content area displays a list of 12 accounts, each with columns for Account Name, Account Site, Billing State, Phone, and Type. The first account, 'Burlington Tex.', is selected and highlighted with an orange box. A 'Record' callout box points to this row. A green box highlights the 'Account Name' column header. A red box highlights the 'Account Name' field for the selected record. The bottom left corner features a circular icon with a magnifying glass.

	ACCOUNT NA...	ACCOUNT SITE	BILLING STAT...	PHONE	TYPE	A
1	Burlington Tex..		NC	(336) 222-70...	Customer - Di...	J
2	Dickenson plc		KS	-62...	Customer - Ch..	J
3	Edge Commu...		TX	-60...	Customer - Di...	J
4	Express Logist...		OR	(503) 421-78...	Customer - Ch..	J
5	GenePoint		CA	(650) 867-34...	Customer - Ch..	J
	Grand Hotels ...		IL	(312) 596-10...	Customer - Di...	J

Object Relationships in Salesforce

- Object relationships are a special field type that connects two or more objects together.
- It defines how **records in one object are associated with records in another object**.
- The **field is created on the many side object (child) and it is related to the one side object(Parent)**.

Example:

- A relationship between Account and Contact object.
- If a sales rep opens an account, they've probably been talking to a few people at that account's company.
- They've probably made contacts like executives or IT managers and stored those contacts' information in Salesforce.

Object Relationships in Salesforce

ACCOUNT
Edge Communications

+ Follow Edit New Contact

Type Customer - Direct Phone (512) 757-6000 Website http://edgecomm.com

RELATED DETAILS NEWS

We found no potential duplicates of this account.

Contacts (2)

New

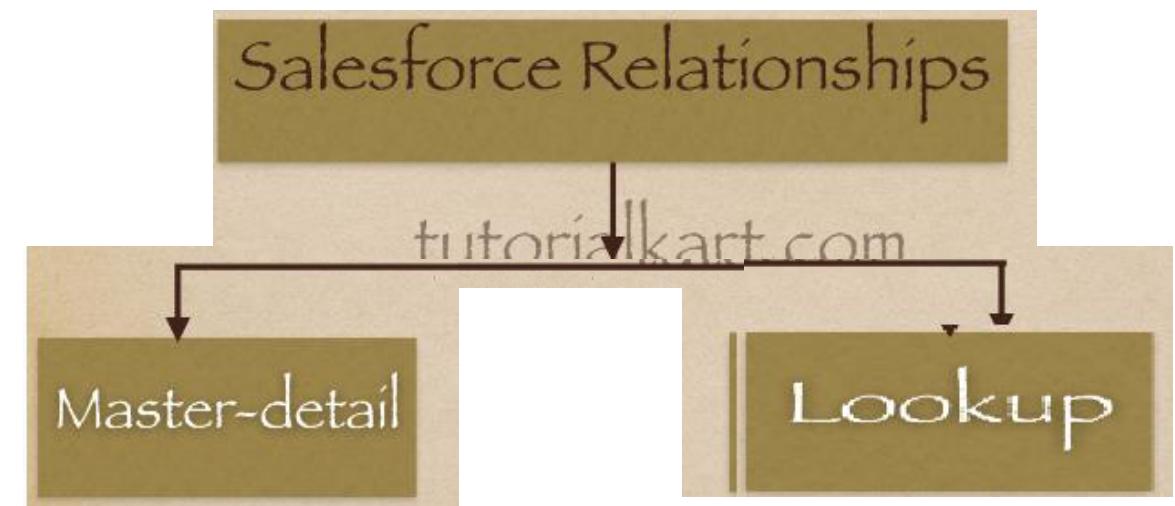
Sean Forbes
Title: CFO
Email: sean@edge.com
Phone: (512) 757-6000

Rose Gonzalez
Title: SVP, Procurement
Email: rose@edge.com
Phone: (512) 757-6000

View All

Types of object relationship:

- Lookup, and
- Master-Detail



Master-Detail Relationship

- A tightly coupled relationship where one object (detail) is considered subordinate to another object (master).
- The master record(parent) owns the detail record(Child).
- The two objects are highly dependent on one another.
- When a parent record is deleted, all of its child records are also deleted.
- It is used when we want to control the display of detail records based on the value in the master record.
- The Master-Detail Relationship field should be created on the detail object.
- The detail record inherits the permission and the sharing rule from master records.
- Master-Detail Relationship in Salesforce is a one-to-many relationship.
- It links one master (parent) record to one or more detail (child) records.
 - Make sure that no records should be created on detail(Child) object.

“A Standard object cannot be a detail object”

Master-detail Relationship

Book (One) Master Object



Book History (Many) Detail Object

Master –Detail Relationship Field created in Many Object

No records should be created on detail (Many) Object.

Master-Detail Relationship

BOOK (Master)

B.No.	BName	Price
B1	C++	1200
B2	Python	1700

BOOK History (Detail)

BH.No	B.Name	Iss Date	Ret Date
H-01	Python	21/4/24	28/4/24
H-02	C++	12/6/24	28/6/24

After Master-Detail Relationship field created on the Many object

BOOK History

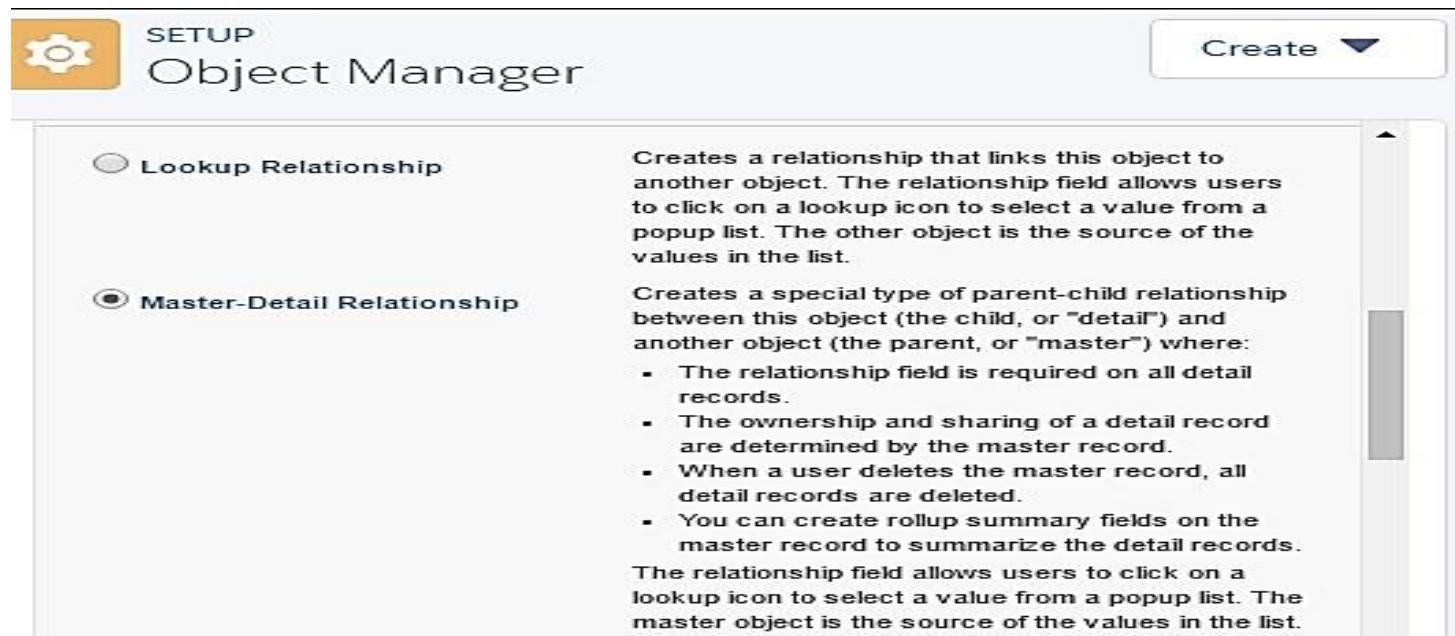
BH.No	B.Name	Iss Date	Ret Date	Rel-B.No
H-01	Python	21/4/24	28/4/24	B2
H-02	C++	12/6/24	28/6/24	B1

BOOK

B.No.	BName	Price	Rel-BH.No
B1	C++	1200	H-02
B2	Python	1700	H-01

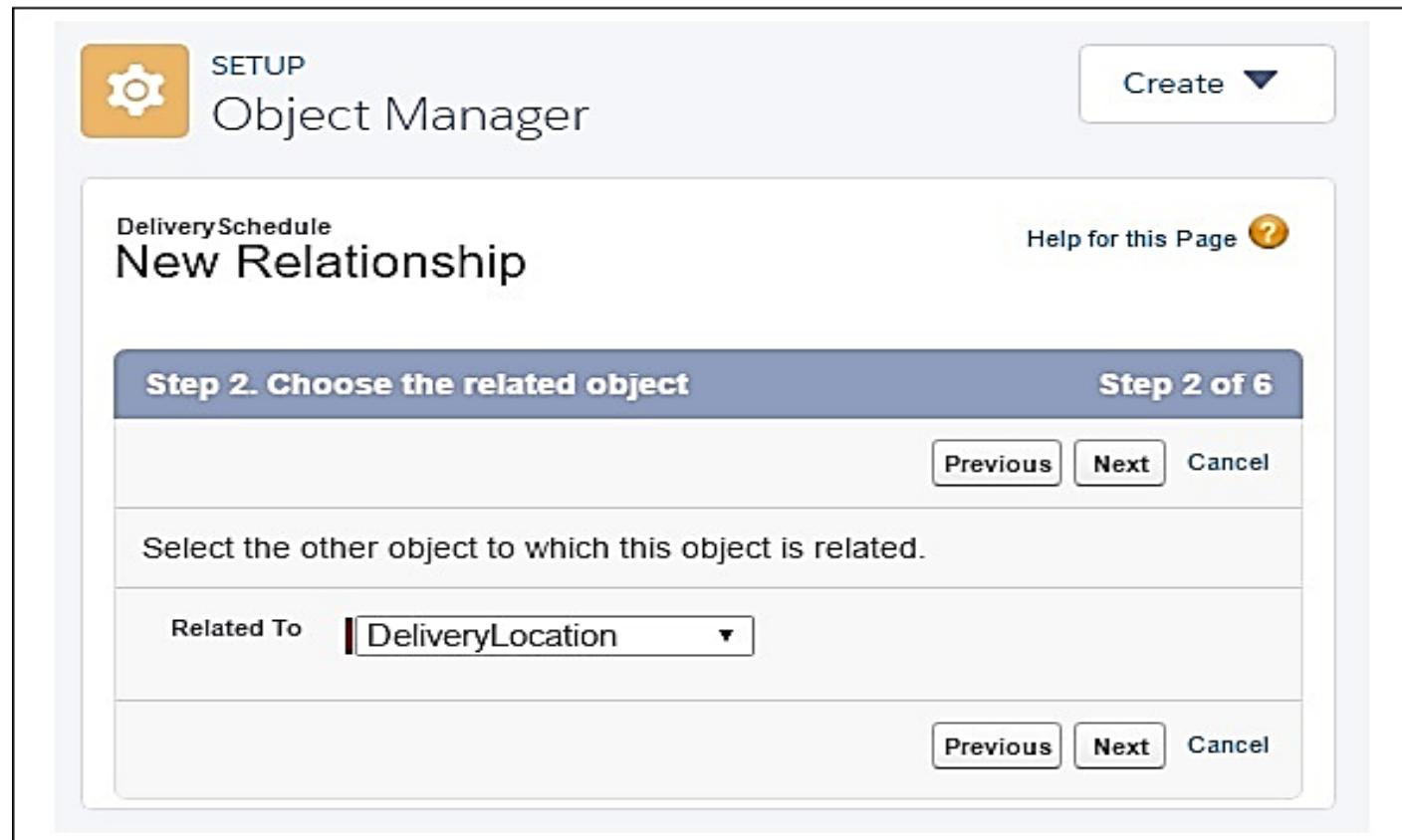
Steps to create Master-Detail Relationship in salesforce

- **Select the Detail Object:** Identify the object that will serve as the detail object in the relationship.
- **Create a New Field:** Within the detail object's page, click on the Fields & Relationships section, and then click on New.
- **Select Field Type:** In the New Custom Field page, choose Master-Detail Relationship and then click Next.



Steps to create Master-Detail Relationship in salesforce

- **Select Master Object:** You will then be asked to select the master object that you want your detail object to relate to. Choose the appropriate master object from the list and then click Next.



Steps to create Master-Detail Relationship field

- **Define Field Properties:**
- Now, you need to set the field properties.
- Provide a Field Label and a Field Name.
- The field name will be auto-populated based on the label you input, but it can be customized if required.
- Click Next after filling in these details.

The screenshot shows the 'Object Manager' interface in 'SETUP' mode, specifically 'Step 3. Enter the label and name for the lookup field' of a six-step process. The 'Field Label' is set to 'DeliveryLocation'. The 'Field Name' is also set to 'DeliveryLocation'. There is a 'Description' section which is currently empty. The 'Help Text' section is also empty. The 'Child Relationship Name' is set to 'DeliverySchedules'. Under 'Sharing Setting', the 'Read Only' radio button is selected, with a note: 'Select the minimum access level required on the Master record to create Child records.' Below this, the 'ReadWrite' radio button is selected. A checkbox labeled 'Allow reparenting' is checked. A note states: 'Child records can be reparented to other parent records after they are created.' The 'Lookup Filter' section contains a note: ' Optionally, create a filter to limit the records available to users in the lookup field. [Tell me more!](#)' and a link to 'Show Filter Settings'. At the bottom right are 'Previous', 'Next', and 'Cancel' buttons.

