Assignment: 01

Title: Build a Data Model for a Travel Approval App

Create a Travel Approval Lightning App

Learning Objectives

In this project, you'll:

- Build a Lightning app, add tabs, and customize page layouts.
- Create custom objects and fields for the app.
- Define relationships between objects.
- Import data and test the app.

Introduction

Your organization has decided to implement a custom travel approval app. Up until now, you had a travel approval process in place based on emailing spreadsheets. It had no central repository or enforcement of the process, resulting in the inability to report on travel approval activities across the organization. You need to create an application that meets these requirements:

- Each employee must submit an electronic request in the system for future travel.
- Each request includes a list of estimated expenses for airfare, hotel, rental car, and so on.
- Each request must be approved by the employee's manager, and all out-of-state travel must be approved by a travel coordinator.
- Managers need reports and dashboards to track key travel request trends and KPIs.
- In addition, employees and managers must be able to access their travel requests, approvals, and dashboards via mobile device.

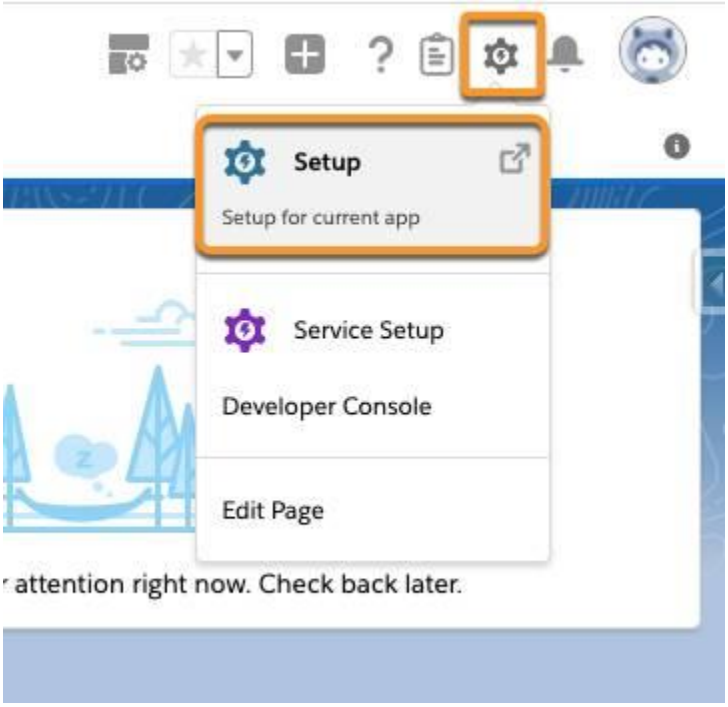
By the end of the project, you'll have a working prototype of the new travel approval application. You start by creating a travel approval app that provides a view of your specific travel-related objects, which you create in the next steps. Remember that a Salesforce app is a grouping of tabs that give you access to corresponding object data.

Create a New Trailhead Playground

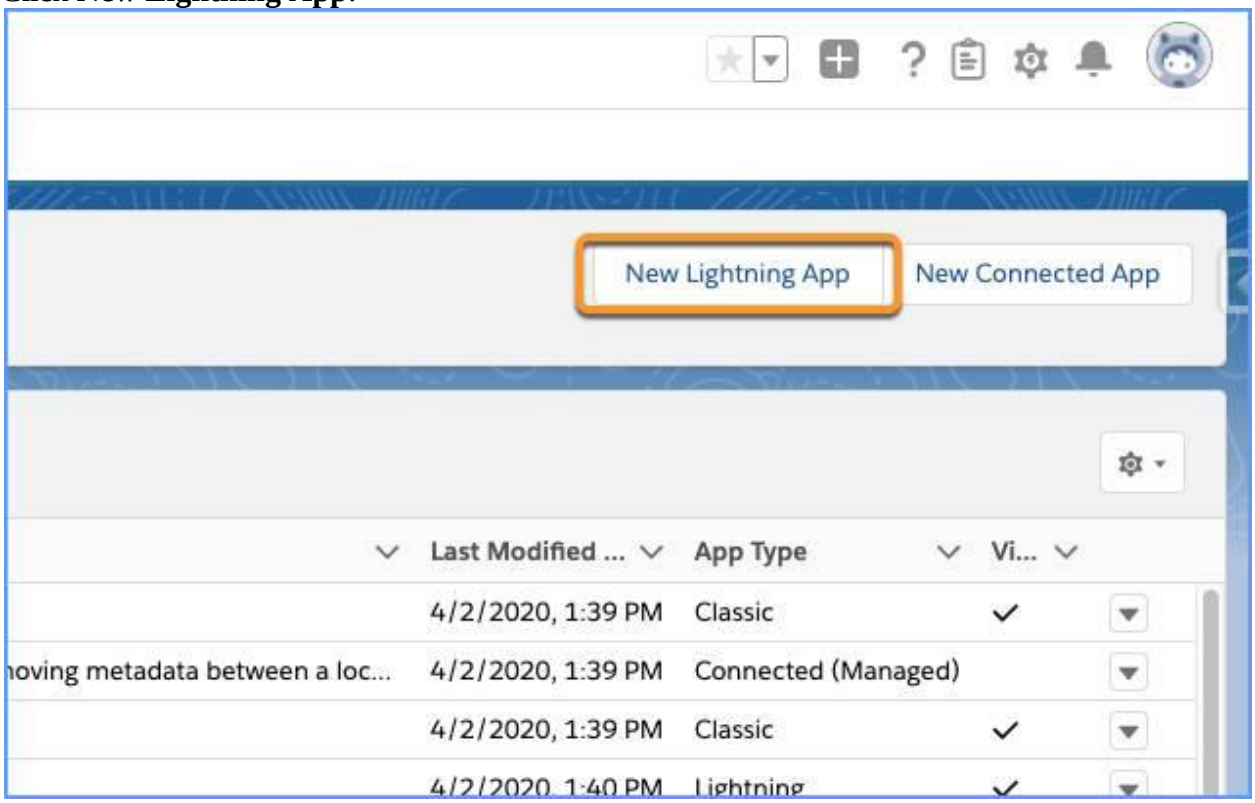
For this project, you need to create a new Trailhead Playground. Scroll to the bottom of this page, click the playground name, then click **Create Playground**. It typically takes 3–4 minutes to create a new Trailhead Playground.

Open your new Trailhead Playground by clicking **Launch** at the bottom of this page. Your playground opens in a new browser tab or window. Keep the playground window open while you do this project. After you complete the project steps in your playground, come back to this window and click **Verify step** at the bottom of this page.

1. In your Trailhead Playground, click and then select **Setup**



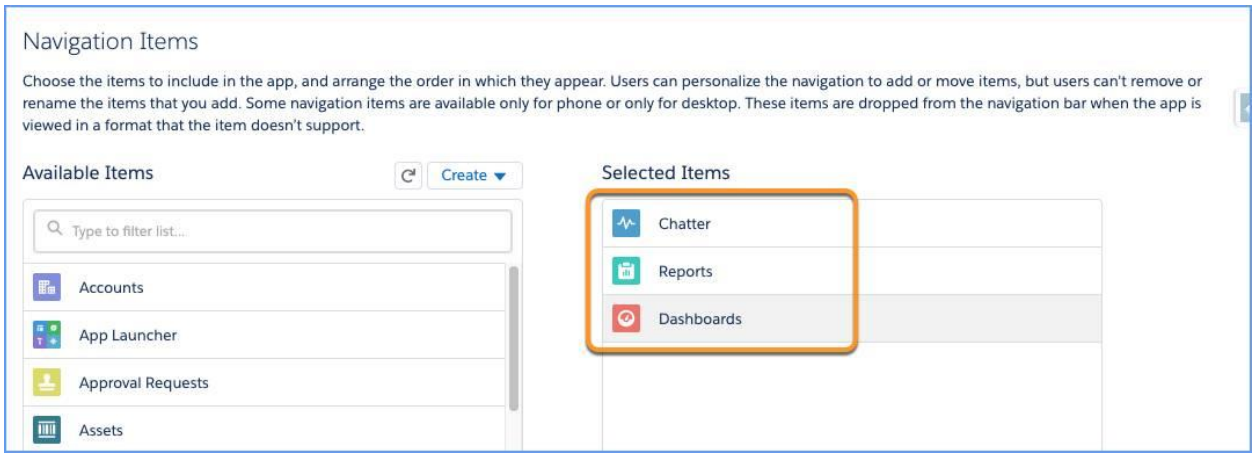
2. In the Quick Find box, enter App Manager and select **App Manager**.
3. Click **New Lightning App**.



4. In the App Details & Branding window, enter these details.

- For App Name, enter Travel App.
- For the Image, click **Upload** and select **travel.png** from the files you downloaded above.

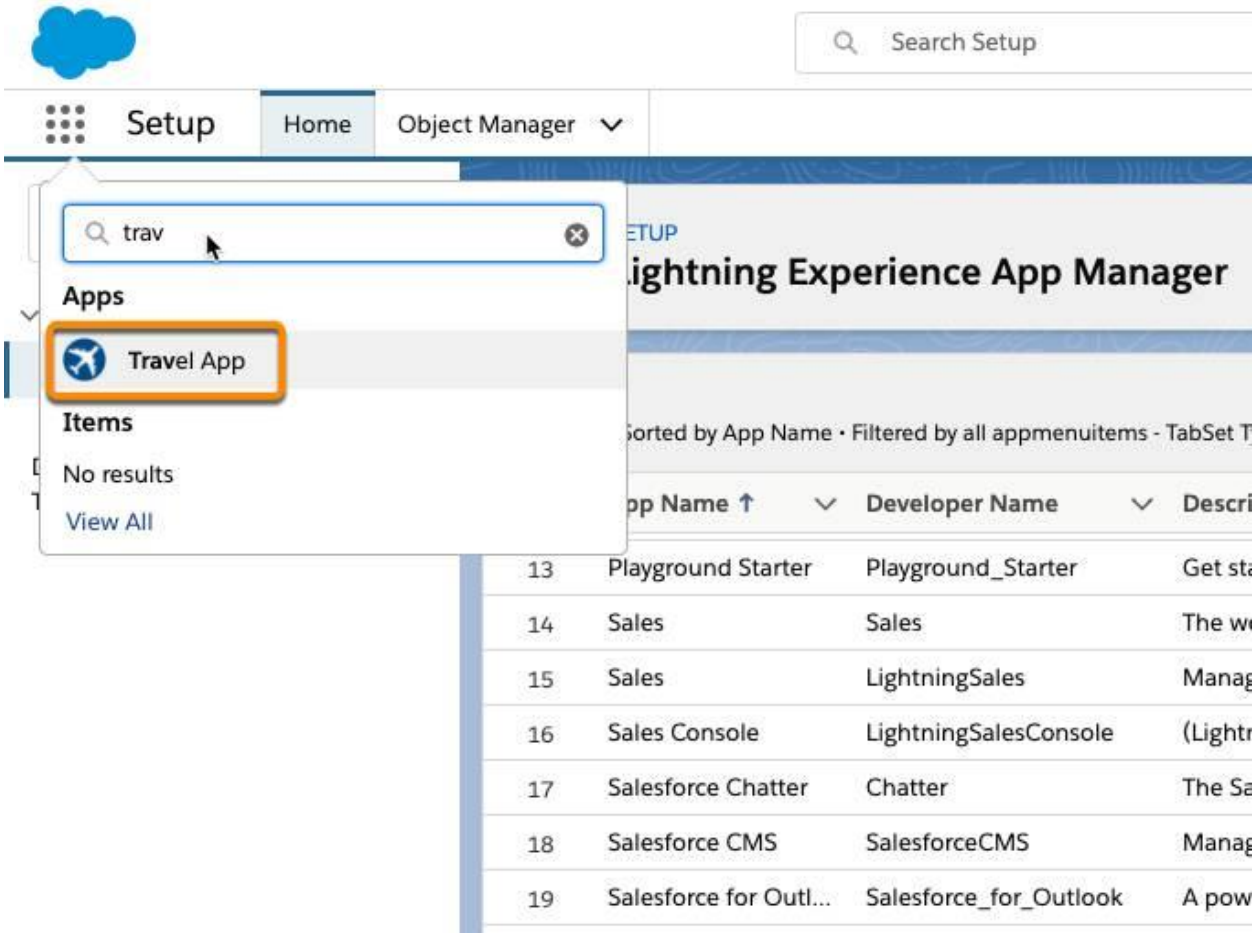
5. Click **Next**.
6. On the App Options screen, select **Standard navigation** and click **Next**.
7. On the Utility Items screen, click **Next**
8. On the Navigation Items screen, select **Chatter, Reports,** and **Dashboards** from the Available Items list, and move them to the Selected Items list using the arrow. Then click **Next**.