Steps to create Master-Detail Relationship field

- **Set Field-Level Security:** In this step, you can determine which user profiles will be able to see and access the new Master-Detail relationship field. After making your selections, click Next.
- **Add to Page Layout:** The system will then ask you to select the page layouts you want the new Master-Detail relationship field to appear on. Make your selections and click Save.

The screenshot shows the Salesforce Object Manager interface, specifically the 'Step 6: Add custom related lists' screen. At the top, there's a 'Create' button. The main area displays the following details for a new field:

Field Label	DeliveryLocation
Data Type	Master-Detail
Description	(empty)

Below these fields, a note says: "Specify the title that the related list will have in all of the layouts associated with the parent." A 'Related List Label' input field contains the value "DeliverySchedules".

Underneath, a note states: "These are the page layouts that will include this field. Because this is a Master-Detail relationship, the field is required." A table titled "Add Related List" shows one entry:

Add Related List	Page Layout Name
<input checked="" type="checkbox"/>	DeliveryLocation Layout

At the bottom, there's a checkbox labeled "Append related list to users' existing personal customizations" with the checked option selected. Navigation buttons at the bottom include "Previous", "Save & New", "Save", and "Cancel".

Lookup Relationship

- A lookup connection is a loosely connected relationship in which one object refers to another.
- It enables one object (child) to link to another object (parent) without requiring the parent record to be present.
- A single-parent record can have multiple child records linked to it, and the child record can exist independently of the parent record.
- Child records in a lookup relationship are not owned by the parent record.
- When a parent record is deleted, the child record is not affected, and the lookup field on the child record is left empty.
- Lookup relationships do not automatically inherit the parent record's sharing and security settings. Access to the parent record does not allow access to the child records that are related to it.

Lookup Relationship

Student (One)



Book (Many)

Lookup Relationship Field created in Many Object

Lookup Relationship

Student (One)

Std.No	SName
S-001	Ravi
S-002	Ashok

BOOK (Many)

B.No.	BName	Price
B1	C++	1200
B2	Python	1700

After Lookup Relationship field created on the Many object

BOOK

B.No.	BName	Price	Rel Std.No
B1	C++	1200	S-002
B2	Python	1700	S-001

Student

Std.No	SName	Taken Book
S-001	Ravi	B2
S-002	Ashok	B1

Steps to create Lookup Relationship field

1. Go to **SETUP > OBJECT MANAGER**
2. Choose the Child Object that will be part of the Lookup Relationship.
3. Click on Custom Fields and Relationship, then click the New button.

Steps to create Lookup Relationship field

4. Select the Lookup Relationship option and click on Next.

The screenshot shows the 'Step 1. Choose the field type' page of a custom field creation wizard. At the top, there's a title bar with 'Sample New Custom Field' and a 'Help for this Page' link. Below it, a progress bar indicates 'Step 1' is active. The main area is titled 'Data Type' and contains five options:

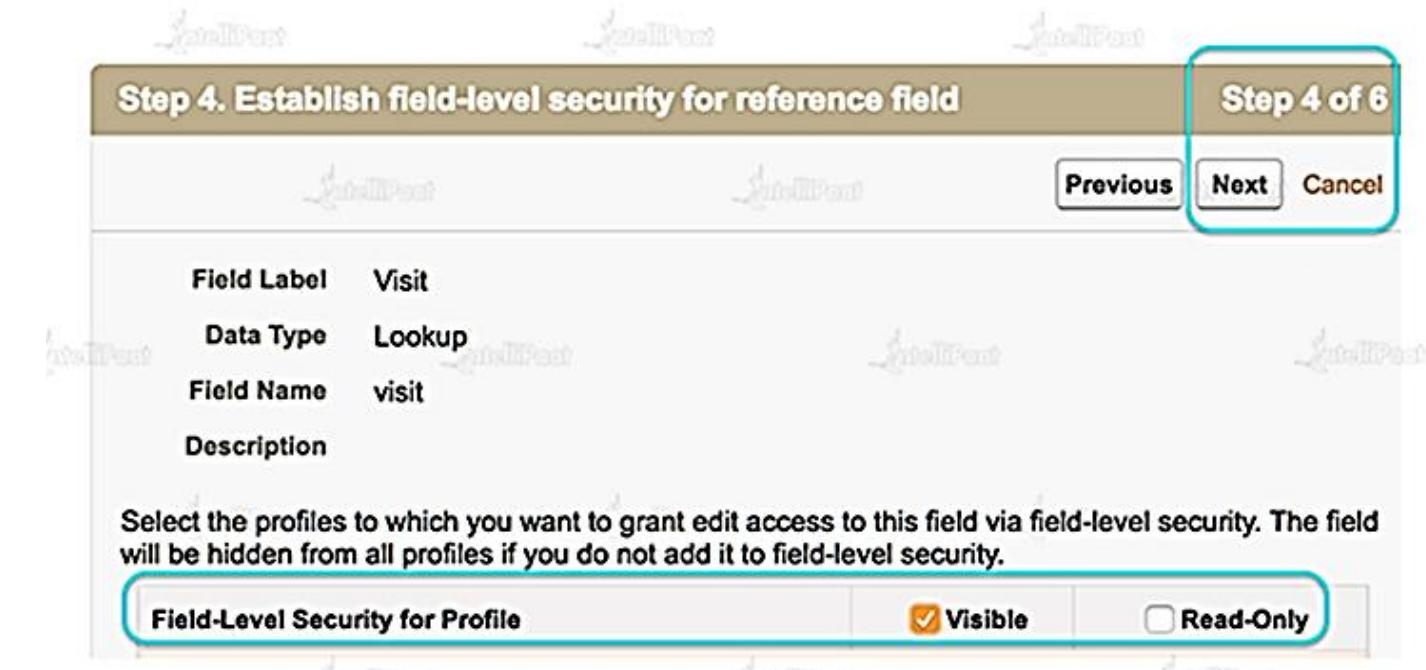
- None Selected: Select one of the data types below.
- Auto Number: A system-generated sequence number that uses a display format you define. The number is automatically incremented for each new record.
- Formula: A read-only field that derives its value from a formula expression you define. The formula field is updated when any of the source fields change.
- Roll-Up Summary: A read-only field that displays the sum, minimum, or maximum value of a field in a related list or the record count of all records listed in a related list.
- Lookup Relationship: Creates a relationship that links this object to another object. The relationship field allows users to click on a lookup icon to select a value from a popup list. The other object is the source of the values in the list.

The 'Lookup Relationship' option is highlighted with a red box. At the bottom right of the page are 'Next' and 'Cancel' buttons.

5. Choose the Related to Object label, and then select the Child Object. Provide the Field Label, Field Name, and click “Next.”

Steps to create Lookup Relationship field

6. Configure the field-level security for the reference field. Ensure all profiles have access to the field-level security, then click “Save.”



The screenshot shows a step-by-step configuration interface for creating a lookup relationship field. The top bar indicates "Step 4 of 6". The main section displays the following details:

Field Label	Visit
Data Type	Lookup
Field Name	visit
Description	(empty)

A note below states: "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 add it to field-level security." At the bottom, there is a "Field-Level Security for Profile" section with two checkboxes: "Visible" (checked) and "Read-Only".

7. Select the page layout for the child object field and select “Next.”
8. Click “Add Custom Related List” in the new window and click “Save.”

Look Up Relationship	Master-Detail Relationship
We can create 25 lookup relationships for both standard and custom objects	We can create only 2 master- detail relationships for both standard and custom objects
Look Up Relationship can create even if records already exists in child object	master- detail relationships cant be created if records already exists in child object.
If we delete parent record, then child records will not be deleted/	If we delete parent record, then child records will be deleted automatically.
It is a Optional field	It is a Mandatory field
The ownership and sharing of a child record are not determined by the parent record	The ownership and sharing of a child record are determined by the master record

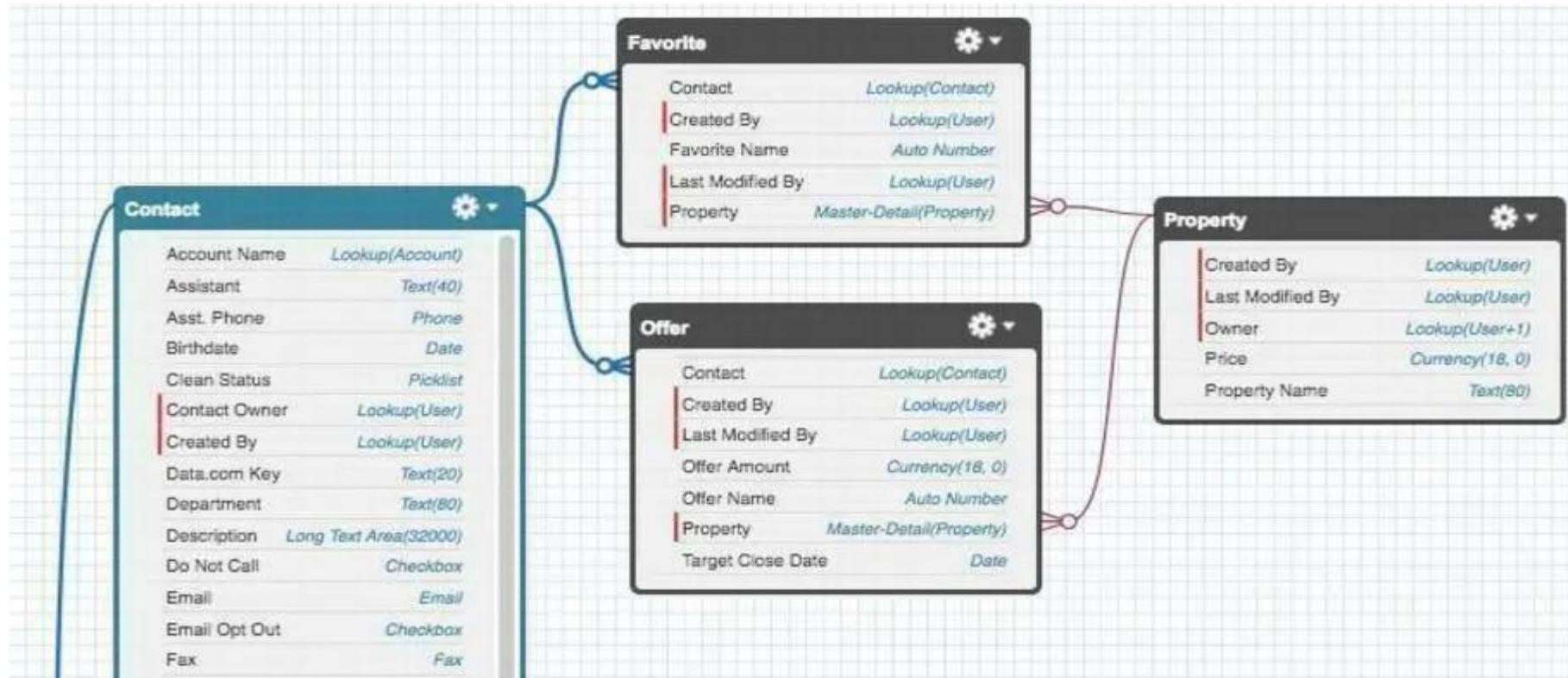
Work with Schema Builder

- **Schema Builder** is a tool that lets you **visualize and edit** your data model.
 - It's useful for designing and understanding complex data model.
1. From Setup, search for and click Schema Builder in the Quick Find box.



Work with Schema Builder

- In the left panel, click **Clear All**.
- Check Contact, Favorite, Offer, and Property.
- Click **Auto-Layout**.



Work with Schema Builder

- You can drag these objects around the canvas.
- This doesn't change your objects or relationships.
- But it can help you visualize your data model in a useful way.
- Schema Builder is a handy tool for introducing your Salesforce customizations to a co-worker or explaining the way data flows throughout your system.

Create an Object with Schema Builder:

- In the left sidebar, click the **Elements** tab.
- Click **Object** and drag it onto the canvas.
- Enter information about your object. You can make it whatever you want.
- Click **Save**.

Work with Schema Builder

Create Fields with Schema Builder:

Creating fields with Schema Builder is just like creating objects.

- From the **Elements tab**, choose **a field type** and **drag it onto the object** you just created.

Notice that you can **create relationship fields, formula fields, and normal fields** in Schema Builder.

- **Fill out the details** about your new field.
- **Click Save.**

Salesforce Application

Application, commonly referred to as App, is a **particular tool or program used to complete a specific set of functions.**

Used as a container to **store all the tabs and objects along with their functionality.**

Various tabs form a group that eventually **works together and performs multiple responsibilities** of the app.
An App simply consists of 3 major components,

1. Logo
2. Name
3. Ordered Set of Tabs

We have two types of apps in Salesforce,



Standard Apps

- Standard apps come with **every occurrence of Salesforce as default.**
- These apps are already included in the Salesforce instant, and we get default access to them.
- Users have a **little bit of control over making necessary changes** and get the best output.
- However, some aspects like **description, label, and logo are fixed**, and we can't change them.

Example - Sales, Community, Salesforce Chatter, Marketing, etc.

Custom Apps

- Custom apps are created according to the **needs of a company** to fulfill specific demands of a business.
- Custom Apps are user-oriented.
- On top of it, we can **combine standard and custom tabs to create a unique app** accordingly.
- The best thing is that we can **change the logo and other details** in the future if necessary.

We can see a list of both standard and custom apps on the platform by clicking on the **“App Launcher”** on the Salesforce home page.

Setup Home Object Manager

App Launcher

Search Setup

Visit AppExchange

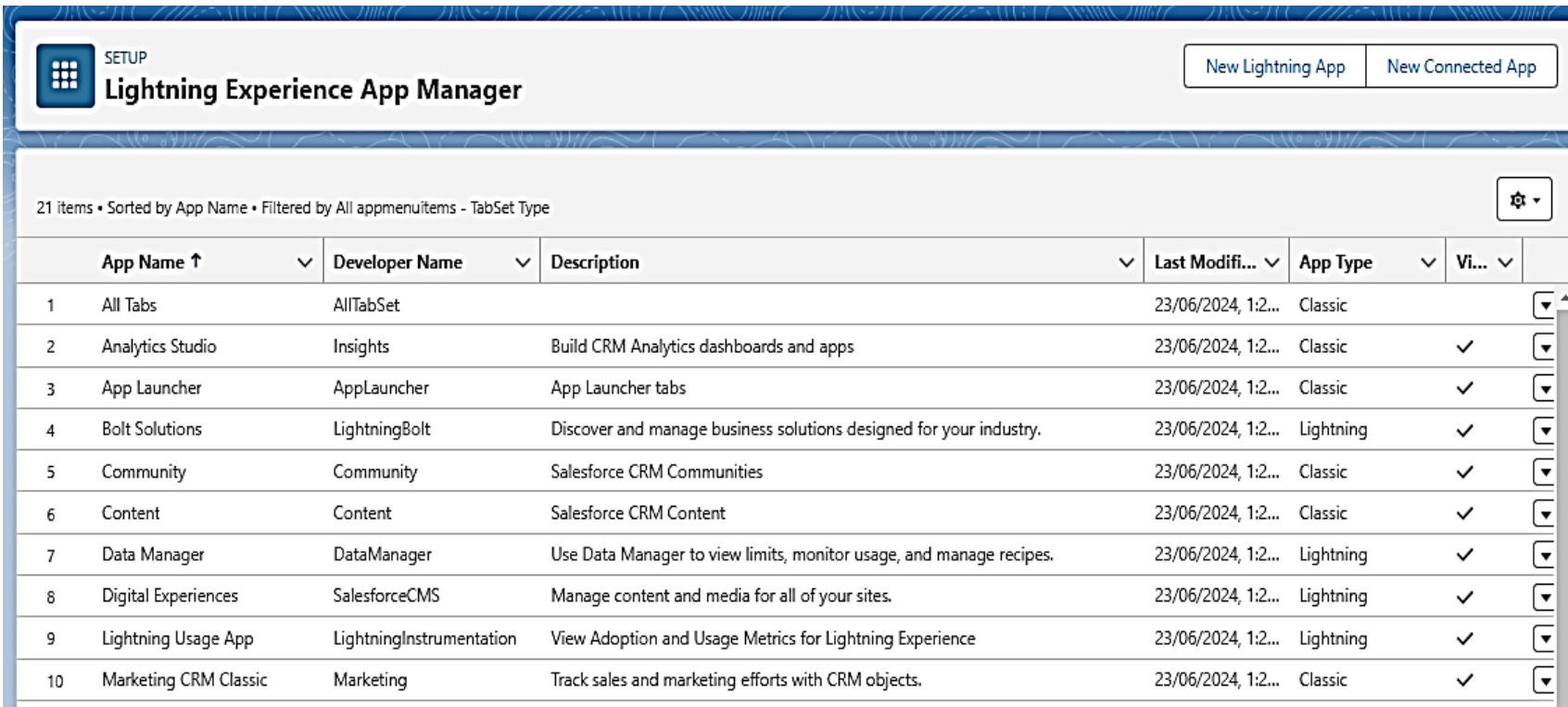
All Apps

 Service Manage customer service with accounts...	 Marketing Best-in-class on-demand marketing automation	 Community Salesforce CRM Communities
 Salesforce Chatter The Salesforce Chatter social network, including...	 Content Salesforce CRM Content	 Sales Console (Lightning Experience) Lets sales reps work with...
 Service Console (Lightning Experience) Lets support agents work...	 Sales Manage your sales process with accounts, leads...	 Lightning Usage App View Adoption and Usage Metrics for Lightning...
 Salesforce CMS Manage content and media for all of your sites	 Salesforce Scheduler Setup Set up personalized appointment scheduling.	 Bolt Solutions Discover and manage business solutions...
 Test		

CRM

Steps to Create a Custom Salesforce app

1. Search for “apps” on the “Quick Find” box and select “App Manager.”



The screenshot shows the "Lightning Experience App Manager" interface. At the top, there's a header with a "SETUP" button, a "Lightning Experience App Manager" title, and two buttons: "New Lightning App" and "New Connected App". Below the header is a search bar with placeholder text "Search for an app or feature" and a "Find" icon. A message below the search bar says "21 items • Sorted by App Name • Filtered by All appmenuitems - TabSet Type". The main area is a table with the following columns: App Name, Developer Name, Description, Last Modified, App Type, and Visibility. The table lists 10 apps, each with a "Edit" icon in the last column.

	App Name ↑	Developer Name	Description	Last Modified	App Type	Vi...	
1	All Tabs	AllTabSet		23/06/2024, 1:2...	Classic	✓	▼
2	Analytics Studio	Insights	Build CRM Analytics dashboards and apps	23/06/2024, 1:2...	Classic	✓	▼
3	App Launcher	AppLauncher	App Launcher tabs	23/06/2024, 1:2...	Classic	✓	▼
4	Bolt Solutions	LightningBolt	Discover and manage business solutions designed for your industry.	23/06/2024, 1:2...	Lightning	✓	▼
5	Community	Community	Salesforce CRM Communities	23/06/2024, 1:2...	Classic	✓	▼
6	Content	Content	Salesforce CRM Content	23/06/2024, 1:2...	Classic	✓	▼
7	Data Manager	DataManager	Use Data Manager to view limits, monitor usage, and manage recipes.	23/06/2024, 1:2...	Lightning	✓	▼
8	Digital Experiences	SalesforceCMS	Manage content and media for all of your sites.	23/06/2024, 1:2...	Lightning	✓	▼
9	Lightning Usage App	LightningInstrumentation	View Adoption and Usage Metrics for Lightning Experience	23/06/2024, 1:2...	Lightning	✓	▼
10	Marketing CRM Classic	Marketing	Track sales and marketing efforts with CRM objects.	23/06/2024, 1:2...	Classic	✓	▼

2. It leads you to the Lightning Experience App Manager. Here, you can choose the “New Lightning App” option to begin the custom app creation.

3. On the window that pops up, enter the app name, developer name, and description. We can also pick a color theme for the app or upload an image containing the app logo in this step.

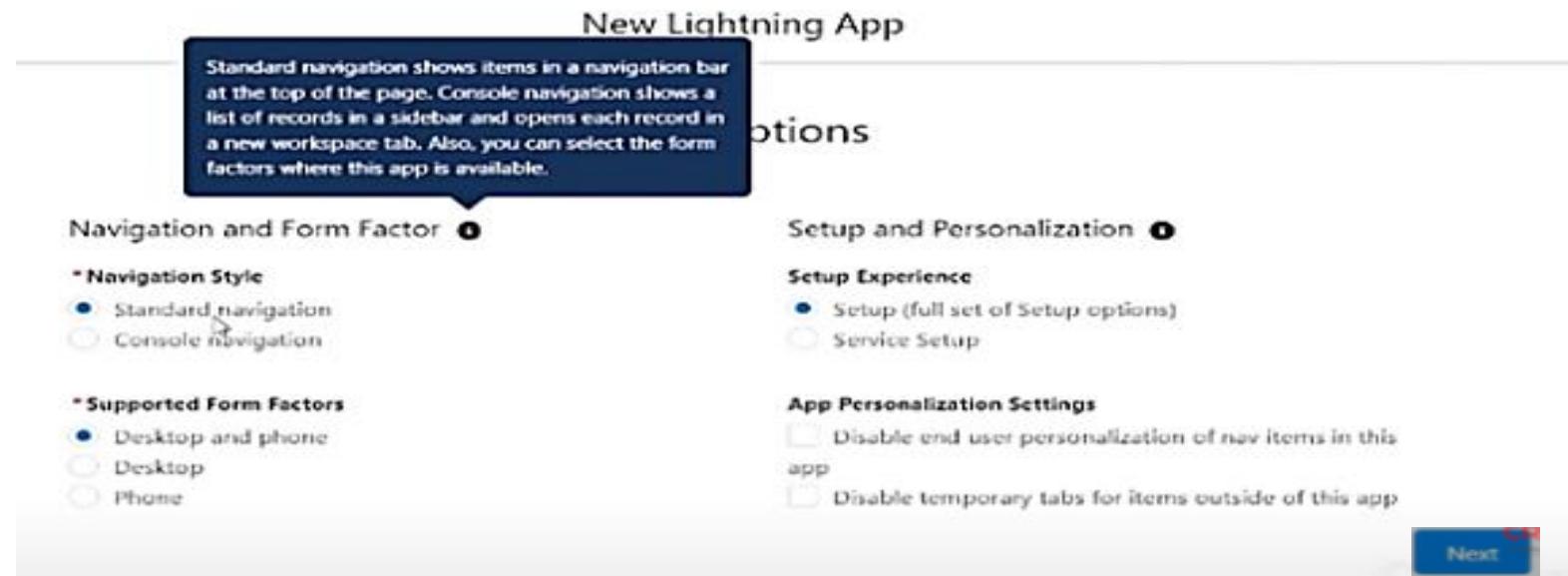
App Details & Branding

Give your Lightning app a name and description. Upload an image and choose the highlight color for its navigation bar.

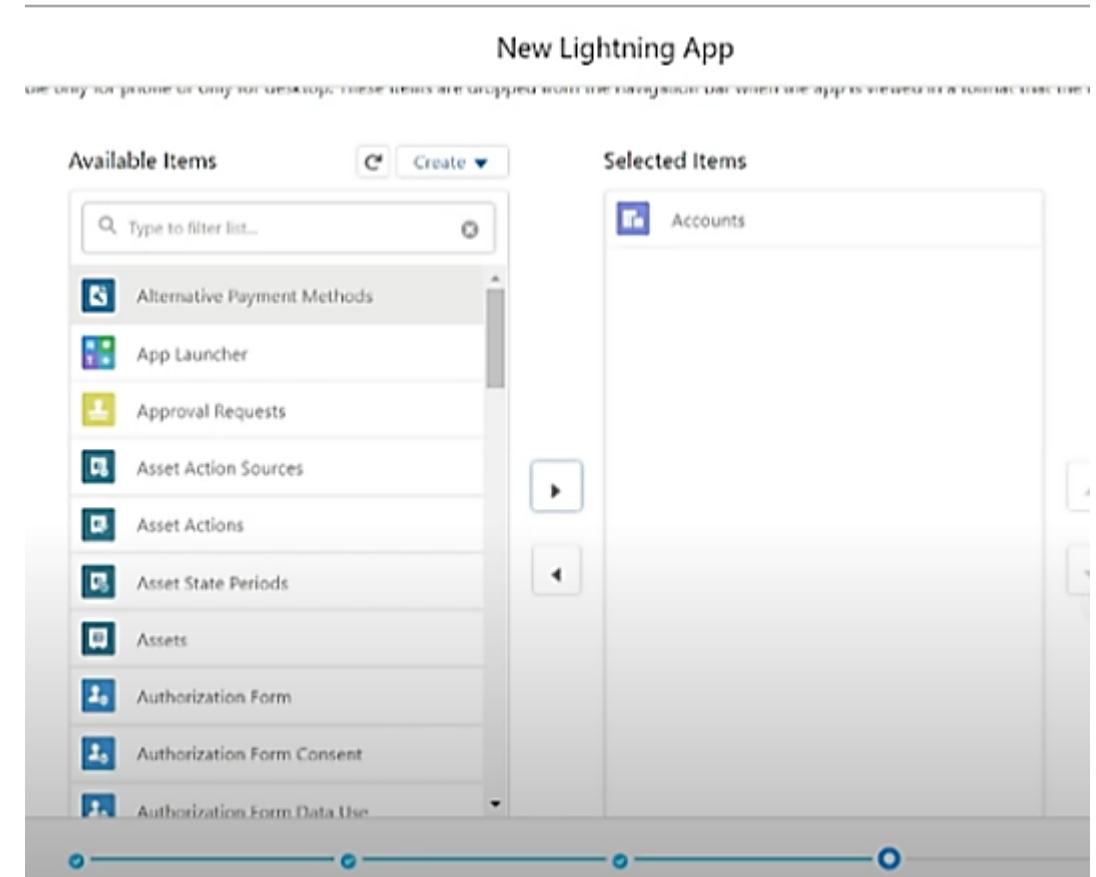
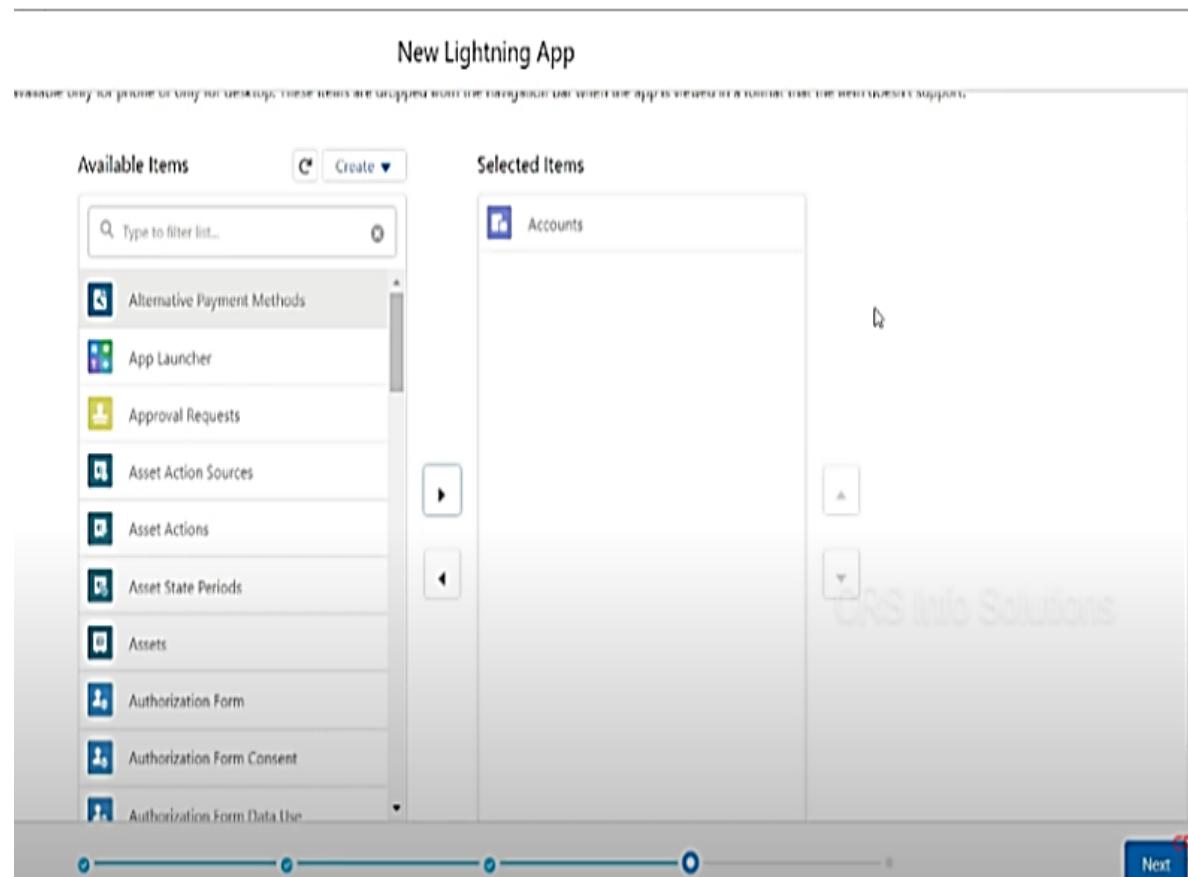
App Details	App Branding
* App Name <small>(Required)</small> University Management	Image <small>(Required)</small> <input type="button" value="Upload"/>
* Developer Name <small>(Required)</small> University Management	Primary Color Hex Value <input type="color" value="#007002"/> #007002
Description <small>(Optional)</small> Enter a description...	Org Theme Options <input type="checkbox"/> Use the app's image and color instead of the org's custom theme
App Launcher Preview	