9. On the User Profiles screen, select **System Administrator** and add it to Selected Profiles, then click **Save & Finish**.

Now navigate to your new Travel App application to see what it looks like so far.

Click , then search for and select **Travel App**.



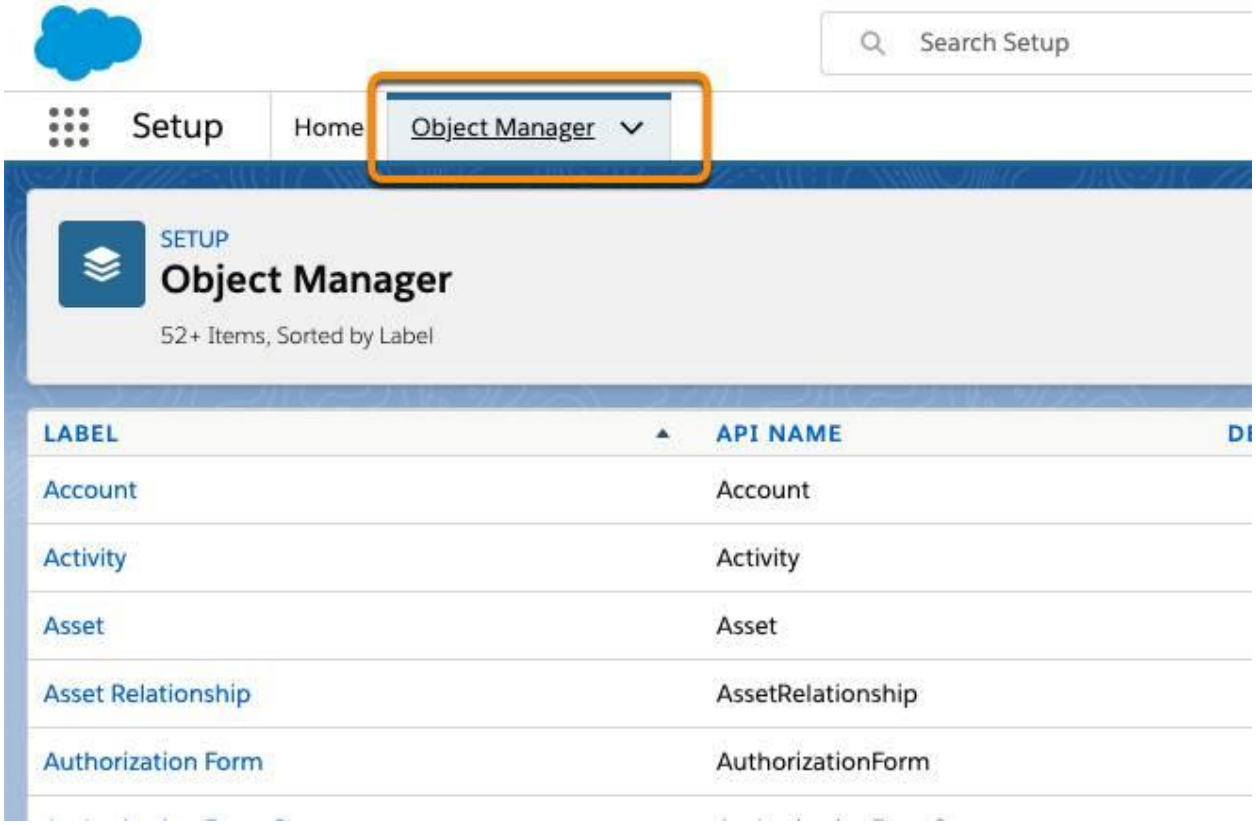
At this point, your window should have three tabs that you defined earlier: Chatter, Reports, and Dashboards.

Now that you've created the travel app, and added three tabs to the app, you're ready to create the data model. In the next steps, you create the Department, Travel Approval, and Expense Items objects.

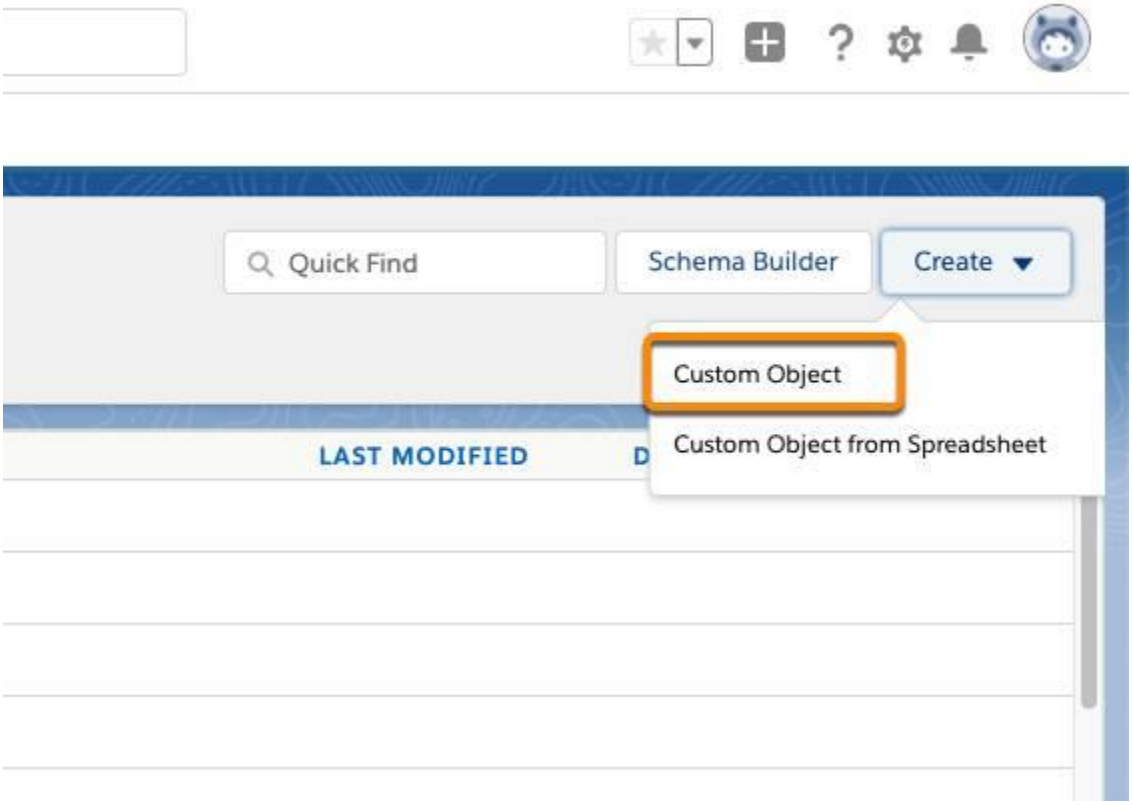
Create a Department Object

The next step in creating your organization's travel approval app is to create the data model. The first object to create is the Department object. This object stores information about your departments such as name and cost center code.

1. From Setup, click **Object Manager**.



2. Click **Create**, then select **Custom Object**.

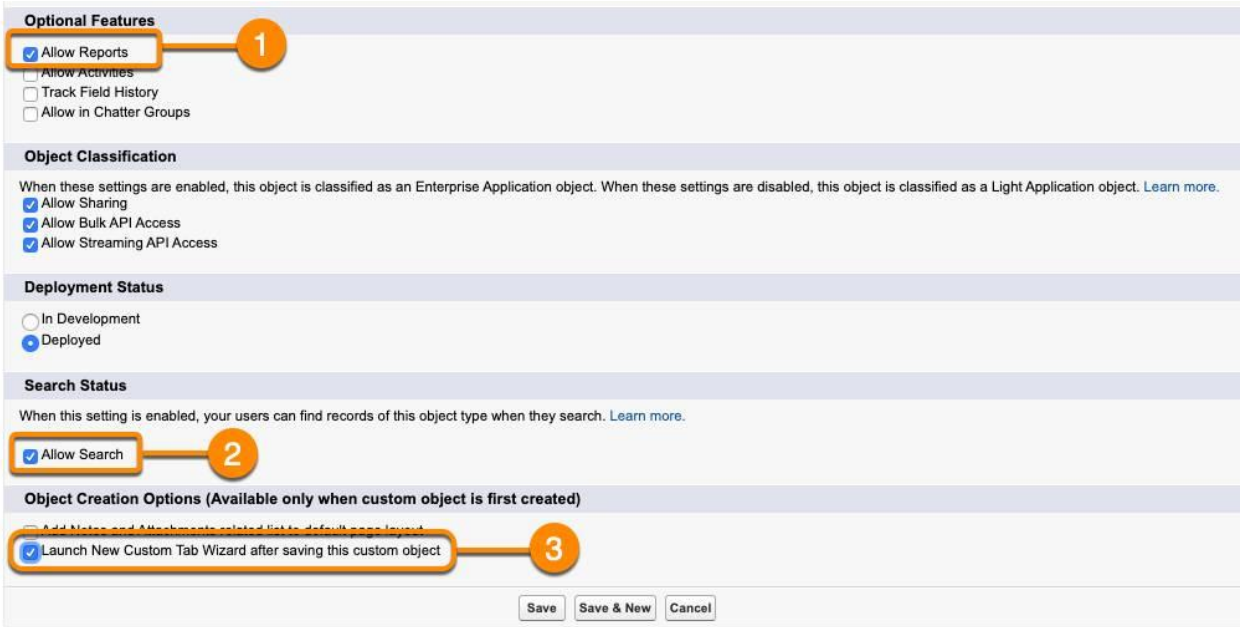


3. Enter these details:

Field	Value
Label	Department
Plural Label	Departments
Object Name	Department (this field auto-populates)
Record Name	Department Name
Data Type	**Text**

4. Now scroll down and select these options:

- **Allow Reports** (1)
- **Allow Search** (2)
- **Launch New Custom Tab Wizard after saving this custom object** (3)