Next

4. Then, click the “**Next**” button to start **setting up app options**. We can select the preferred navigation style, supported form factors, setup experience, and app personalization settings. For now, you can go with the **default options** provided here in this step.



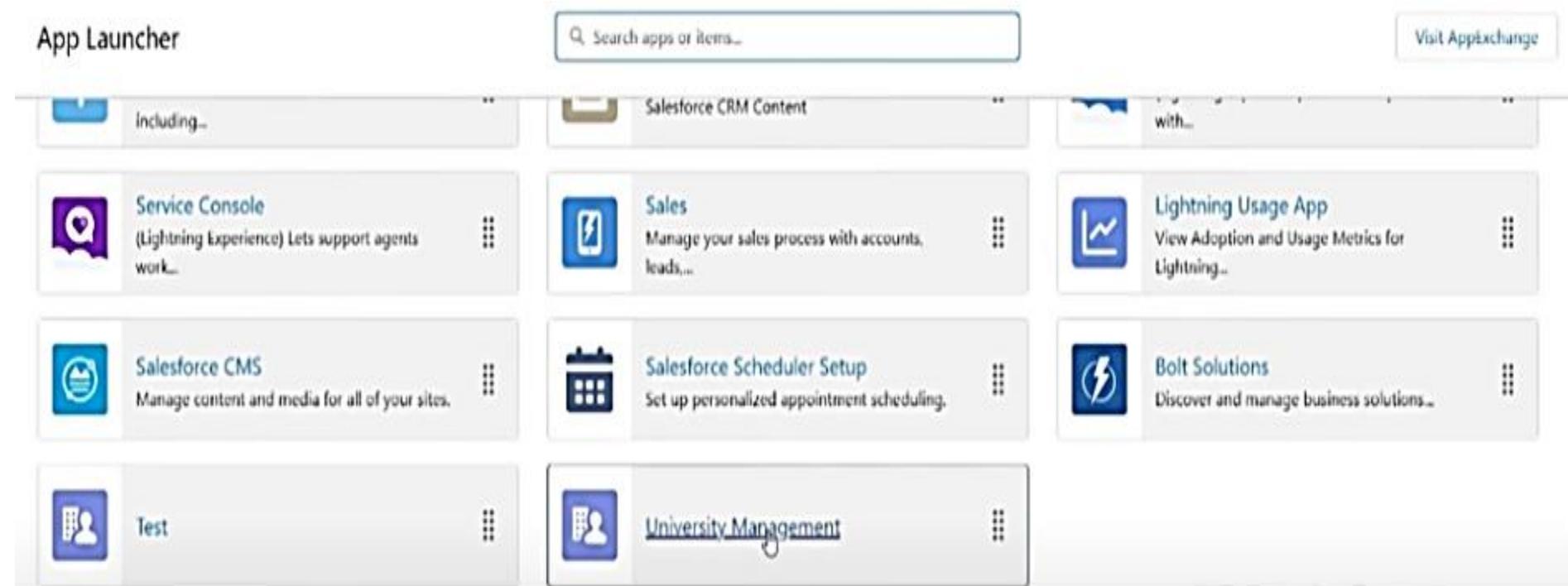
5. Now, click “Next” to go to the “Utility Items” page. You can keep it as default and move to the next page by click on to the “Next” button.



6. Here, we have to choose a set of items to include in the app. The **left side of the page** shows a list of **standard objects** Salesforce provides, such as Accounts and Assets. For example, let's simply pick the Accounts object to add to the new app (University Management).

7. Then, go to the next page to select profiles for your app. You can search for the **default “System Administrator” profile** and add it to the app

8. Next, **save and finish** the app creation process. Now we can **view this new app (University Management) on the App Launcher**.



Data Management

- Data Managements means **import/export of data** (or data sets) from/to the external system using out of the box or third-party tools.

We can classify into two types:

1. **Data Import-** Importing means **uploading and syncing datasets** from various databases or cloud repositories into your Salesforce account.
2. **Data Export-** Exporting means **creating a copy, extracting, and syncing your data** from Salesforce into **another format and app**, such as exporting a Salesforce report to a spreadsheet file in **CSV (Comma Separated Value) format**.

Data Management

Import Data:

- Easily import external data into Salesforce.

Salesforce offers two main methods for importing data.

- **Data Import Wizard** - a **tool available within Salesforce** Setup,
- **Data Loader** - an **external tool provided by Salesforce** that easily connects to your orgs.
- **Data Import Wizard**
 - tool, accessible through the Setup menu.
 - import data in common standard objects as well as data in custom objects.
 - It can import up to 50,000 records at a time

Use the Data Import Wizard When:

- You need to load less than 50,000 records.
- The objects you need to import are supported by the wizard.
- You don't need the import process to be automated.

Data Management

- There are **3 operations possible** while Importing Data in Salesforce using Data Import Wizard:
 - **Insert** – Simply creates new records in Salesforce.
 - **Update** – Modifies existing records in Salesforce with the help of a record id or external id.
 - **Upsert** – Combination of insert and update. It modifies the existing records and creates a new one if the record is unavailable in the organization.

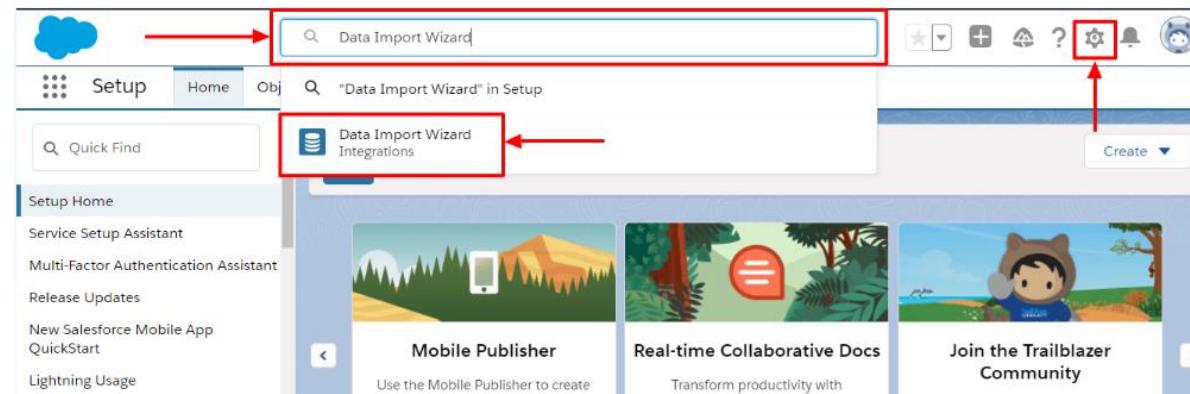
Data Management

Steps to Use the Data Import Wizard:

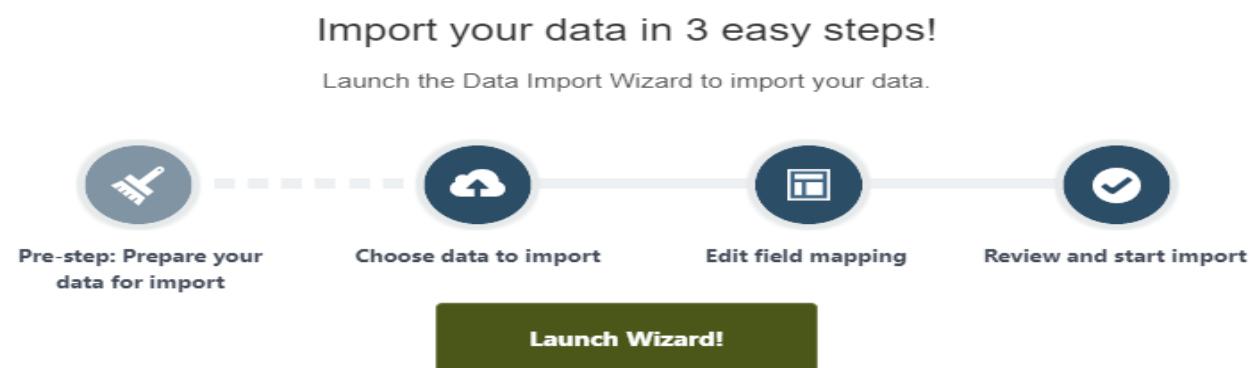
Step 1: Prepare your file for import After preparing your import data, **save it as a CSV file**.

Step 2: Start the wizard.

- i. From Setup, enter Data Import Wizard in the Quick Find box, then select **Data Import Wizard**.



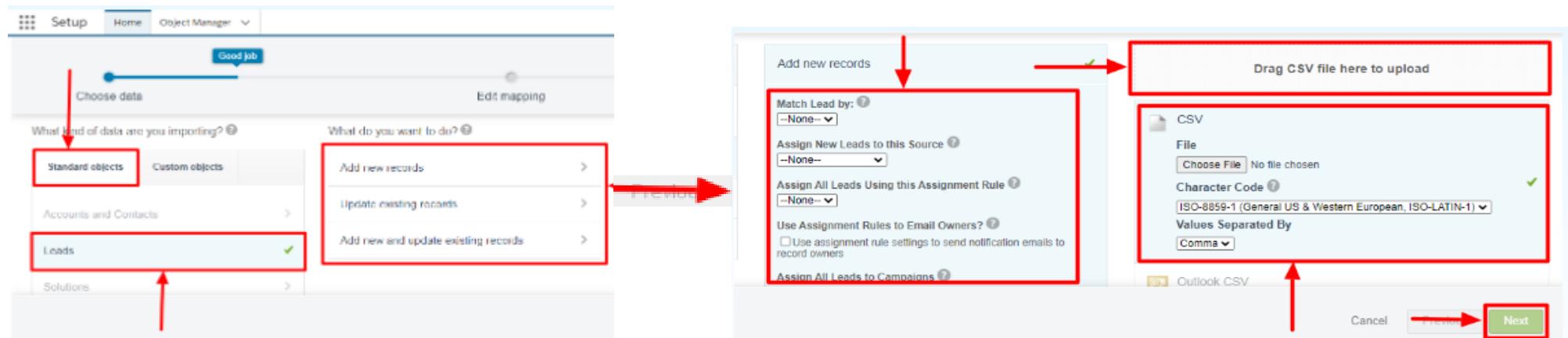
- ii. Review the information provided on the welcome page, then click **Launch Wizard!**



Data Management

Step 3: Choose the data that you want to import.

- i. To import accounts, contacts, leads, solutions, person accounts, or campaign members, click **Standard Objects**.
- ii. To import custom objects, click **Custom Objects**.
- iii. Specify whether you want to add new records to Salesforce, update existing records, or add and update records simultaneously.
- iv. Specify matching and other criteria as necessary. Hover over the question marks for more information about each option.
- v. Specify the file that contains your data. You can **specify your data file by dragging the CSV to the upload area** of the page or by clicking the CSV category you're using and then navigating to and selecting the file.



- vi. Choose a character encoding method for your file. Most users can accept the default character encoding.
- vii. Click **Next**.

Data Management

Step 4. Map your data fields to Salesforce data fields. Salesforce will mark your **unmapped fields**. Click *Map* under the *Edit* column to change and map the fields to an existing Salesforce field.

CSV Header	Mapped Salesforce Object	Edit
First Name+Last Name	Unmapped	Map
Last Name	Change	Last Name
email	Change	Email
Phone	Change	Phone
Title	Change	Title
Company	Change	Company
Address Line 1	Map	Unmapped

Review and start your import.

Review your import information on the Review page. If you still have unmapped fields that you want to import, click **Previous** to return to the previous page and specify your mappings.

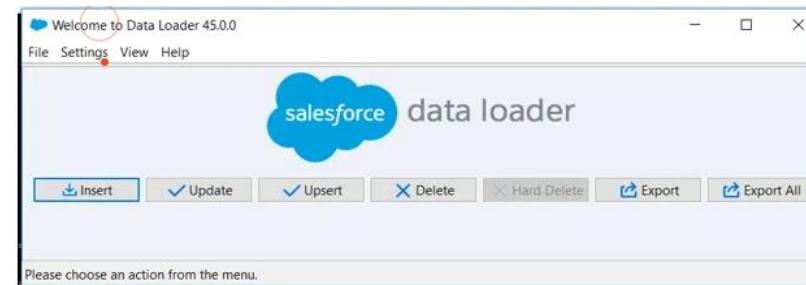
Click **Start Import**

Step 5. Check import status. From Setup, enter “Bulk Data Load Jobs” in the Quick Find box, then select **Bulk Data Load Jobs**. The user who starts the data import receives a status email when the import is completed.

Data Management

ii) Data Loader

- The Data Loader tool is the most **efficient external tool** to move data rapidly into the platform. It is used not only for **importing and exporting data** but also does **updating and deleting data**.
- The Data Loader is a complex tool that supports all standard objects and custom objects.



- a client application that can **import up to 150 million records** at a time, of any data type, either from files or a database connection the ability to handle large volumes of data, the Data Loader is ideal for complex data migration tasks.
- It can be operated either through the **user interface or the command line**.
- You need to specify data sources, field mappings, and other parameters via configuration files.
- This makes it possible to automate the import process, using API calls.

Use Data Loader When:

You need to load 50,000 to 150 million records.

You need to load into an object that is not supported by the Data Import Wizard.

You want to schedule regular data loads, such as nightly imports.

Data Import Wizard	Data Loader
Used for simple data imports.	Used for complex data imports.
Can load up to 50,000 records.	Can load up to 5,00,000 records.
Supports all the custom objects and only a few standard objects like Account, Contact, Campaign members, person accounts, Leads, and Solution.	Supports all custom and standard objects.
Supports scheduled export.	Doesn't support scheduled export.
Delete operation is not available.	Delete operation is available.
Cannot import cases and opportunities.	Can import cases, events, tasks, and opportunities.
Duplicates can be ignored while importing.	Duplicates cannot be ignored while importing.
Doesn't require installation.	Requires installation.

Data Management

Export Data:

- Easily export data from Salesforce, either manually or on an automatic schedule.
- The data is exported as a set of **comma-separated values (CSV) files**.
- Data export tools provide a convenient way to obtain a copy of your Salesforce data, either for backup or for importing into a different system.

Salesforce offers two main methods for exporting data.

- **Data Export Service**
- **Data Loader**

Data Management

Data Export Service:

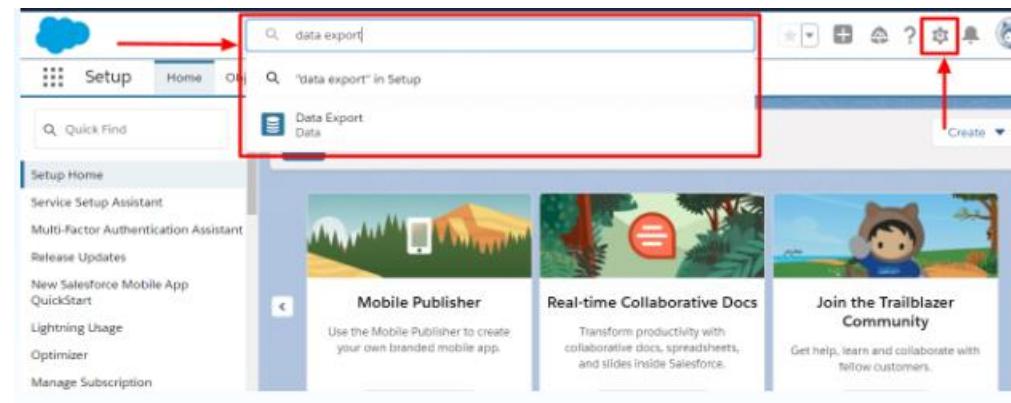
- Accessible through the **Setup menu**.
- It allows you to **export data** manually **once every 7 days** (for weekly export) **or 29 days** (for monthly export).
- In **Professional Edition and Developer Edition**, you can **generate backup files only every 29 days**, or automatically at **monthly intervals** only.

Data Management

Steps to Use the Data Export Service:

Step 1: Navigate to the Data Export option on Salesforce

On the Salesforce interface, navigate to *Setup* and enter *Data Export* in the search box.



Choose either Export Now or Schedule Export.

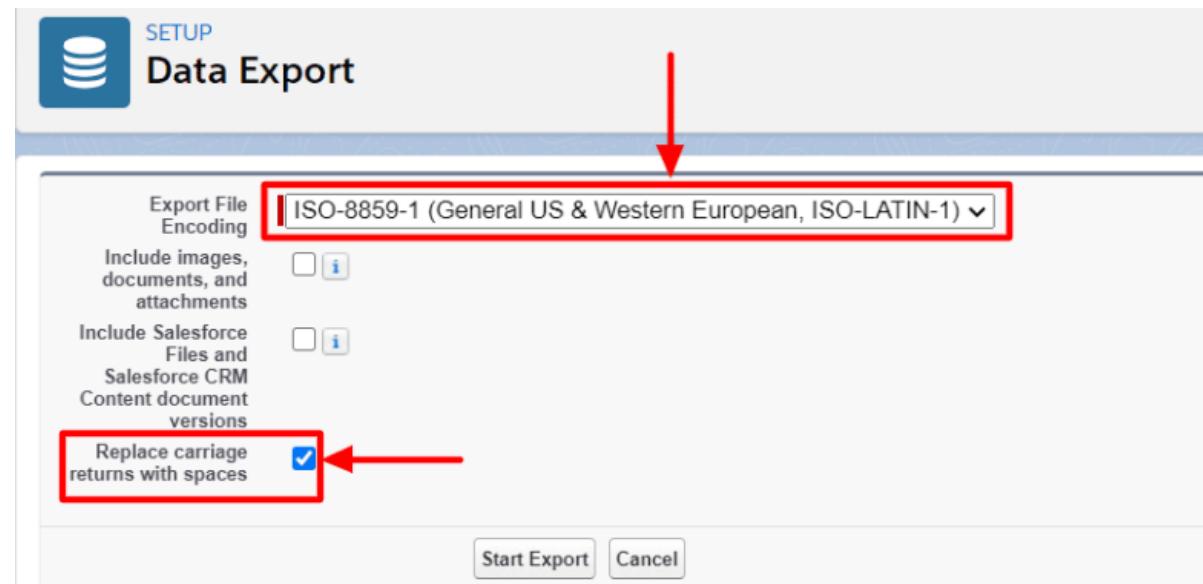
- The **Export Now** option prepares your files for **export immediately**. This option is only available if enough time has passed since your last export.
- The **Schedule Export** option allows you to schedule the export process to **run at monthly intervals**.

Data Management

Step 2: Choose the desired encoding for your export file

If you want images, documents, attachments, and so on included in your data, select the appropriate options.

Select **Replace carriage returns with spaces** to have spaces instead of carriage returns or line breaks in your export files. This is useful if you plan to use your export files for importing or other integrations.



Data Management

Select the types of info you want to include in your export. If you're not familiar with Apex API names, choose *Include all data* and click *Start Export*.

Start Export Cancel

Exported Data
Select what type of information you would like to include in the export. The data types listed below use the Apex API names. If you are not familiar with these names, select *Include all data* for your export.

Include all data

<input type="checkbox"/> Contract	<input type="checkbox"/> Order	<input type="checkbox"/> OrderItem
<input type="checkbox"/> Approval	<input type="checkbox"/> ContractContactRole	<input type="checkbox"/> RecordType
<input type="checkbox"/> BusinessProcess	<input type="checkbox"/> EntityHistory	<input type="checkbox"/> FieldHistory
<input type="checkbox"/> EmailRoutingAddress	<input type="checkbox"/> Campaign	<input type="checkbox"/> CampaignMember
<input type="checkbox"/> Account	<input type="checkbox"/> Contact	<input type="checkbox"/> Lead

Step 3: Schedule your export

Configure your export schedule by setting the frequency, (only available for organizations with monthly exports), start and end dates, and time of day for your scheduled export.

SETUP Data Export

Schedule Data Export

with spaces

Frequency

On day of every month On of every month

Start End

4/29/2021

Preferred Start Time

Exact start time will depend on job queue activity.

Save Cancel

Data Management

Click **Save** when you're done (or **Start Export** if you're not scheduling, but instead exporting your Salesforce files immediately)..

Salesforce creates **a zip archive of CSV files** and **emails you** when it's ready.

Exports will complete as soon as possible.

However, we can't guarantee the date and time the export will complete. Large exports are broken up into multiple files.

Follow the link in the email or click **Data Export** to download the zip file.

Zip files are deleted 48 hours after the email is sent.

Data Management

Data Loader:

- A client application that you must install separately.
- It can be operated either through the user interface or the command line.
- The latter option is useful if you want to automate the export process, or use APIs to integrate with another system.

Picklist Administration

Salesforce Picklist Fields

- A picklist is a **list box of pre-defined values**. The user can only select one of the pre-defined values.
- Only the Administrator has the ability to add or delete picklist values. It is a **simple dropdown menu** of options.

Values in Salesforce Picklist:

In salesforce value can be defined in three ways:

- We can **use a predefined picklist** which is a standard picklist field by salesforce.com.
- When we create a picklist we need to **set individual values** (specific to a single picklist field).
- Create a **global value set**. When we need to share with more than one picklist field, we can **set a global value set**.

There are three different types of picklists available in Salesforce:

- 1. Standard**
- 2. Custom**
- 3. Custom Multi-Select**

1. Standard Picklists:

- These picklists are the **default options provided within your Salesforce org**, requiring no customization.
- They typically **consist of common fields essential for standard objects** within your organization.
- For example,

In a **Lead object**, there is a **picklist field named LeadSource** which is a standard picklist. It has some standard value sets.

It also utilized for the Account Source picklist field on the Account object. Changes made to these standard picklist values are reflected across related fields.

Standard Picklists

The screenshot shows the Salesforce Object Manager interface for the Lead object. The top navigation bar includes 'Setup', 'Home', and 'Object Manager'. The left sidebar lists various configuration tabs: Details, Fields & Relationships (selected), Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, and Object Limits. The main content area is titled 'Fields & Relationships' with a sub-label '32 Items, Sorted by Field Label'. It displays a table with columns for Field Label, API Name, and Type. A red oval highlights the 'Lead Source' field, which is defined as 'LeadSource' of type 'Picklist'. Other visible fields include 'Last Modified By', 'LastTransferDate', 'OwnerId', and 'Status'.

Field Label	API Name	Type
Last Modified By	LastModifiedById	Lookup(User)
Last Transfer Date	LastTransferDate	Date
Lead Owner	OwnerId	Lookup(User,Group)
Lead Source	LeadSource	Picklist
Lead Status	Status	Picklist

2. Custom Picklists: (**Global value set**)

As their name suggests, these picklists are **user-created** according to specific requirements. Users can add their own values and configure custom picklists' behavior to align with their needs.

A Global Picklist Value Set in Salesforce means a picklist which you can access for all salesforce objects.

Steps to create a Global Picklist value set:

Step 1: Go to ‘Picklist Value Sets’ under Setup → Home → Quick find.

The screenshot shows the Salesforce Setup interface. At the top, there's a navigation bar with a cloud icon, 'Setup', 'Home', and 'Object Manager'. A search bar says 'Search Setup' with a magnifying glass icon. On the left, a sidebar has sections for 'Data' (including 'Picklist Settings' and 'State and Country/Territory Picklists') and 'Objects and Fields' (including 'Picklist Value Sets', which is highlighted). Below the sidebar, a message says 'Didn't find what you're looking for? Try using Global Search.' The main content area has a title 'Picklist Value Sets' with a blue icon. It contains a sub-section titled 'Picklist Value Sets' with a description: 'Global picklist value sets let you share the values across objects. Base custom picklist fields on a global value set to inherit its values. The value set is restricted so users can't add unapproved values.' Below this is a table header 'Global Value Sets' with columns 'Label' and 'Description'. A 'New' button is at the top right of the table. The table body shows one entry: 'No records to display.' and 'Deleted Global Value Sets (0)'.

Step 2: Click on ‘New’ button.

Picklist Value Sets

Global picklist value sets let you share the values across objects. Base custom picklist fields on a global value set to inherit its values. The value set is restricted so users can't add unapproved values through the API.

View: All ▾ Create New View

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Other **All**

Global Value Sets	New	Description
Label ↗ No records to display. Deleted Global Value Sets (0)		

Step 3: Enter a label, name, and description. Then put all the Picklist values in the provided Text area as one value per line.