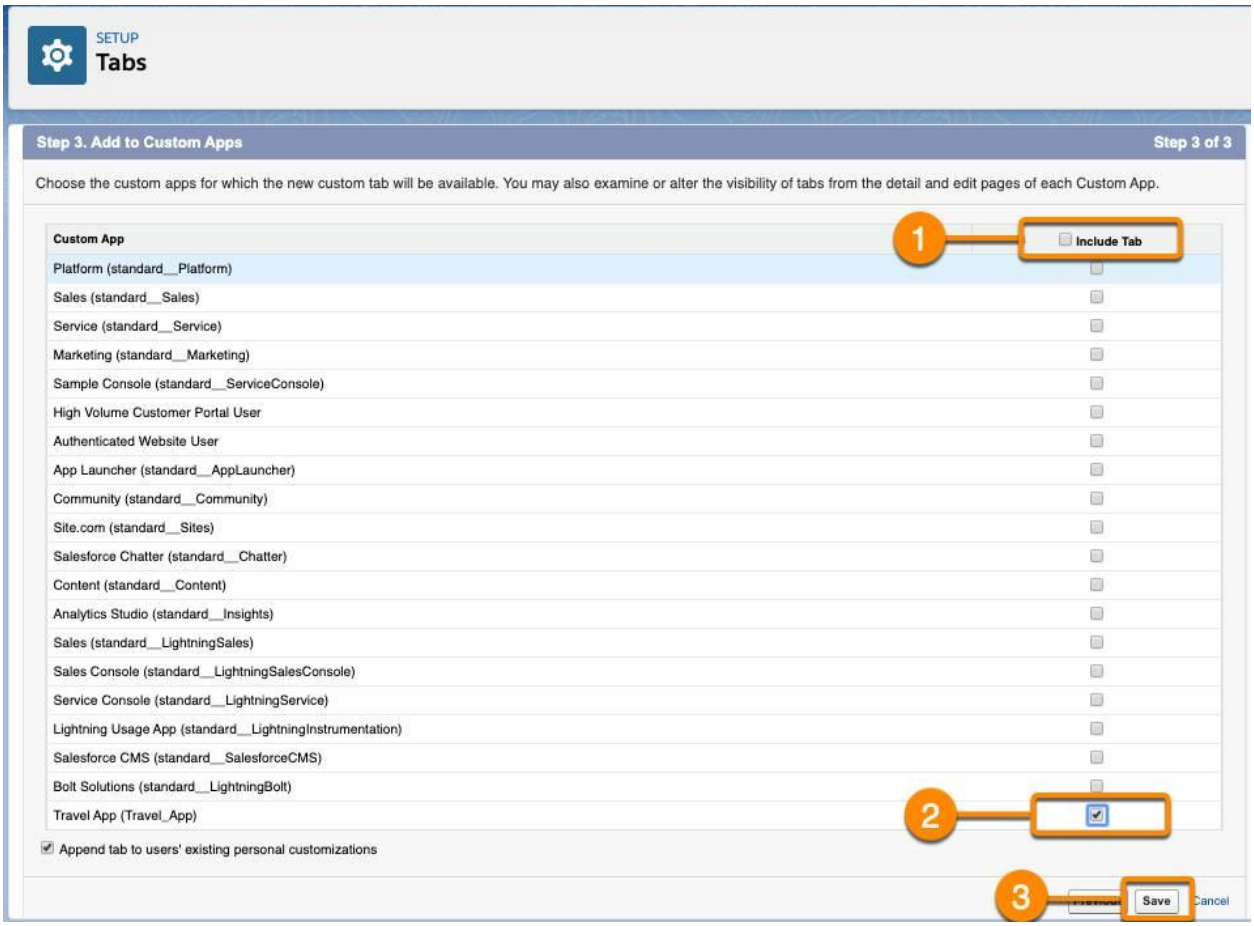


5. Click **Save**.

6. Now, define your tab settings. Click the next to the Tab Style field and select **Books**.

7. Click **Next**. Leave the next screen as is and click **Next**.
8. Next, choose which applications to associate with this tab.

- Click the **Include Tab** (1) option at the top of the column to deselect all apps.
- Select only the **Travel App** (2) app from the list.
- Click **Save** (3).



9. On the next screen, click **Fields & Relationships**, then click **New**.
10. Select **Text** as the data type, then click **Next**.
11. Enter these details.

- For Field Label, enter Department Code
- For Length, enter 10
- Select **Required**
- Select **Unique**, then select **case sensitive**

12. Click **Next**.
13. Leave the Establish field-level security screen as is, and click **Next**.
14. Leave the Add to page layouts screen as is, and click **Save**.

Now that you've created the Department Object, you're ready to move on to the next step, creating the Travel Approval object. The Travel Approval object stores basic information about where employees are traveling and trip duration.

Create a Travel Approval Object

In the previous steps, you created the travel app using Lightning App Builder and created the first custom object for Departments. Now you create the object to store the Travel Approval requests.

1. Navigate back to **Object Manager**.
2. Click **Create** then select **Custom Object**.
3. Enter these details:

Parameter	Value
Label	Travel Approval
Plural Label	Travel Approvals
Object Name	Travel_Approval (this field auto-populates)
Record Name	Travel Approval #
Data Type	**Auto Number**
Display Format	TA-{00000}
Starting Number	1

4. Don't click Save yet. You need to set a few more parameters first. Scroll down and select these additional options.
   - **Allow Reports**
   - **Allow Activities**
   - **Track Field History**
   - **Allow Search**
   - **Add notes and Attachments related list to default page layout**
   - **Launch New Custom Tab Wizard after saving this custom object**. Note: Be sure to check this box as it drives the next screens that will show. If you miss this option, you can create a custom tab by going to Setup, searching for and selecting **Tabs**, then creating a new tab after your object has been created.
5. Click **Save**.
6. Click next to Tab Style and select **Airplane**.
7. Click **Next**.
8. Keep the Add to profiles screen as is, and click **Next**.
9. In the Add to Custom Apps screen, select the **Include Tab** checkbox to deselect all apps. Select **Travel App**, then click **Save**.
10. On the object configuration page, click **Fields & Relationships**, then click **New**.
11. Select **Text Area** as the data type, then click **Next**.

12. For Field Label, enter Purpose of Trip.
13. Click **Next**.
14. Leave the Establish field-level security screen as is, and click **Next**.
15. Keep the Add to page layouts screen as is, and click **Save**. To create the remaining fields for the Travel Approval object, repeat step 9 to begin, then follow the parameters below.
16. Create the **Status** field with a **Picklist** data type. Click **Enter values, with each value separated by a new line**. Use the following values:
    - New
    - Submitted
    - Pending Approval
    - Approved
    - Rejected
    - Draft
17. Create the **Trip Start Date** field with a **Date** data type.
18. Create the **Trip End Date** field with a **Date** data type.
19. Create the **Out-of-State** field with a **Checkbox** data type.
20. Create the **Destination State** field with a **Text** data type. Set the text **Length** to 2.
21. Create the **Department** field with a **Lookup Relationship** data type, then select **Department** for the Related To field. Click **Next** 4 times, then **Save**.

You've just created the Travel Approval object and created a lookup relationship to the Department object. In the next step, you create the Expense Item object, where each expense line item for the travel request is created.

Create an Expense Item Object

In the previous steps, you created the travel app and custom objects for Department and Travel Approval. The final object you create is the Expense Item object. This allows the app to provide estimates for trip costs such as airfare, hotel, or rental car.

1. Navigate back to **Object Manager**.
2. Click **Create** then select **Custom Object**.
3. Enter these details:

Field	Value
Label	Expense Item
Plural Label	Expense Items
Starts with vowel sound	*Check/select this option*
Object Name	Expense_Item (this field auto-populates)
Record Name	Expense Item Number

Field	Value
Data Type	Auto Number
Display Format	E-{00000}
Starting Number	1

4. Select **Allow Reports**.

   Note: Don't select Launch new Custom Tab Wizard after saving this custom object. You don't need a separate tab for just **Expense Items**. Users will use the **Travel Approval** tab to navigate to specific records and then drill down to expense items from the select travel approval.
5. Click **Save**.

Next, you're directed to the standard object configuration page for the Expense Item object, where you create its fields Start with the Amount field.

1. Click **Fields & Relationships**, and click **New**.
2. For data type, select **Currency**.
3. Enter these details.
   - For Field Label, enter Amount
   - For Length, enter 16
   - For Decimal places, enter 2
   - Select **Required**
4. Click **Next, Next**, then **Save & New**.

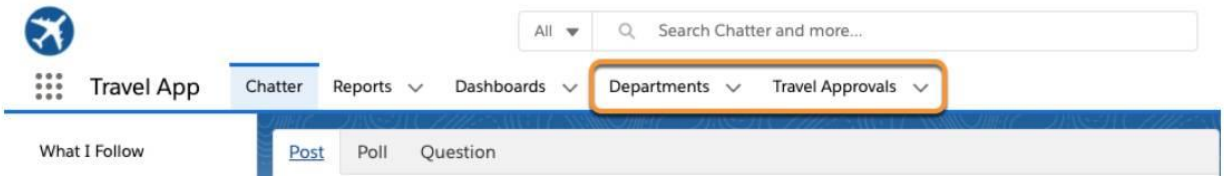
Next, create the **Expense Type** field.

1. Select **Picklist** as the data type.
2. Select **Enter values, with each value separated by a new line.**
3. Add these values:
   - Airfare
   - Hotel
   - Rental car
   - Meals
   - Other
4. Select **Required**.
5. Click **Next**, **Next,** then **Save & New**.

Create the Travel Approval field.

1. Select **Master-Detail Relationship** data type, click **Next**.
2. Select **Travel Approval** from the Related To menu.
3. Click **Next** four times, then click **Save**.

Now, see how the travel approval app looks. Click to open the App Launcher, then search for and select **Travel App** with the two new tabs you created.



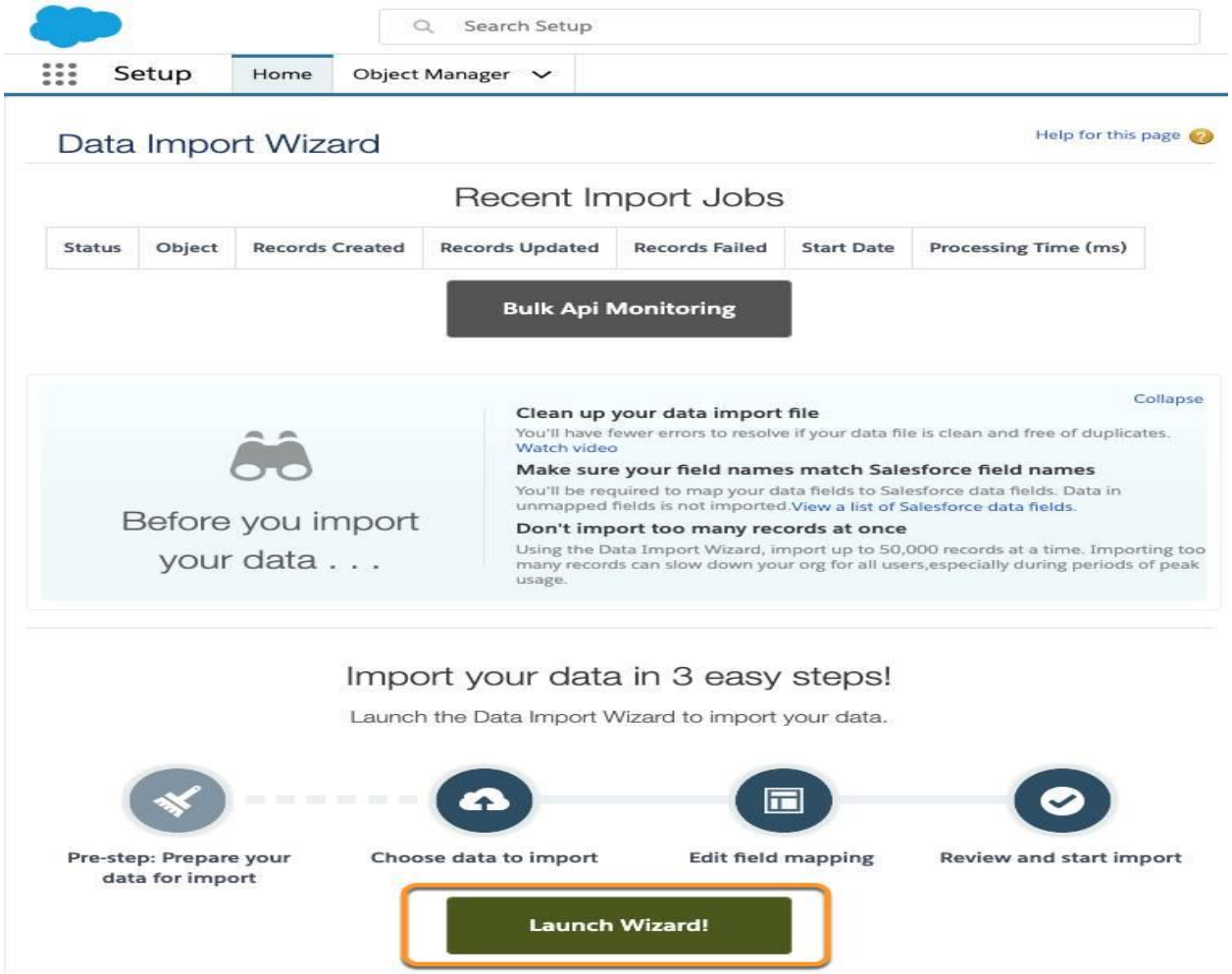
Import Data and Test the App

You now have a fully functional application. You built the data model, and in parallel behind the scenes, the user interface was created for you. And a full SOAP and REST API layer was automatically created to integrate your Travel Approval objects with objects in other systems. In this final step, you import some data and test the app.