Global Value Set

Global Value Set Edit

Save **Save & New** Cancel

Information

Label: Country
Name: Country 
Description: This contains all the Country names

Values

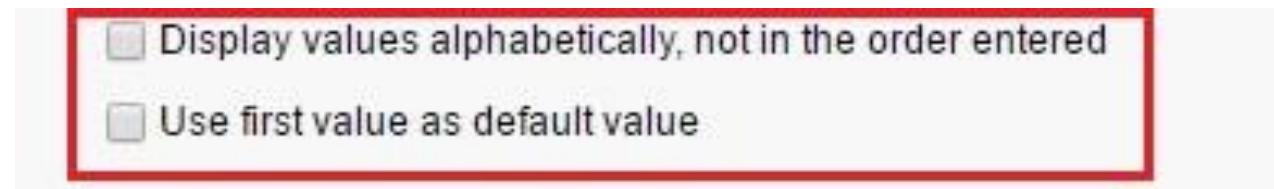
Enter values, with each value separated by a new line

India
USA
Australia
United Kingdom

Display values alphabetically, not in the order entered
 Use first value as default value

Save Save & New Cancel

Step 4: Optionally choose to sort the values alphabetically or to use the first value as the default value, or both. You can't change these settings later.



Step 5: Click Save

Global Value Set

[« Back to List](#)

[Printable View](#) | [Help for this Page](#)

Global Value Set Detail

[Edit](#) [Delete](#)

Information

Label	Country
Name	Country
Description	This contains all the Country names

[Edit](#) [Delete](#)

Values

Action	Values	API Name	Default	Chart Colors	Modified By
Edit Del Deactivate	India	India	<input type="checkbox"/>	Assigned dynamically	Salesforce Training, 6/20/2017 11:07 PM
Edit Del Deactivate	USA	USA	<input type="checkbox"/>	Assigned dynamically	Salesforce Training, 6/20/2017 11:07 PM
Edit Del Deactivate	Australia	Australia	<input type="checkbox"/>	Assigned dynamically	Salesforce Training, 6/20/2017 11:07 PM
Edit Del Deactivate	United Kingdom	United Kingdom	<input type="checkbox"/>	Assigned dynamically	Salesforce Training, 6/20/2017 11:07 PM

Inactive Values

No Inactive Values values defined.

Fields Where Used

No records to display

Step 6: Choose “Use global picklist value set”

Step 2. Enter the details

Field Label	<input type="text" value="CountryName"/> i
Values	<input checked="" type="radio"/> Use global picklist value set <input type="radio"/> Enter values, with each value separated by a new line <input style="border: 1px solid #ccc; padding: 2px; width: 100px; height: 25px; font-size: 10px; margin-bottom: 5px;" type="button" value="Country"/>
	<input type="checkbox"/> Display values alphabetically, not in the order entered <input type="checkbox"/> Use first value as default value i <input checked="" type="checkbox"/> Restrict picklist to the values defined in the value set i
Field Name	<input type="text" value="Country"/> i
Description	<input type="text"/>
Help Text	<input type="text"/>
Required	<input type="checkbox"/> Always require a value in this field in order to save a record
Auto add to custom report type	<input checked="" type="checkbox"/> Add this field to existing custom report types that contain this entity i
Default Value	<input type="text" value="Show Formula Editor"/> i Use formula syntax: Enclose text and picklist value API names in double quotes : ("the_text"), include numbers without quotes : (25), show percentages as decimals: (0.10), and express date calculations in the standard format: (Today() + 7). To reference a field from a Custom Metadata type record use: SCustomMetadata.Type__mdt.RecordAPIName.Field__c

2. Custom Picklists: (Enter values, with each value separated by a new line)

- Select Enter values, with each value separated by a new line.

Product
New Custom Field Help for this Page 

Step 2. Enter the details Step 2 of 4

[Previous](#) [Next](#) [Cancel](#)

Field Label i

Values (Use global picklist value set
 Enter values, with each value separated by a new line)

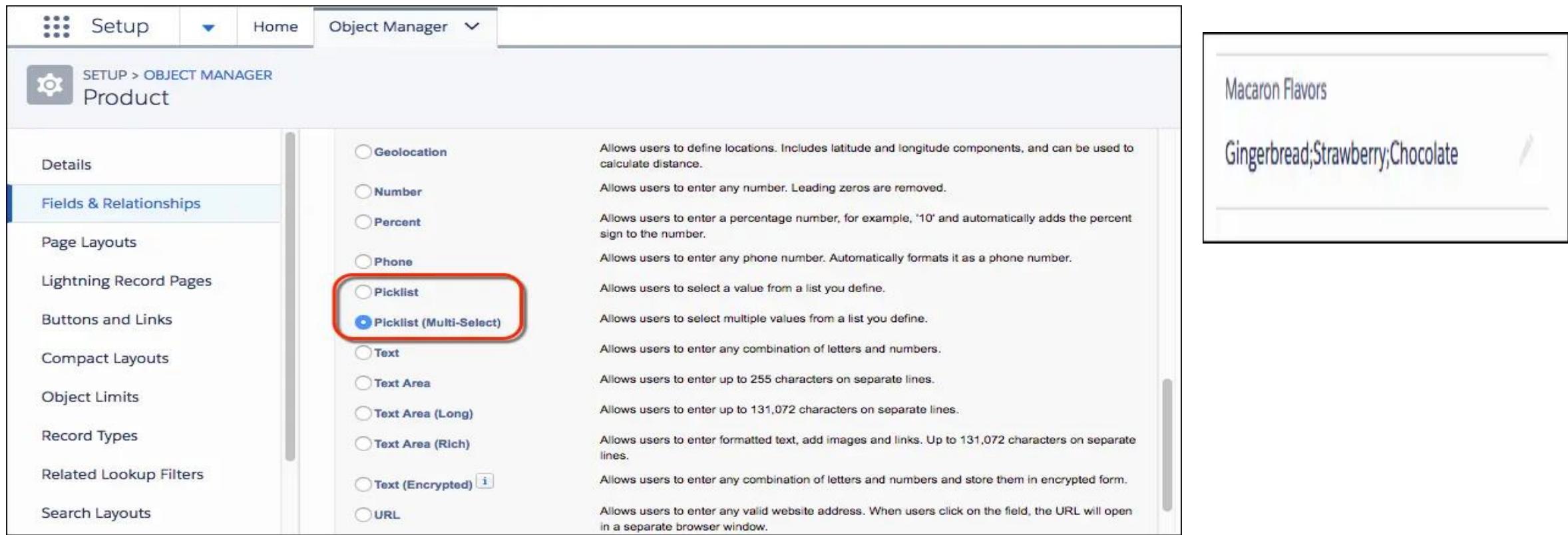
Gingerbread
Strawberry
Chocolate
Raspberry

Display values alphabetically, not in the order entered
 Use first value as default value i
 Restrict picklist to the values defined in the value set i

Field Name i

3. Custom Multi-Select Picklists:

This feature allows users to **select more than one value from the picklist simultaneously**. Once enabled, the selected values are displayed in the field, separated by a semicolon. Unlike standard and custom picklists, which permit selection of only one value at a time, multi-select picklists offer the flexibility of choosing one or more values simultaneously, enhancing data selection capabilities.



The screenshot shows the Salesforce Setup interface with the following details:

- Setup** button in the top-left corner.
- Home** and **Object Manager** buttons in the top-right corner.
- Object Manager** dropdown menu open, showing **Product**.
- Fields & Relationships** tab selected in the left sidebar.
- Macaron Flavors** field is visible on the right side of the screen.
- Product** object details are shown in the main area.
- Fields & Relationships** section contains the following fields:
 - Geolocation
 - Number
 - Percent
 - Phone
 - Picklist (selected)
 - Picklist (Multi-Select)** (highlighted with a red box)
 - Text
 - Text Area
 - Text Area (Long)
 - Text Area (Rich)
 - Text (Encrypted) i
 - URL
- Picklist (Multi-Select)** description: Allows users to select multiple values from a list you define.
- Macaron Flavors** field value: Gingerbread;Strawberry;Chocolate

Formulas and Validations - Use Formula Fields

- Users need to access and understand this data at a glance without doing a bunch of calculations in their heads.
- Enter formula fields, the powerful tool that gives you control of how your data is displayed.

Example:

- You wanted to take two numeric fields on a record and divide them to create a percentage.
- You want to turn a field into a clickable hyperlink for easy access to important information from a record's page layout.
- Maybe you want to take two dates and calculate the number of days between them.

Formulas and Validations - Use Formula Fields

The diagram illustrates the integration of various Salesforce components:

- Page Layouts:** A blue box highlights the "Days to Close" field on the Opportunity page layout.
- List Views:** A blue arrow points from the "Days to Close" field in the Page Layout to the "Days to Close" column in the List View table.
- Reports:** A blue arrow points from the "Days to Close" column in the List View table to the "Days to Close" column in the Report table.

Opportunity Page Layout:

Opportunity Name	Amount	Expected Revenue	Days to Close	Close Date
BettaBurger	\$423,100.00	\$253,860.00	7	5/25/2017
		\$97,000.00	13	5/31/2017
		\$14,000.00	21	6/8/2017
		\$163,450.00	22	6/9/2017
		\$30,950.00	55	7/12/2017

Opportunity List View:

Opportunity Name	Amount	Days to Close
BettaBurger	\$423,100.00	7
Cloud Kicks	\$194,000.00	13
DreamHouse Realty	\$140,000.00	21
Ursa Major Solar	\$233,500.00	22
Get Cloudy Consulting	\$309,500.00	55

Opportunity Report:

Days to Close
7
13
21
22
55

Formulas and Validations - Use Formula Fields

Find the Formula Editor:

You can create custom formula fields on any standard or custom object.

1. From Setup, open the **Object Manager** and click **Object**.
2. In the left sidebar, click **Fields & Relationships**.
3. Click **New**.
4. Select **Formula** and click **Next**.
5. In **Field Label**, type **My Formula Field**. Notice that **Field Name** populates automatically.
6. Select the **type of data** you expect your formula to return. For example, if you want to write a formula that calculates the commission a salesperson receives on a sale, you select **Currency**.
7. Click **Next**. **You've arrived at the formula editor!**

Formulas and Validations - Use Formula Fields

Field Label Field Name [i] Previous Next Cancel

Auto add to custom report type Add this field to existing custom report types that contain this entity [i]

Formula Return Type

None Selected Select one of the data types below.

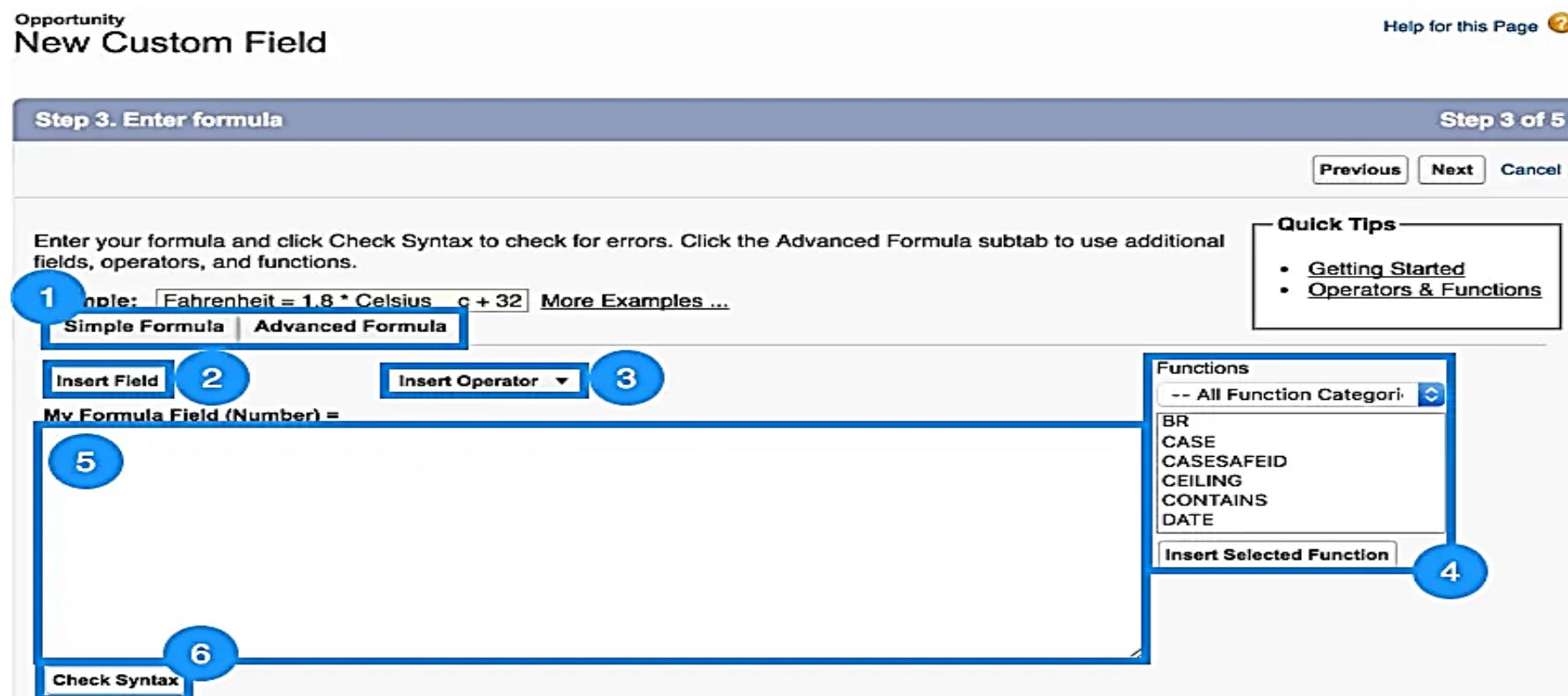
Checkbox Calculate a boolean value
Example: `TODAY() > CloseDate`