Import Departments

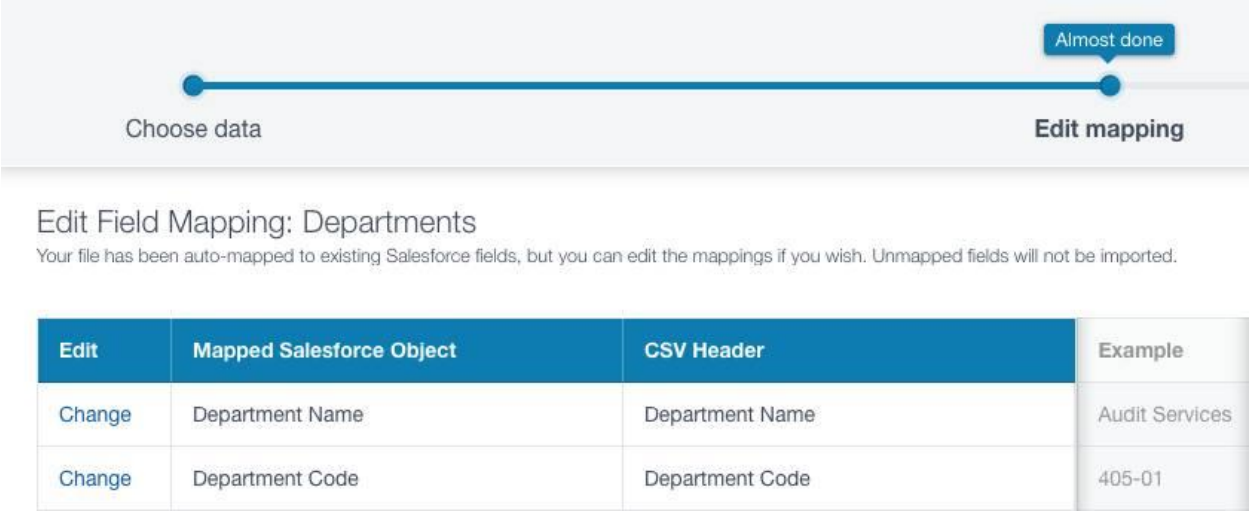
Before you test your application, first load some sample data into the Departments object.

1. From Setup, click the **Home** tab.
2. In the Quick Find box, enter Data Import and select **Data Import Wizard**.
3. Click **Launch Wizard!**



4. Click the **Custom Objects** tab and select the **Departments** object.
5. Next, select **Add new records**.
6. Drag and drop the **Departments.csv** file you downloaded in Step 1 - Create a Travel Approval Lightning App to the Drag CSV file here to upload section, or click the CSV icon and browse to select your file. Select **Next**.
7. Since the field names in the CSV file (CSV Header) are the same as the field names in your object (Mapped Salesforce Object), the fields are automatically mapped.

Click **Next**.



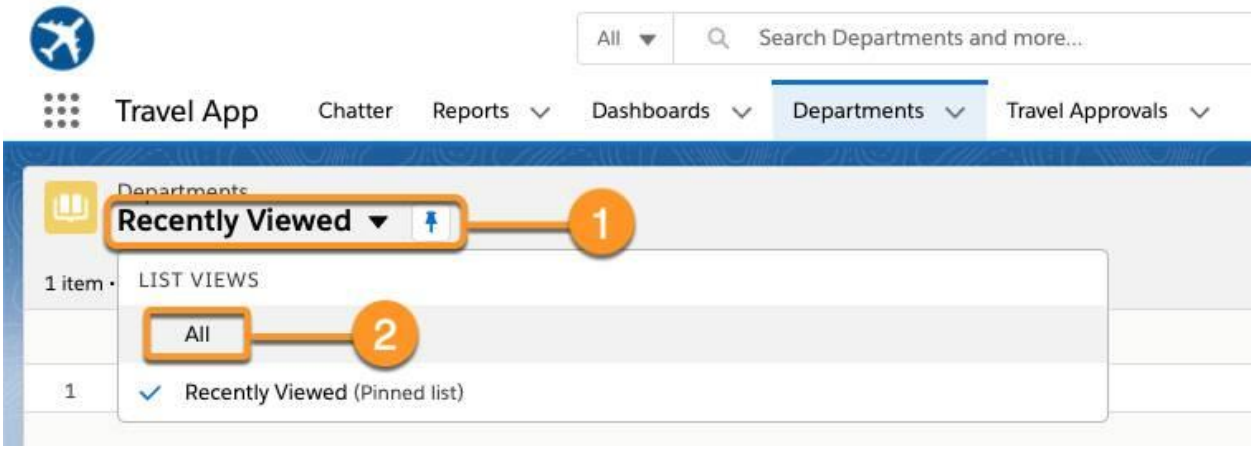
8. The next screen gives you a summary of your data import. Click **Start Import**.
9. Click **OK** on the popup.

This takes you to the bulk import summary window that shows that the process has completed and 16 records have been successfully imported or processed. You'll also get an email notification confirming the import.

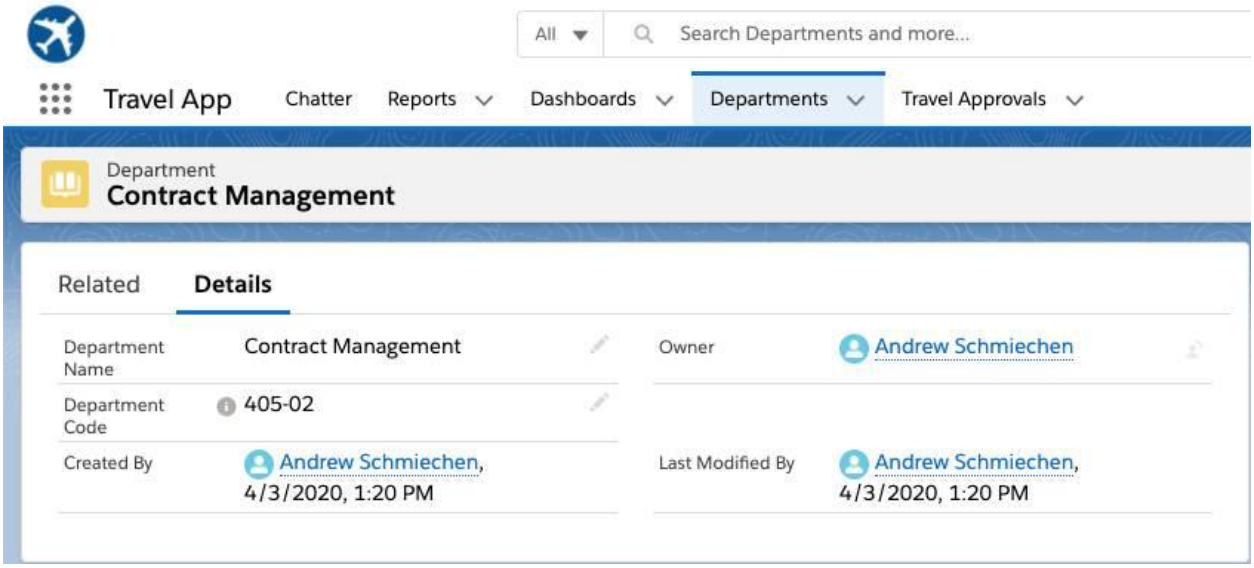
Test the App

Now that you've imported department data, you can test out the app.

1. Click to open the App Launcher and navigate back to your Travel Approval app.
2. Click the **Departments** tab.
3. Click the **Recently Viewed** (1), and select **All** (2).



4. Click any one of the departments to drill down into the Department details. For example, click **Contract Management** and check out the department details including the Department Code field you created, along with some default fields.

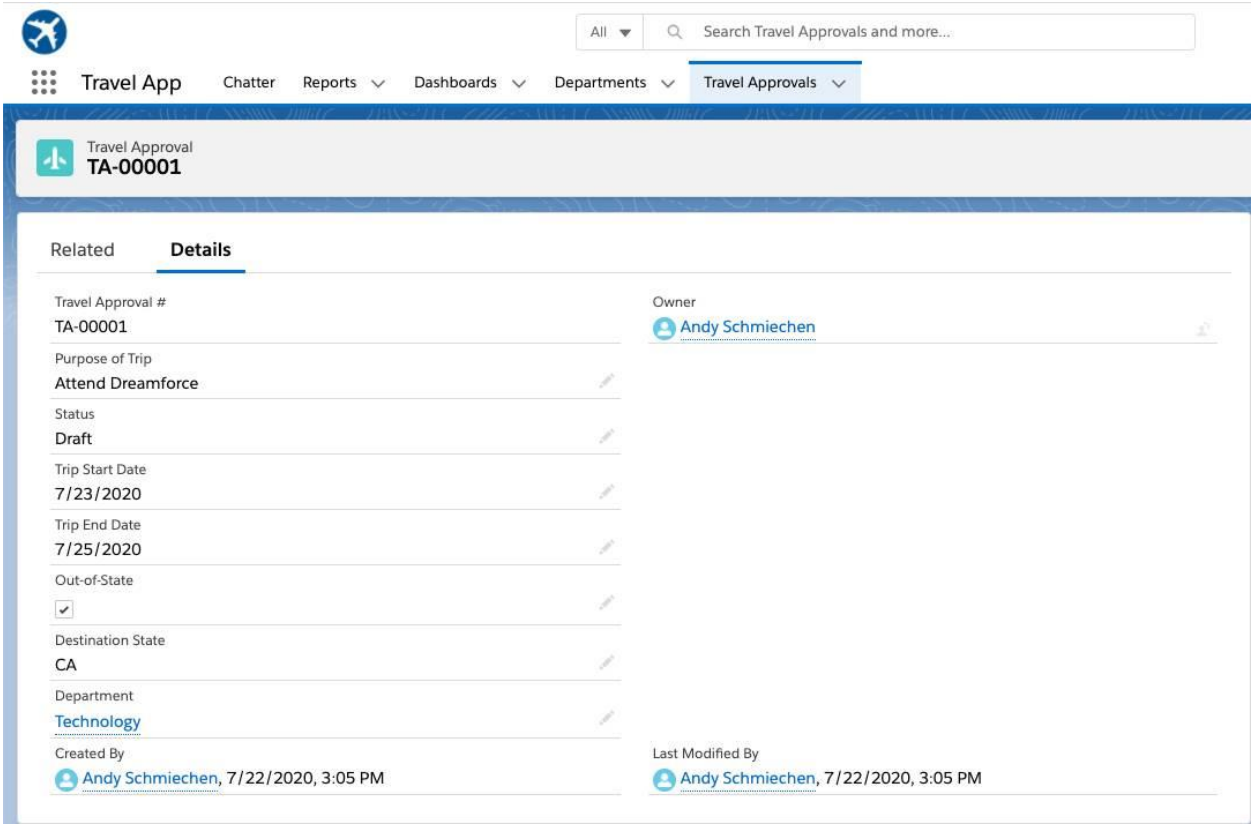


Now, create a sample travel approval and associate a few expense estimates to it.

1. Click the **Travel Approvals** tab and click **New**.
2. Enter these details.

Parameter	**Value**
Purpose of Trip	Attend Dreamforce
Status	**Draft**
Trip Start Date	*(pick any date you want)*
Trip End Date	*(pick any date you want)*
Out-of-State	*Check/select this option*
Destination State	CA
Department	Technology

3. Click **Save**. You now have a travel approval record.



Finally, add expense estimates for airfare and hotel to the travel approval. Click the **Related** tab.

1. Click **New**, then enter these details:
    - Amount: 450
    - Expense Type: **Airfare**
2. Click **Save**.
3. Click **New** then enter these details.
    - Amount: 870
    - Expense Type: **Hotel**
4. Click **Save**.

Congratulations! You've successfully created a travel app for your organization. To build the app, you created custom objects for Departments, Travel Approvals, and Expense Items, and you imported department data. Finally, you've tested the app by creating the first Travel Approval record. In the next project, you learn how to customize the user interface, work with list views, and enable Chatter.