Currency Calculate a dollar or other currency amount and automatically format the field as a currency amount.
Example: `Gross Margin = Amount - Cost_c`

Formulas and Validations - Use Formula Fields

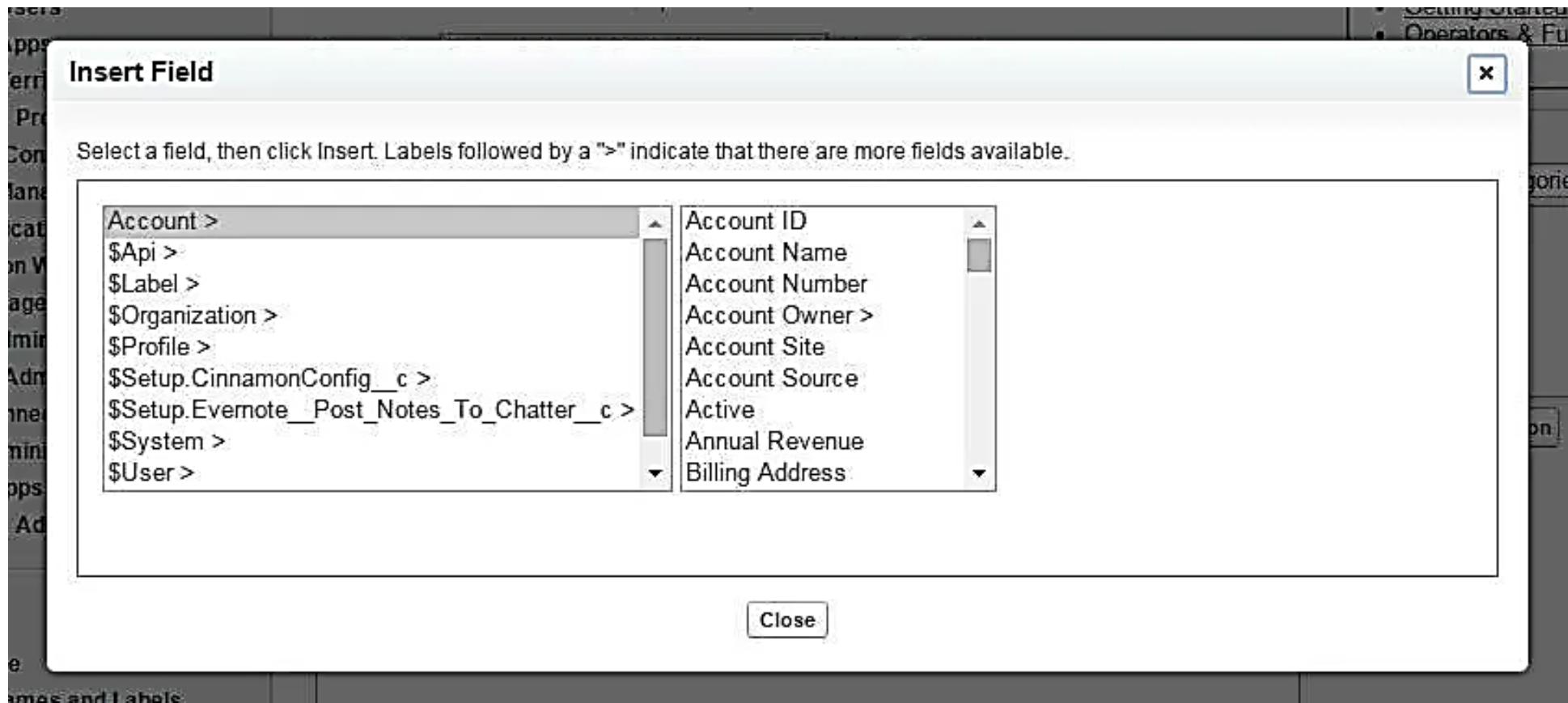
Use the Formula Editor:

1. The formula editor comes in two flavors: **Simple** and **Advanced**. It is always recommended using the Advanced editor. It means more tools for you to create powerful formulas.



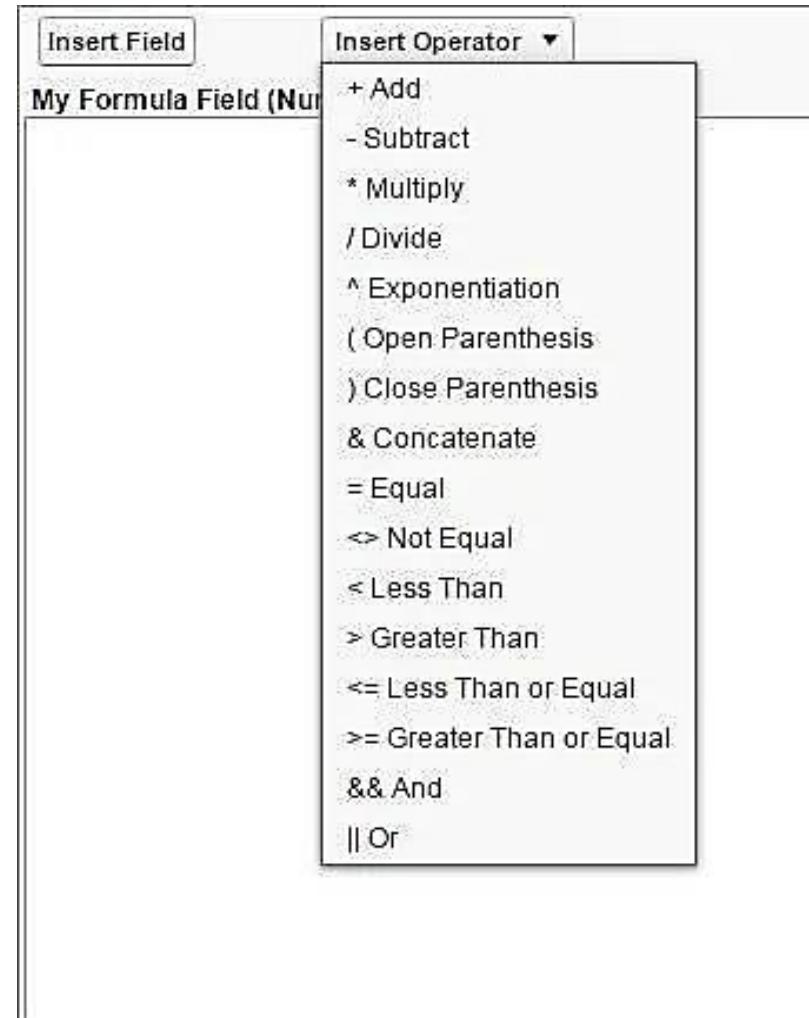
Formulas and Validations - Use Formula Fields

2. The **Insert Field button** opens a menu that allows you to select fields to use in your formula. Inserting from this menu automatically generates the correct syntax for accessing fields.



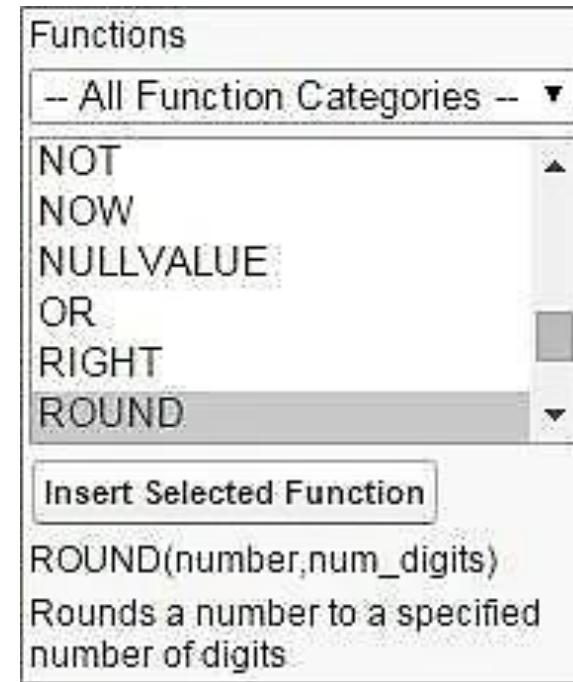
Formulas and Validations - Use Formula Fields

3. The **Insert Operator** button opens a dropdown list of the available mathematical and logical operators.



Formulas and Validations - Use Formula Fields

4. The Functions menu is where you view and insert formula functions. Functions are more complicated operations that are preimplemented by Salesforce. Some functions can be used as-is (**for example**, the **TODAY()** function returns the current date), while others require extra pieces of information, called **parameters**. The **LEN(text)** function, for instance, finds the length of the text you input as a parameter.

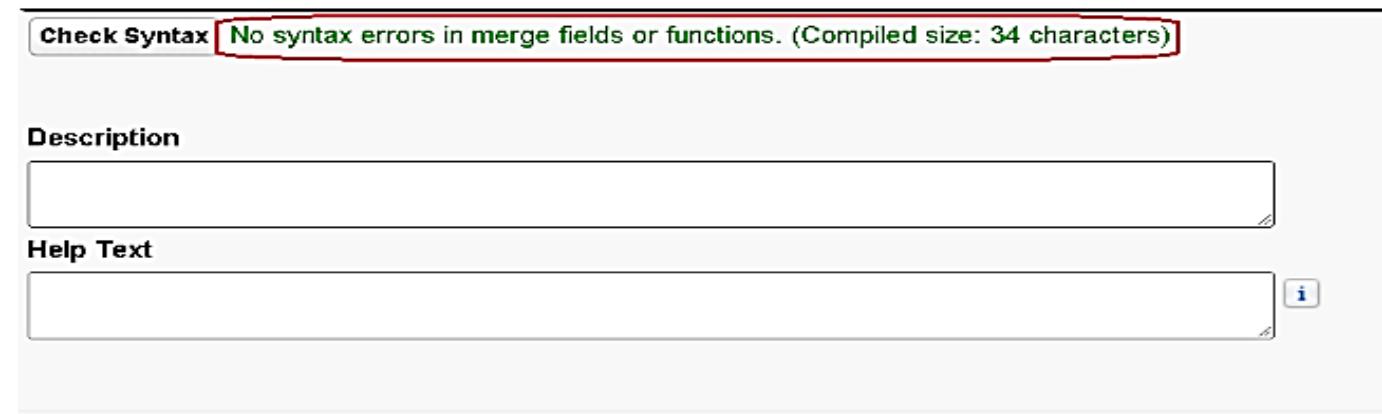


Formulas and Validations - Use Formula Fields

5. The text area is where you enter your formula. When writing formulas, keep in mind that:

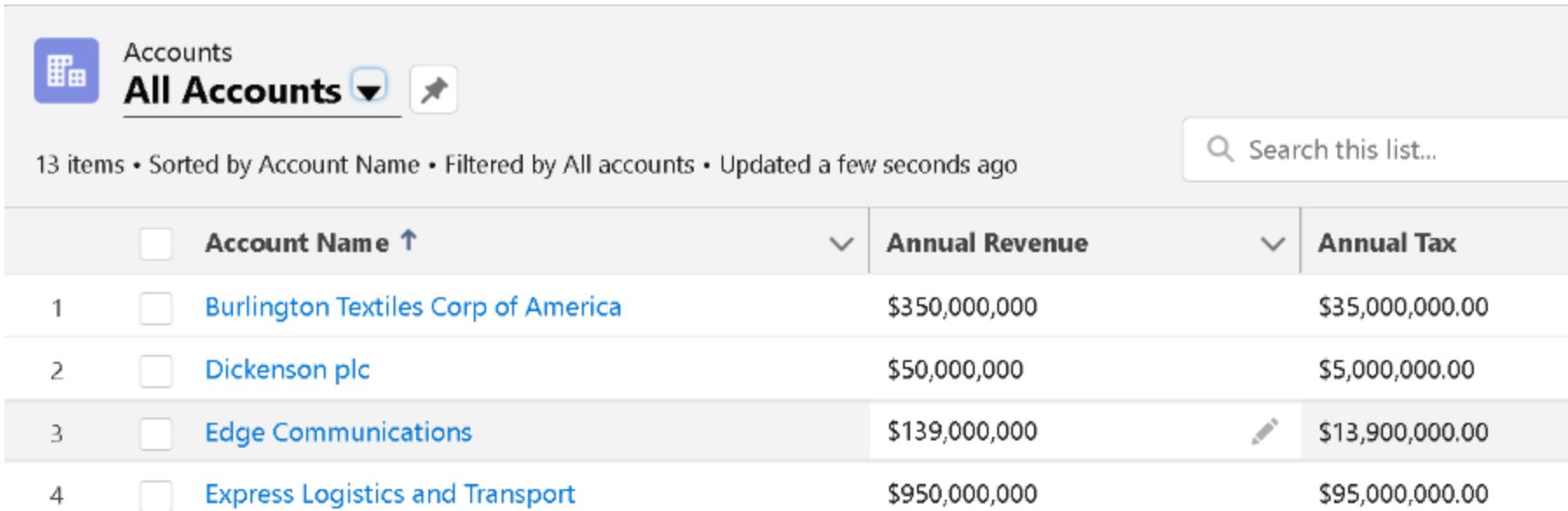
- **Whitespace doesn't matter.** You can insert as many spaces and line breaks as you want without affecting the formula's execution.
- **Formulas are case sensitive.** Pay attention to capitalization of field and object names.
- When working with numbers, **the standard order of operations applies.**

6. Once you've written a formula, you can use the **Check Syntax** button to ensure that everything is in working order before saving. If your formula has issues, the syntax checker alerts you to specific problems.