Assignment: 02

Title: Customize the User Interface for a Travel Approval App

Create a User and Setup Approvals

Learning Objectives

In this project you'll:

- Customize the page layout for a travel approval app.
- Enable Chatter on the travel approval app to allow for in-app collaboration.

There are a number of ways to adjust the user interface in your Salesforce org to meet your needs. Many customizations can be made through configuration menus and drag-and-drop page layout editors—all with no coding required. This project focuses on the non-coding approach to modifying the user interface, as you customize an app that tracks company travel.

Note that if your company has advanced user interface requirements beyond what can be accomplished with standard configuration, your developers can create custom interfaces or components.

Launch Your Trailhead Playground

You complete this hands-on project in your own personal Salesforce environment, called a Trailhead Playground. Get your Trailhead Playground now by first logging in to Trailhead, and then clicking **Launch** at the bottom of this page. Your playground opens in a new browser tab or window. Keep the playground window open while you do this project. After you complete the project steps in your playground, come back to this window and click **Verify step** at the bottom of this page.

Create a User

Before you begin customizing the travel app, first create a new user, Eric Executive, and set him up as manager. This involves assigning roles and profiles so that Eric has the correct permissions to approve travel requests.

1. In your Trailhead Playground, click and then select **Setup**.
2. Enter Users in the Quick Find box, and select **Users**.
3. Click **New User** and enter these details.

Field	Value
First Name	Eric
Last Name	Executive
Alias	eexec
Email	**(use your real email address)**
Username	Usernames must be unique across ALL of Salesforce. Choose a username like: • **eric.<yourlastname>@<yourcompany>.com** • …or create a username of your choice that should be unique
Nickname	eric.exec
Role	CEO
User License	Salesforce
Profile	System Administrator

4. Click **Save**.

Enable Approval Settings

Now set Eric Executive as your manager, but first ensure you are logged in as yourself. Later in your approval process, travel approval requests are routed to your manager as a first-level approval step.

1. From Setup, enter Users in the Quick Find box and select **Users**.
2. Select your user account in the list provided. (Click on your name in the All Users list.)
3. Click **Edit**.
4. Scroll down to Approver Settings. Set your manager as Eric Executive by clicking and selecting **Eric Executive** from the list.

5. Click **Save**.

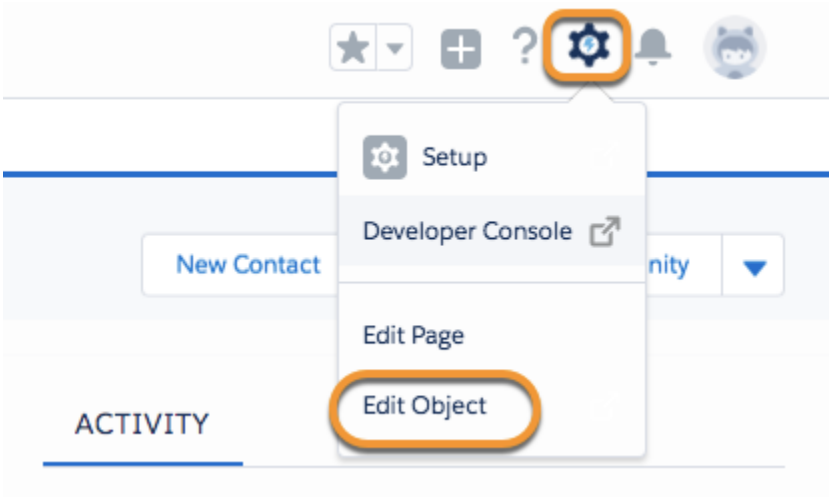
You're off to a good start. Move on to the next step and create and Customize a List View.

Create and Customize a List View

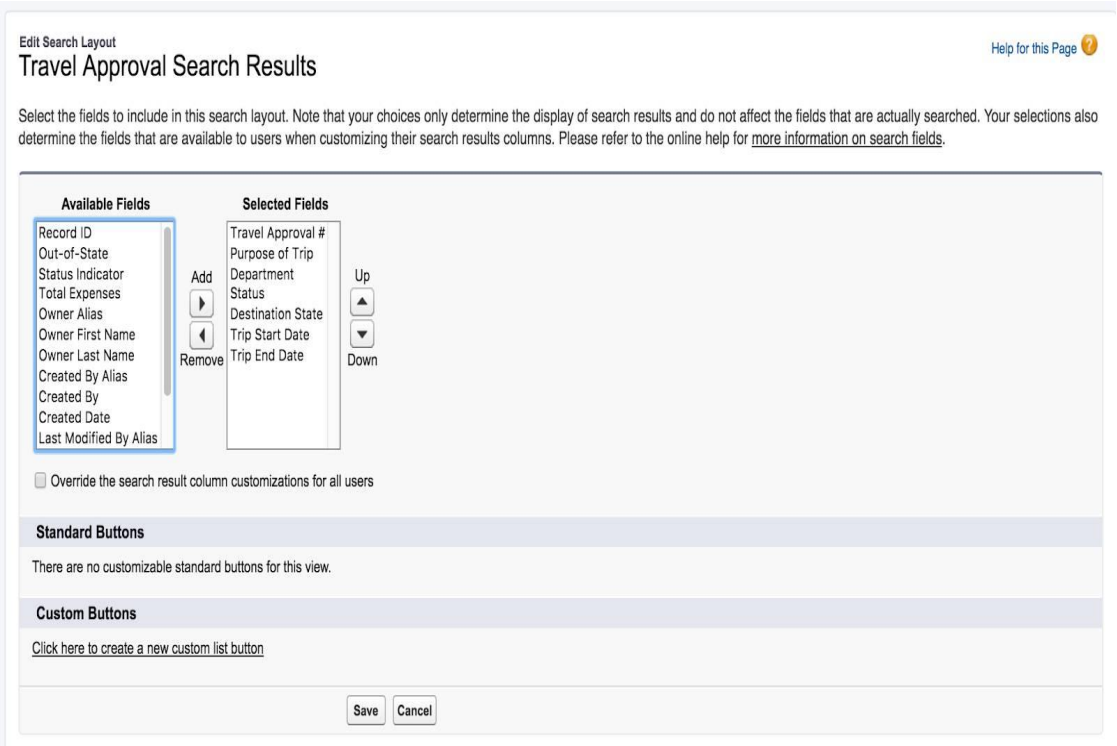
Create List Views

A list view is a set of search conditions that displays records that match the search conditions. For example, a view of contacts that have "Birthdays This Month" would filter your list of contacts based on a search for birthdays falling on a day in the current month. By default, Salesforce includes a number of views for each screen Tab. You can switch between different list views by selecting the current list view and selecting another from the dropdown list.

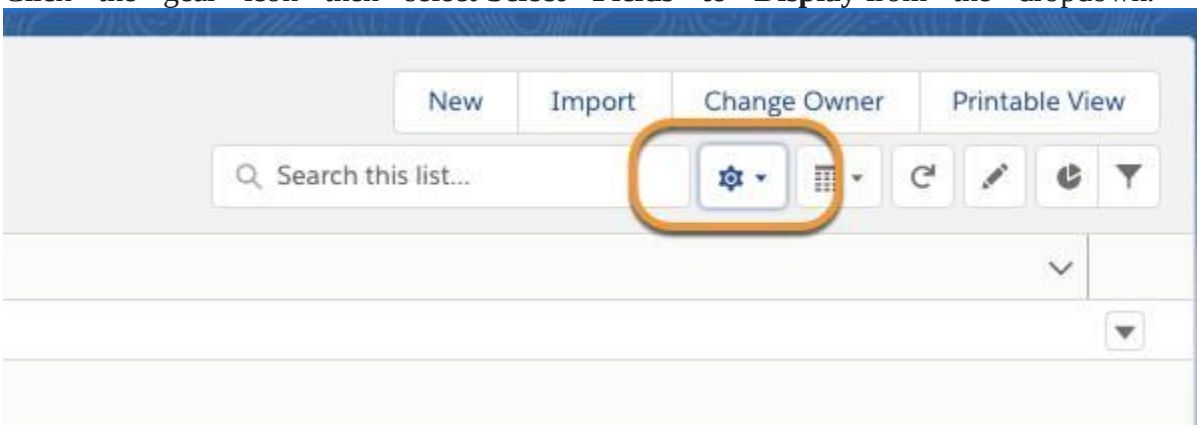
1. From the App Launcher, find and select the **Travel App** and select the **Travel Approvals** tab.
2. Select record **TA-00001** under **All** LIST VIEWS.
3. Click the gear icon, then select **Edit Object**. This loads the object configuration page for the Travel Approval object.



4. Click **Search Layouts**. Click the down arrow for the Default Layout and select **Edit** from the dropdown.
5. Use the Add arrow to move these fields into the Selected Fields column, in order.
    - Purpose of Trip
    - Department
    - Status
    - Destination State
    - Trip Start Date
    - Trip End Date



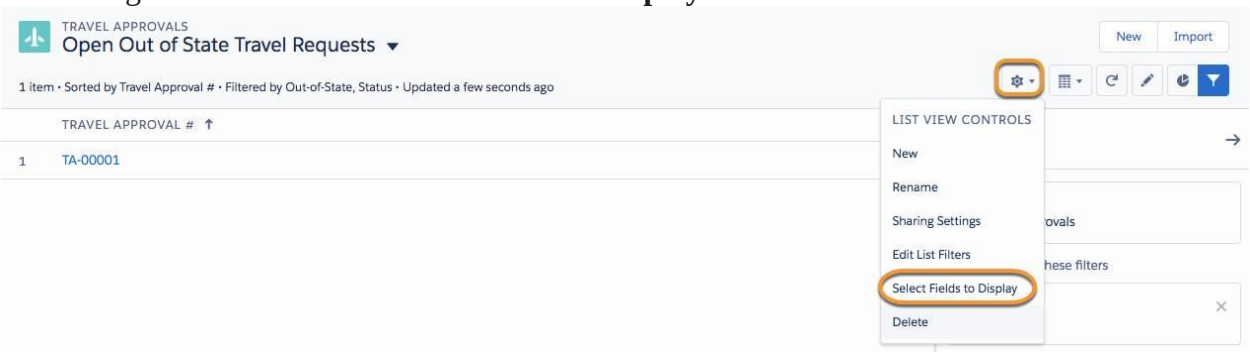
6. Click **Save**.
7. Using the App Launcher, navigate back to the **Travel App** and click the **Travel Approvals** tab..
8. Click **Recently Viewed** and select the **All** list view.
9. Click the gear icon then select **Select Fields to Display** from the dropdown.



10. Use the Add arrow to move these fields to the Selected Fields column, in order.
    - Department
    - Created By
    - Status
    - Trip Start Date
    - Trip End Date
11. Click **Save**.

You can also create a custom list view for your own use. Your custom list views can be private, or you can make them accessible to other users. In this scenario, you create a list view with a filter to show all out-of-state travel requests that have not been approved or rejected. This way you can see exactly what approvals are still outstanding.

1. Click the List View gear icon and select **New** option.
2. Name the new list view Open Out of State Travel Requests and select **All users can see this list view**.
3. Click **Save**.
4. Click **Add Filter**and enter these details:
    - Field: **Out-of-State**
    - Operator: **equals**
    - Value: **True**
5. Click **Done**.
6. Click **Add Filte**r again and enter these details:
    - Field: **Status**
    - Operator: **not equal to**
    - Value: **Approved**, **Rejected**
7. Click **Done**.
8. Click **Save**.
9. Click the gear icon and select **Select Fields to Display**.



10. Use the Add arrow to move the following fields to the Visible Fields column, in order.
    - Department
    - Created By
    - Status
    - Destination State
    - Trip Start Date
    - Trip End Date
11. Click **Save**.

Keep up the great work! Move on to the next step and customize the page layout of the Travel Approval object.

Customize the Travel Approval Object Page Layout

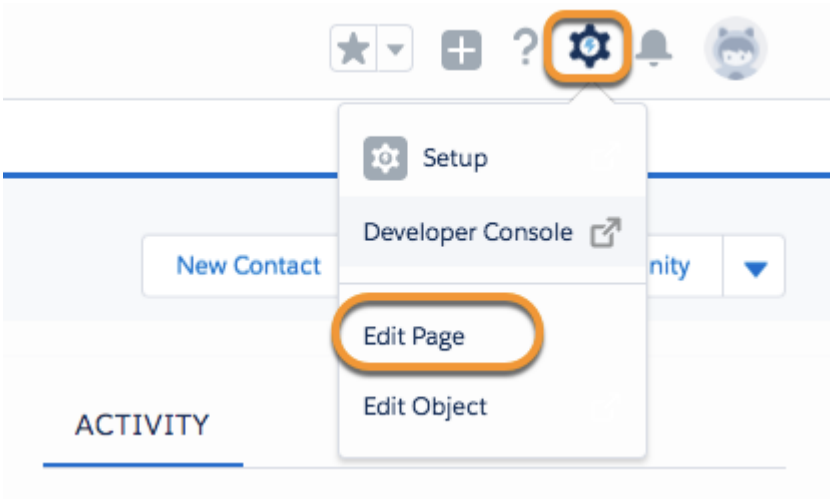
A page layout determines the fields, sections, related lists, and buttons that appear when users view or edit a record. You can modify an object's default page layout or create a custom page layout.

You may have noticed from trying out the app, that all of the fields on your Travel Approval or Expense Item record are aligned in a single column and are slotted in the order in which they were created. This is the default behavior of the new field wizard, but it's not practical for how your users will want to use the system. So management asked you to group fields together logically to make it easier for users to enter data.

Customize a Page Layout

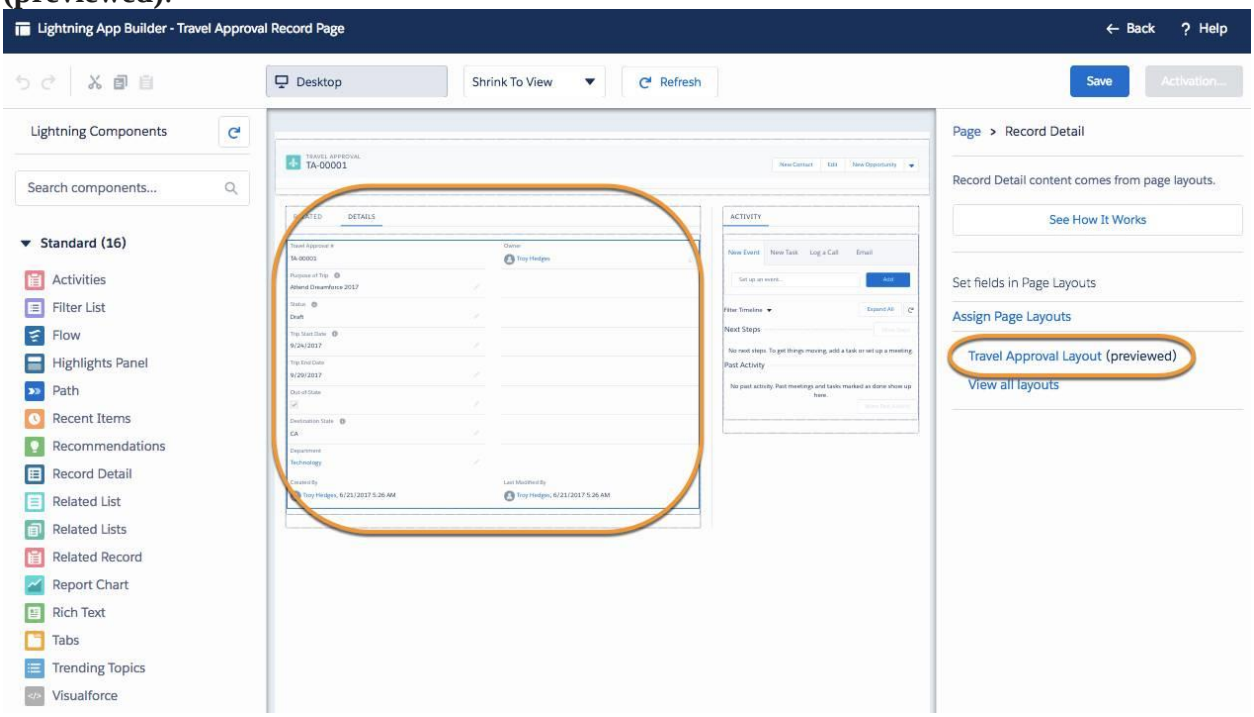
To adjust the Travel Approval user interface to meet management's requirements, start by creating a page layout.

1. In the Travel App app, click the **Travel Approvals** tab and open **TA-00001**.
2. Click and then select **Edit Page**

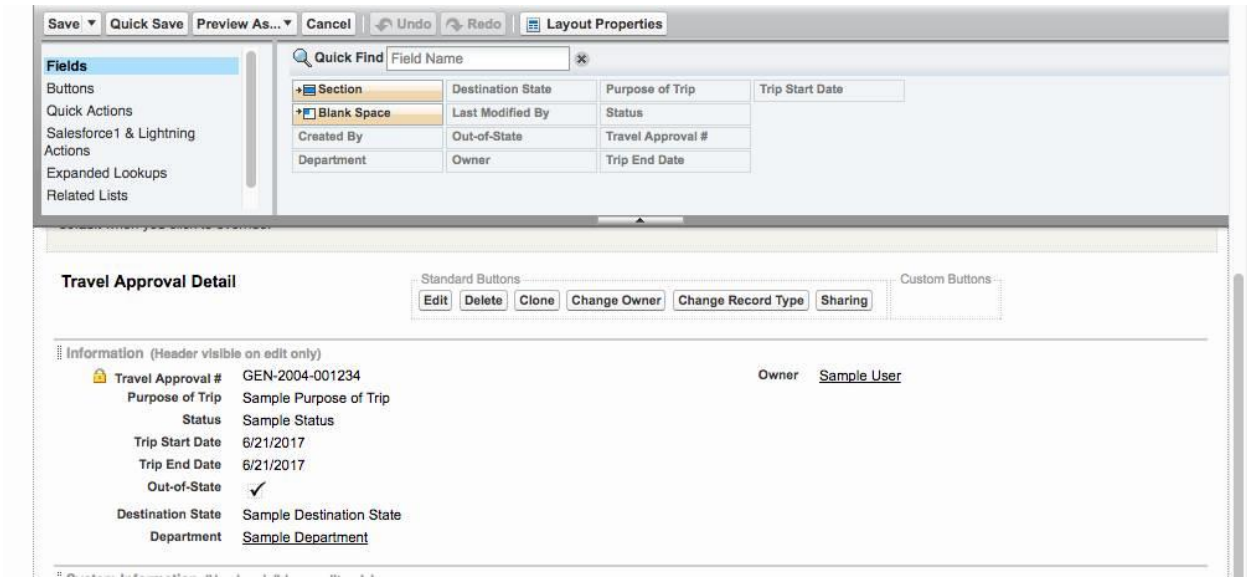


3. Left-click once in the middle of the form to select it. You should see a light blue border around the form. On the right-hand side, click **Travel Approval Layout**

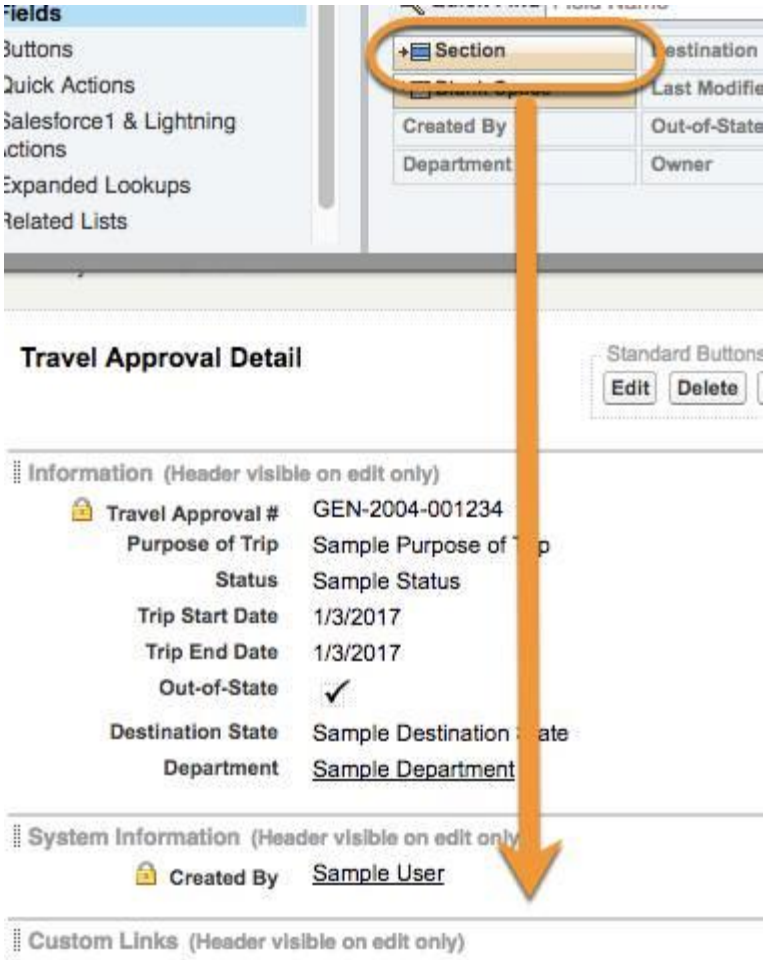
(previewed).



4. Scroll down to the **Travel Approval Detail** section. Here's where you can change the order and position of fields and create a new section to group the trip detail fields.



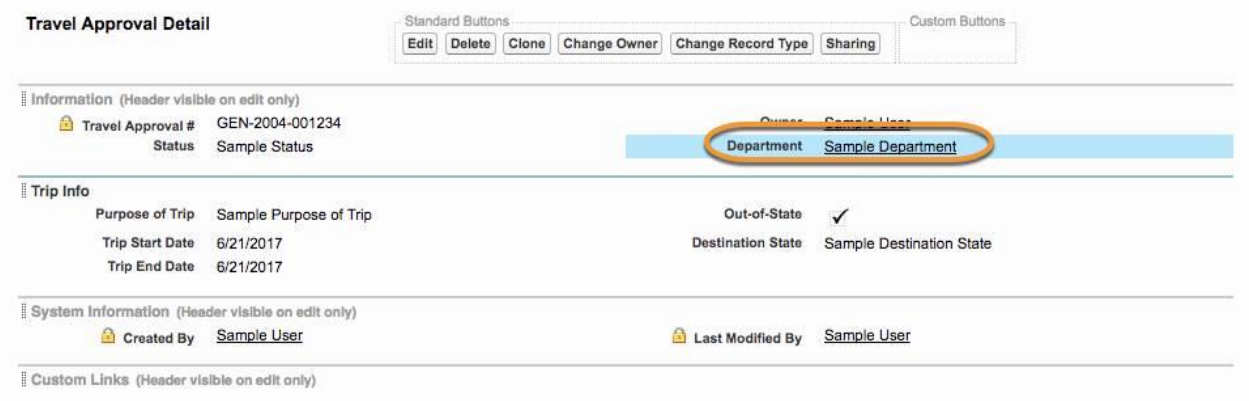
5. Drag **Section** from the top pane to the lower pane directly below the Information section. When dragging over the page, you get a visual indicator of where you can drop the new section.



.

6. Name the section Trip Info and leave the rest of the settings at their default values, then click **OK**.
7. Drag **Purpose of Trip**, **Trip Start Date,** and **Trip End Date** from the Information section to the left-hand column of the Trip Info section.
8. Drag **Out-of-State** and **Destination State** from the Information section to the right-hand column of the Trip Info section.

9. Drag the **Department** field from the left-hand column of the Information section to the right-hand column.



10. Click **Save**.

With a customized Travel Approval page layout, managers have easy access to important information, which helps streamline the approval process. Move on to the next step where you create a related list to show more details of travel expense items.