Formulas and Validations - Use Formula Fields

Now when you see records of the Account Object,
We can see the “Annual Tax” is calculated as 10% of the Annual Revenue.



The screenshot shows the Salesforce "All Accounts" page. At the top, there is a blue header bar with the "Accounts" icon, the text "All Accounts", and a search bar. Below the header, the page displays 13 items, sorted by Account Name, filtered by All accounts, and updated a few seconds ago. The main content area is a table with four columns: Account Name, Annual Revenue, and Annual Tax. The "Annual Tax" column contains values that are 10% of the "Annual Revenue" values. Row 3 is highlighted with a light gray background.

	<input type="checkbox"/> Account Name ↑	<input type="checkbox"/> Annual Revenue	<input type="checkbox"/> Annual Tax
1	<input type="checkbox"/> Burlington Textiles Corp of America	\$350,000,000	\$35,000,000.00
2	<input type="checkbox"/> Dickenson plc	\$50,000,000	\$5,000,000.00
3	<input type="checkbox"/> Edge Communications	\$139,000,000	 \$13,900,000.00
4	<input type="checkbox"/> Express Logistics and Transport	\$950,000,000	\$95,000,000.00

Formulas and Validations - Roll Up Summary Fields

- A roll-up summary field is **one that aggregates data from a child object to a parent object** that shares a Master-Detail relationship.
- Rolling up the **child records and computing the value on the Parent record**.
- Roll-Up Summary field **working on the child object**.
- Rollup Summary field **cannot be created in lookup relationship**.
- Roll-up summary fields can use the **COUNT, SUM, MIN, and MAX** functions.

For example, we could use a roll-up summary field to display the total value (amount) from opportunities on a related account.

Create roll-up summary fields on:

- Any standard / custom object that is on the master side of a master-detail relationship

Formulas and Validations - Roll Up Summary Fields

Roll-up summary fields are only available for objects in a Master-Detail relationship, and are not available for those that have a Lookup relationship.

Account
New Custom Field Help for this Page 

Step 3. Define the summary calculation Step 3 of 5

[Previous](#) [Next](#) [Cancel](#) 

Select Object to Summarize ■ = Required Information

Master Object: Account
Summarized Object: **Opportunities** 

Select Roll-Up Type

COUNT ■

SUM ■

MIN ■

MAX ■

Field to Aggregate: **Amount** 

Filter Criteria

All records should be included in the calculation
 Only records meeting certain criteria should be included in the calculation

[Previous](#) [Next](#) [Cancel](#)

Formulas and Validations - Roll Up Summary Fields

- Even better, roll-up summary fields can have filter criteria, so we could choose to display the total opportunity value from won opportunities on a related account.

Account
New Custom Field Help for this Page 

Step 3. Define the summary calculation Step 3 of 5

Select Object to Summarize

Master Object: Account
Summarized Object: **Opportunities** 

Select Roll-Up Type

COUNT 
 SUM 
 MIN 
 MAX 

Field to Aggregate: **Amount**

Filter Criteria

All records should be included in the calculation
 Only records meeting certain criteria should be included in the calculation

Field	Operator	Value	AND
Won	equals	True	
--None--	--None--		AND
--None--	--None--		AND
--None--	--None--		AND
--None--	--None--		

For checkbox fields, enter a value of True for checked or False for not checked. For picklist fields, enter the master picklist field value in your corporate language.

Step 3 of 5

Previous **Next** **Cancel**

Formulas and Validations - Roll Up Summary Fields

BOOK History

BH.No	B.Name	Iss Date	Ret Date	Rel-B.H.No
H-01	Python	21/4/24	28/4/24	B2
H-02	C++	12/6/24	28/6/24	B1
H-03	Python	22/7/24	30/7/24	B2

BOOK

B.No.	BName	Price	Rel-BH.No
B1	C++	1200	H-02
B2	Python	1700	H-01

After Roll up Summary Field created on Master(One) Object

BOOK

B.No.	BName	Price	Rel-BH.No	Book Count
B1	C++	1200	H-02	1
B2	Python	1700	H-01	2

Formulas and Validations - Validation Rules

- Validation rules **verify that the data a user enters** in a record **meets the standards** you specify before the user can save the record.
- A validation rule can **contain a formula or expression that evaluates the data** in one or more fields and **returns a value of “True” or “False”**.
- Validation rules also **include an error message** to display to the user **when the rule returns a value of “True” due to an invalid value**.

Formulas and Validations - Validation Rules

After you have defined validation rules:

- The **user chooses to create a record** or edit an existing record.
- The user clicks **Save**.
- All validation rules are verified.
- If all **data is valid**, the **record is saved**.
- If any **data is invalid**, the **associated error message displays** without saving the record.
- The user **makes the necessary changes** and clicks **Save again**.

Formulas and Validations - Validation Rules

Creating a Validation Rule

1. From Setup, go to **Object Manager** and click **Account**.
2. In the left sidebar, click **Validation Rules**.
3. Click **New**.
4. Enter the following properties for your validation rule:
 - a. Rule Name: **Account_Number_8_Characters**
 - b. Error Condition Formula: **LEN(AccountNumber) < > 8**
5. Error Message: **Account number must be 8 characters long.**
6. To check your formula for errors, click **Check Syntax**.
7. Click **Save** to finish.

Formulas and Validations - Validation Rules

The screenshot shows the Salesforce Setup interface for managing the Account object. The top navigation bar indicates the path: SETUP > OBJECT MANAGER. The main title is "Account". On the left, a sidebar lists various configuration options: Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Hierarchy Columns, Scoping Rules, Triggers, Flow Triggers, and Validation Rules. The "Validation Rules" option is highlighted with a red oval. The main content area is titled "Details" and contains fields for Description, API Name (set to "Account"), Singular Label (set to "Account"), Plural Label (set to "Accounts"), Enable Reports, Track Activities, Track Field History, Deployment Status, and Help Settings (linking to the Standard salesforce.com Help Window).

SETUP > OBJECT MANAGER

Account

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Hierarchy Columns

Scoping Rules

Triggers

Flow Triggers

Validation Rules

Details

Description

API Name
Account

Custom

Singular Label
Account

Plural Label
Accounts

Enable Reports

Track Activities

Track Field History

Deployment Status

Help Settings
Standard salesforce.com Help Window

Formulas and Validations - Validation Rules

The screenshot shows the Salesforce Setup interface for the Account object. The left sidebar lists various configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Hierarchy Columns, Scoping Rules, Triggers, and Flow Triggers. The main content area is titled "Validation Rules" and displays a table with the following columns: RULE NAME, ERROR LOCATION, ERROR MESSAGE, ACTIVE, and MODIFIED BY. A message at the bottom states "No items to display." In the top right corner of the main area, there is a "New" button, which is highlighted with a red oval.

RULE NAME	ERROR LOCATION	ERROR MESSAGE	ACTIVE	MODIFIED BY
No items to display.				

Formulas and Validations - Validation Rules

Account Validation Rule

Define a validation rule by specifying an error condition and a corresponding error message. The error condition is written as a Boolean formula expression that the error message will be displayed. The user can correct the error and try again.

Validation Rule Edit Save Save & New Cancel

Rule Name Active

Description

Error Condition Formula

Example: [More Examples...](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

Functions

ABS
ACOS
ADDMONTHS
AND
ASCII
ASIN

ABS(number)
Returns the absolute value of a number, a number without its sign

[Help on this function](#)

Formulas and Validations - Validation Rules

Account Validation Rule

Define a validation rule by specifying an error condition and a corresponding error message. The error condition is written as a Boolean formula; the error message will be displayed. The user can correct the error and try again.

Validation Rule Edit Save Save & New Cancel

Rule Name Save Save & New Cancel

Active

Description

Error Condition Formula

Example: [More Examples...](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

[Insert Field](#) [Insert Operator ▾](#)

Functions

-- All Function Categories -- ▾

LEFT
LEN
LN
LOG
LOWER
PAD

[Insert Selected Function](#)

LEN(text)
Returns the number of characters in a text string

[Help on this function](#)

[Check Syntax](#)

Formulas and Validations - Validation Rules

Account Validation Rule

Define a validation rule by specifying an error condition and a corresponding error message. The error condition is written as a Boolean formula expression that returns true or false. When the formula expression evaluates to true, the error message will be displayed. The user can correct the error and try again.

Validation Rule Edit Save Save & New Cancel

Rule Name: Account_Number_8_Characters

Active:

Description:

Error Condition Formula

Example: Discount_Percent__c>0.30 [More Examples](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Validation Message field.

Insert Field Insert Operator ▾

LEN()

Insert Field Dialog:

Select a field, then click Insert. Labels followed by a ">" indicate that there are more fields available.

Account >

- \$ObjectType >
- \$Organization >
- \$Profile >
- \$System >
- \$User >
- \$UserRole >

Account ID

Account Name

Account Number

Account Owner >

Account Site

Account Source

Active

Annual Revenue

Billing Address

You have selected:
AccountNumber
Type: Text
API Name: AccountNumber

Insert

Close

LEN(text)
Returns the number of characters in a text string

Help on this function

Formulas and Validations - Validation Rules

Error Condition Formula

Example: `Discount_Percent_c>0.30` [More Examples...](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

Insert Field **Insert Operator** ▾

- + Add
- Subtract
- * Multiply
- / Divide
- ^ Exponentiation
- (Open Parenthesis
-) Close Parenthesis
- & Concatenate
- = Equal
- <> Not Equal**
- < Less Than
- > Greater Than
- <= Less Than or Equal
- >= Greater Than or Equal
- && And
- || Or

Check Syntax

Error Message

Example: `Discount_Percent_c>0.30`

This message will appear if the formula is true

Error Message

Functions

– All Function Categories -- ▾

- LEFT
- LEN**
- LN
- LOG
- LOWER
- LPAD

Insert Selected Function

`LEN(text)`

Returns the number of characters in a text string

[Help on this function](#)

This error message can either appear at the top of the page or below a specific field on the page

Error Location | Top of Page Field [i](#)

Formulas and Validations - Validation Rules

Rule Name

Active

Description

Error Condition Formula

Example: [More Examples...](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

```
LEN( AccountNumber ) <> 8
```

Functions

ABS
ACOS
ADDMONTHS
AND
ASCII
ASIN

ABS(number)
Returns the absolute value of a number, a number without its sign

[Help on this function](#)

No errors found

Error Message

Example:

This message will appear when Error Condition formula is true

Error Message

This error message can either appear at the top of the page or below a specific field on the page

Error Location Top of Page Field

Formulas and Validations - Validation Rules

Edit Pyramid Construction Inc.

Review the errors on this page.

Account number must be 8 characters long.

* Account Name

Pyramid Construction Inc.

Phone

(014) 427-4427

Parent Account

Search Accounts

Fax

(014) 427-4428

Account Number

1234

Website

www.pyramid.com



* Account Name	Phone
Pyramid Construction Inc.	(014) 427-4427
Parent Account	Fax
Search Accounts	(014) 427-4428
Account Number	Website
1234	www.pyramid.com

Salesforce String functions

Here are some frequently used string methods in Salesforce:

1. **toUpperCase()**

- The ‘toUpperCase()’ method transforms all characters in a text string into their uppercase equivalents.

EXAMPLE: If the given string is “**salesforce**”, applying the ‘**toUpperCase()**’ method will result in “**SALESFORCE**”.

2. **toLowerCase()**

- The ‘toLowerCase()’ method performs the reverse of toUpperCase(). It converts each character within a string to its respective lowercase counterpart.

EXAMPLE: If you have a string “**SALESFORCE**”, employing the ‘**toLowerCase()**’ method will yield “**salesforce**”.

Salesforce String functions

3. contains()

- The ‘contains()’ method verifies if a string includes a specific substring.
- The method provides a **boolean value: true** when the **substring exists**, and **false** when **it does not**. This function is beneficial for locating particular text within a more extensive string.
- You can create search functionality within your Salesforce applications.
- Check for the “@” symbol in **Email Validation**.

EXAMPLE:

```
String myProductName1 = 'HCL';
```

```
String myProductName2 = 'NAHCL';
```

Boolean	result	=
---------	--------	---

```
myProductName2.contains(myProductName1);
```

```
System.debug('O/p will be true as it contains the String')
```

Salesforce String functions

4. trim()

- The ‘trim()’ method erases whitespace at both the starting and ending points of a text string.
- This function is especially valuable for cleaning up user input, such as eradicating extra spaces before storing data in Salesforce. It cleans up data before saving it to Salesforce.

5. substring()

- The ‘substring()’ method retrieves a segment of a string based on the provided start and end index values.
- This function is handy for decomposing strings into smaller parts or extracting specific information from a larger text.

EXAMPLE: Verify the **domain** extension in **Email validation**.

Salesforce String functions

6. replace()

- The ‘replace()’ method replaces a specific substring with another substring within the original string.
- This method is useful for **correcting misspellings** or **updating specific text** within a string.

EXAMPLE: You can **update a query** with new criteria or filters based on user input.

7. replaceAll()

- The ‘replaceAll()’ method is similar to ‘replace()’, but it replaces all occurrences of the specified substring with another substring.

Salesforce String functions

8. equals()

- This method will return true if the given string and the string passed in the method have the same binary sequence of characters and they are not null.
- This method is case-sensitive.
- You can **compare the SFDC record id** as well using this method.

EXAMPLE:

```
String myString1 = 'MyString';
```

```
String myString2 = 'MyString';
```

```
Boolean result = myString2.equals(myString1);
```

```
System.debug('Value of Result will be true as they are same and Result is:'+result);
```