Customize the Expense Item Related List

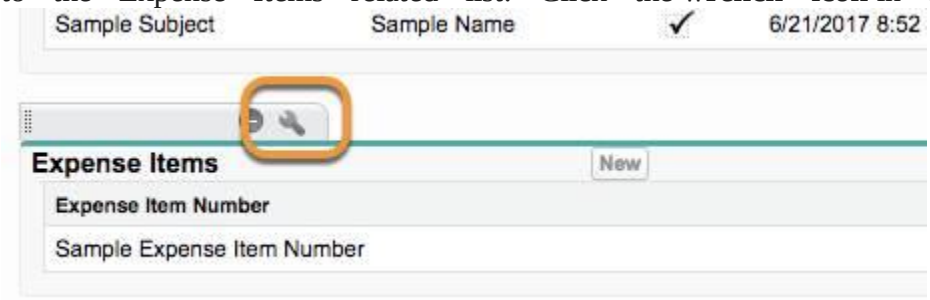
Introduction

Now when you view the Expense Items from a Travel Approval record, it only shows the Expense Item Numbers and not other fields/columns. To allow managers to see details of each expense item without having to drill down to those records, you simply change the related list.

Edit the Expense Item Related List

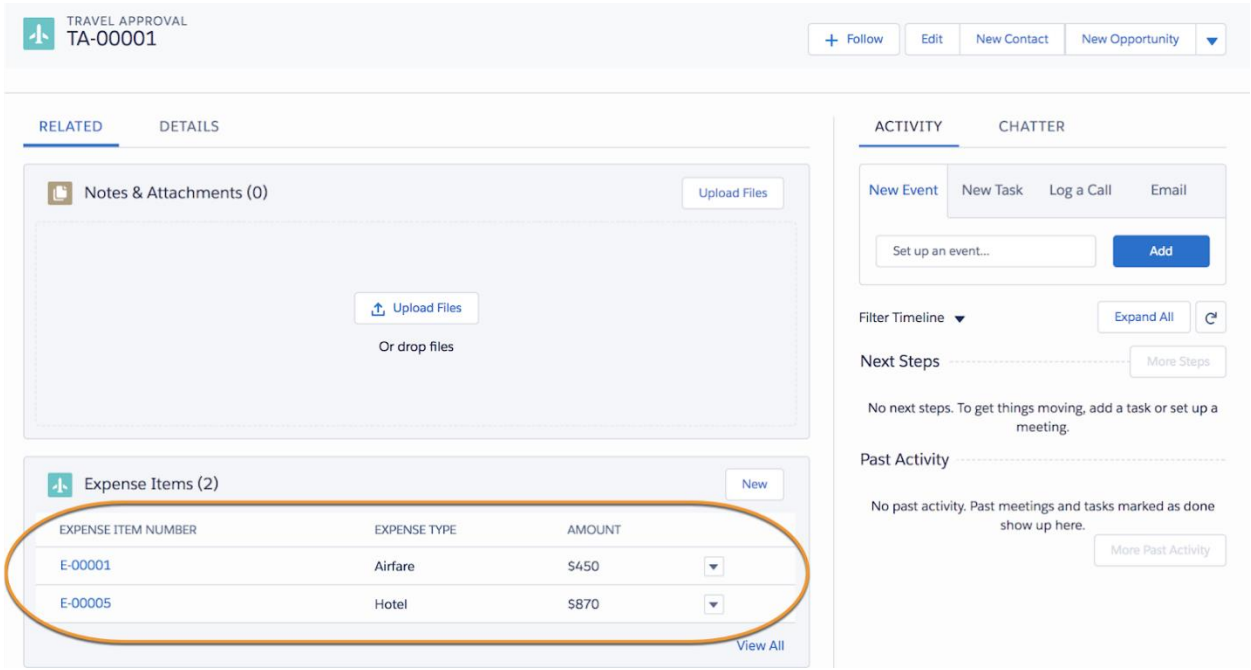
Related lists can be added to any Salesforce page they are related or linked to.

1. From Page Layouts in the Object Manager, select **Travel Approval Layout**. Scroll down to the Expense Items related list. Click the **wrench icon** in the header tab.



2. Move the **Expense Type** and **Amount** fields from Available Fields to Selected Fields.
3. Click **OK**. Click **Yes** if you're asked if you want to Overwrite Users' Related Lists Customizations.
4. Click **Save**.

5. Navigate back to a Travel Approval record and look at the related lists. You should see the extra columns you added to the expense item related list.



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Great work! You have now changed the related list for expense items to display additional columns so we can see details of each expense item without having to drill down into those records. Move on to the next step and enable Chatter on the Travel Approval object to allow managers to easily communicate about travel approval.

Enable Chatter on the Travel Approval Object
Introduction

By enabling feed tracking on objects, managers can follow records and track changes to key fields. They can see updates for records they follow in their Chatter feed, go to a specific record, and @mention other Chatter users to get their attention. It's an ideal way for the management team to communicate about approvals.

Enable Chatter Feed Tracking

Enable Chatter feed tracking on the Travel Approval object.

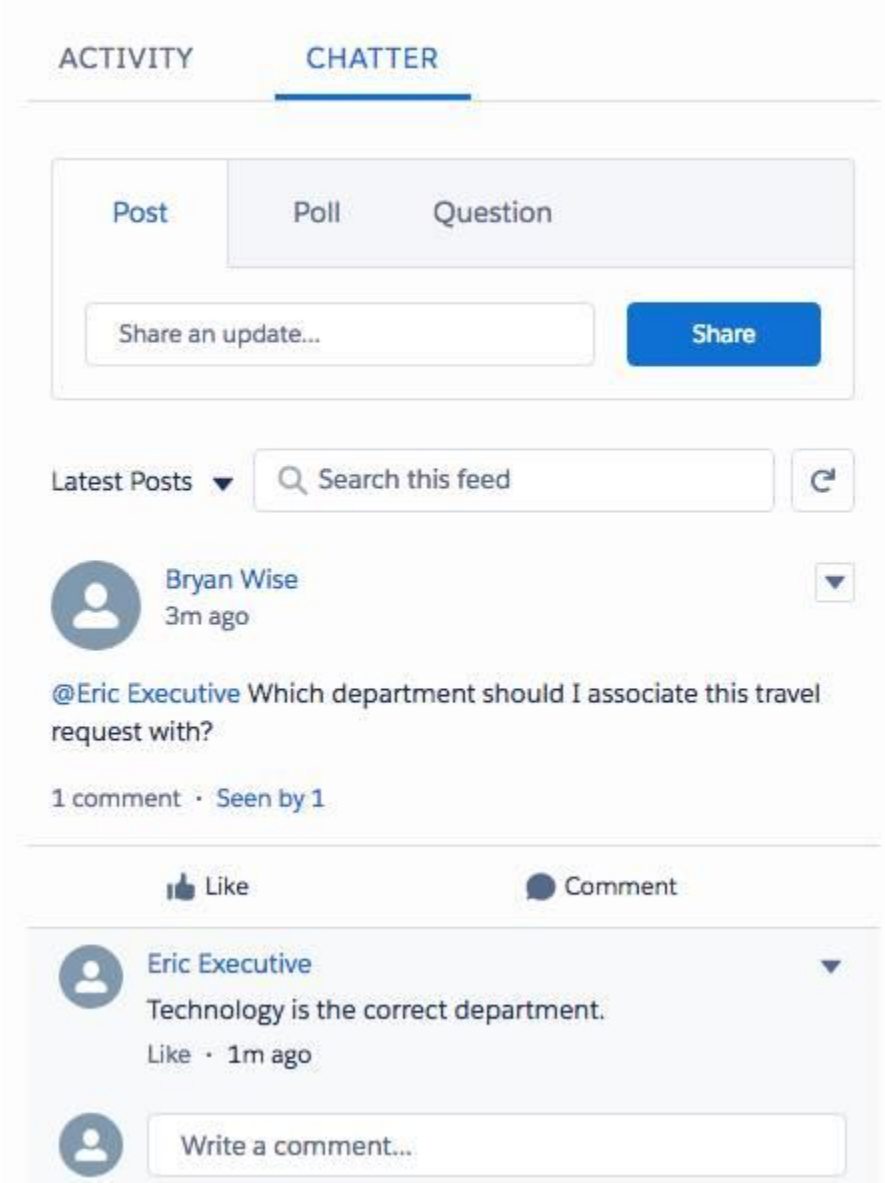
1. From Setup, enter Feed Tracking in the Quick Find box, then select **Feed Tracking**.
2. In the list of available objects, click **Travel Approval**.
3. Select **Enable Feed Tracking**.
4. Select these fields:
    - Destination State

    - Status
5. Click **Save**.

Test Collaboration

1. Via the App Launcher, navigate back to the **Travel App** and click the **Travel Approvals** tab. Click the **TA-00001** record. For record collaboration, notice you have a tab called Chatter. If not, follow the directions below to make the tab to appear:
    - Click on the **gear icon** and select **Edit Page.**
        - Click on the **Activity** tab so that you can edit the configuration of this component.
        - Click **Add Tab** and then click on **Details**. Change the drop-down to **Chatter** and Click **Done.**
        - Click on the **Chatter** Tab.
        - Drag the **Chatter** Component onto the **Chatter** Tab.
        - Click **Save.**
        - Click **Activate.**
        - Click **Assign as Org Default.**
        - Click **Next.**
        - Click **Save**.
        - Click **Back**.
2. Click the **Chatter** tab. Note: By default you have the option to make a Post, submit a Poll for feedback, or ask a Question.
3. Click the **Post** sub-tab. Click in the area labeled **Share an update…** and enter @E and select **Eric Executive** from the popup window. Add the remainder of the message: Which department should I associate this travel request with?.
4. Click **Share** to post. Note: Eric and you will both receive an email and notification about the post.
5. In your email application, reply to the email, saying: Technology is the correct department.

6. **Refresh** your travel app page to see the response in Chatter.



This shows how Eric can collaborate on travel requests directly from his email and still document everything in the Travel Approval app.

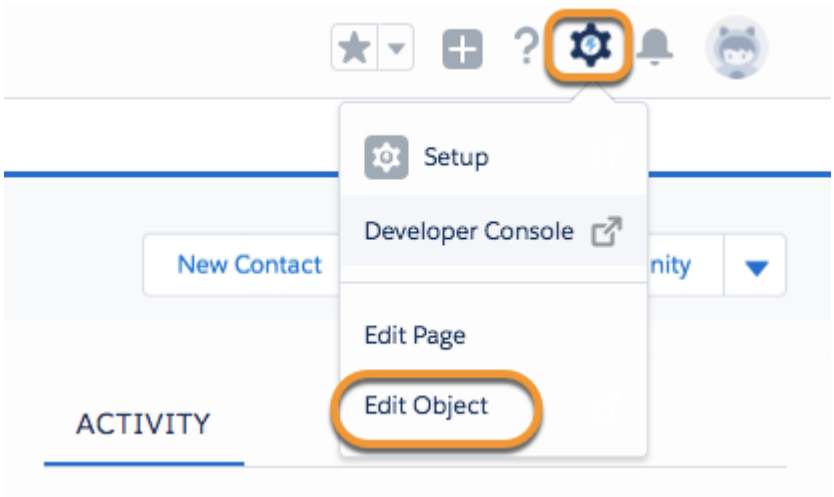
You've created tabs, quick actions, record types, and record pages. You've customized page layouts and enabled feed tracking on Chatter. With all this hard work, you've made Eric Executive and his management team happy. You've also made their Travel Approval app much more efficient. Now they have a more user-friendly app and much easier access to the information they need to do their jobs well.

Create and Customize a List View

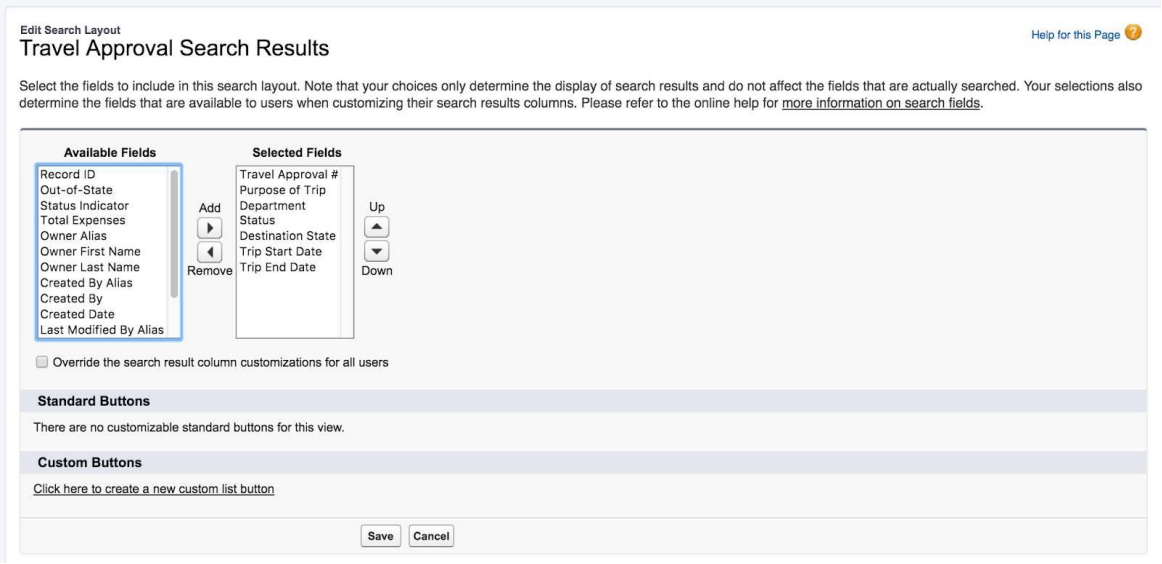
Create List Views

A list view is a set of search conditions that displays records that match the search conditions. For example, a view of contacts that have "Birthdays This Month" would filter your list of contacts based on a search for birthdays falling on a day in the current month. By default, Salesforce includes a number of views for each screen Tab. You can switch between different list views by selecting the current list view and selecting another from the dropdown list.

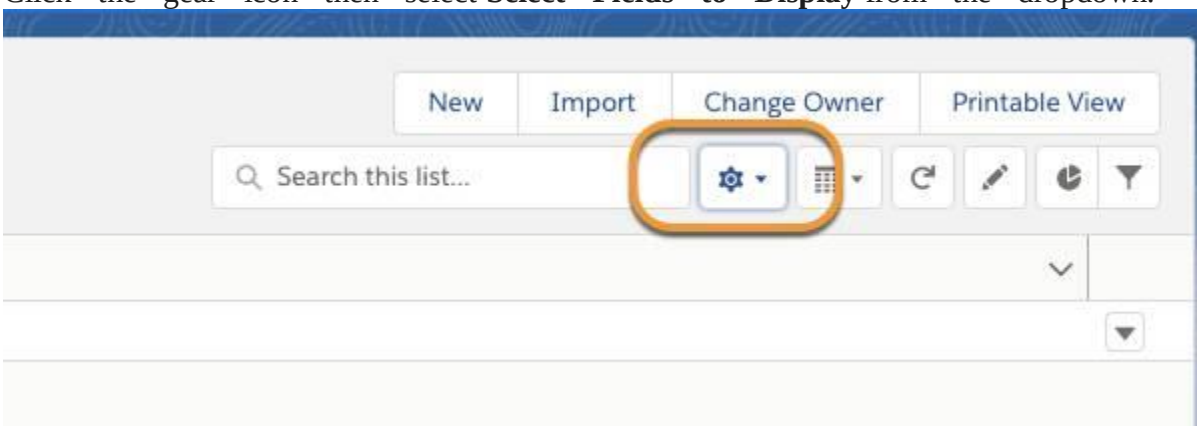
1. From the App Launcher, find and select the **Travel App** and select the **Travel Approvals** tab.
2. Select record **TA-00001** under **All** LIST VIEWS.
3. Click the gear icon, then select **Edit Object**. This loads the object configuration page for the Travel Approval object.



4. Click **Search Layouts**. Click the down arrow for the Default Layout and select **Edit** from the dropdown.
5. Use the Add arrow to move these fields into the Selected Fields column, in order.
    - Purpose of Trip
    - Department
    - Status
    - Destination State
    - Trip Start Date
    - Trip End Date



6. Click **Save**.
7. Using the App Launcher, navigate back to the **Travel App** and click the **Travel Approvals** tab..
8. Click **Recently Viewed** and select the **All** list view.
9. Click the gear icon then select **Select Fields to Display** from the dropdown.

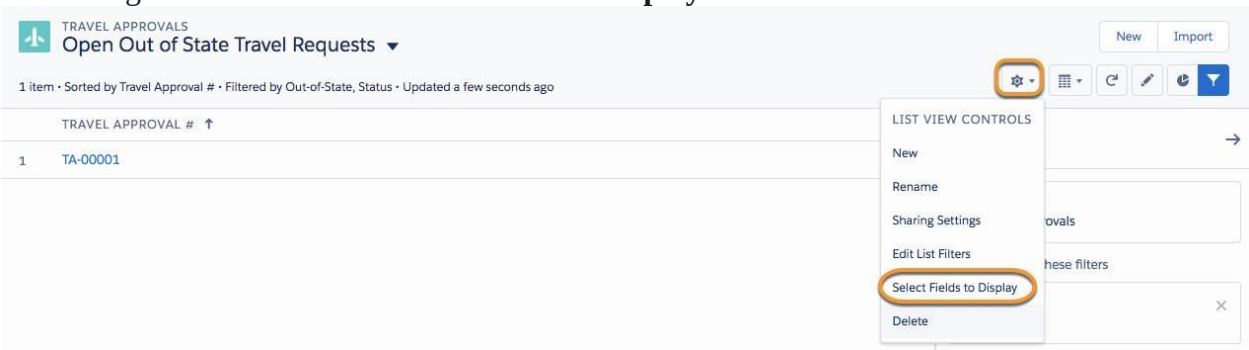


10. Use the Add arrow to move these fields to the Selected Fields column, in order.
    - Department
    - Created By
    - Status
    - Trip Start Date
    - Trip End Date
11. Click **Save**.

You can also create a custom list view for your own use. Your custom list views can be private, or you can make them accessible to other users. In this scenario, you create a list view with a filter to show all out-of-state travel requests that have not been approved or rejected. This way you can see exactly what approvals are still outstanding.

1. Click the List View gear icon and select **New** option.

2. Name the new list view Open Out of State Travel Requests and select **All users can see this list view**.
3. Click **Save**.
4. Click **Add Filter**and enter these details:
    - Field: **Out-of-State**
    - Operator: **equals**
    - Value: **True**
5. Click **Done**.
6. Click **Add Filte**r again and enter these details:
    - Field: **Status**
    - Operator: **not equal to**
    - Value: **Approved**, **Rejected**
7. Click **Done**.
8. Click **Save**.
9. Click the gear icon and select **Select Fields to Display**.



10. Use the Add arrow to move the following fields to the Visible Fields column, in order.
    - Department
    - Created By
    - Status
    - Destination State
    - Trip Start Date
    - Trip End Date
11. Click **Save**.

Keep up the great work! Move on to the next step and customize the page layout of the Travel Approval object.

Customize the Travel Approval Object Page Layout

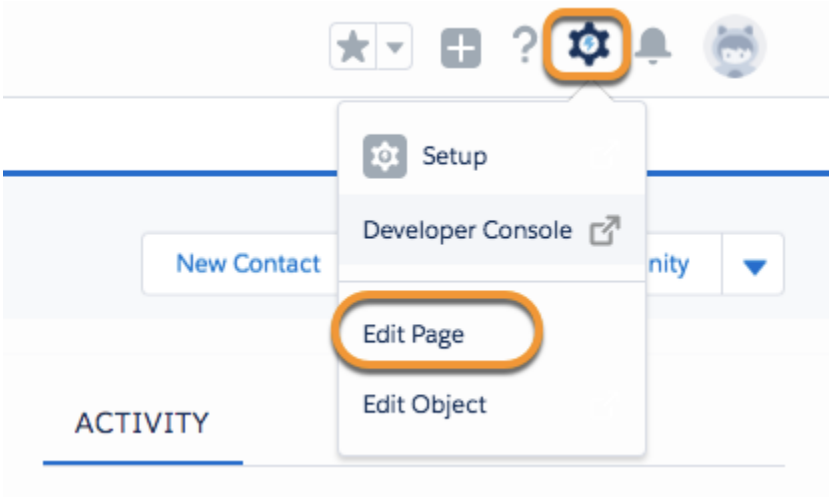
A page layout determines the fields, sections, related lists, and buttons that appear when users view or edit a record. You can modify an object's default page layout or create a custom page layout.

You may have noticed from trying out the app, that all of the fields on your Travel Approval or Expense Item record are aligned in a single column and are slotted in the order in which they were created. This is the default behavior of the new field wizard, but it's not practical for how your users will want to use the system. So management asked you to group fields together logically to make it easier for users to enter data.

Customize a Page Layout

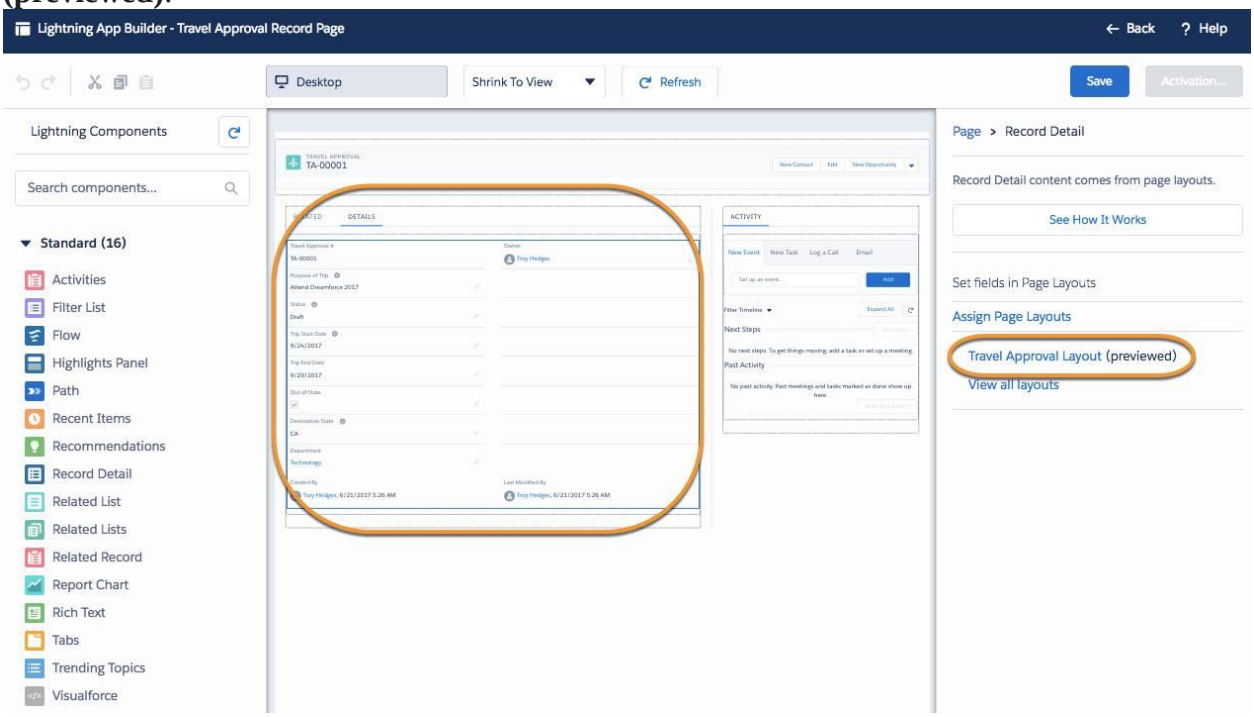
To adjust the Travel Approval user interface to meet management's requirements, start by creating a page layout.

1. In the Travel App app, click the **Travel Approvals** tab and open **TA-00001**.
2. Click and then select **Edit Page.**

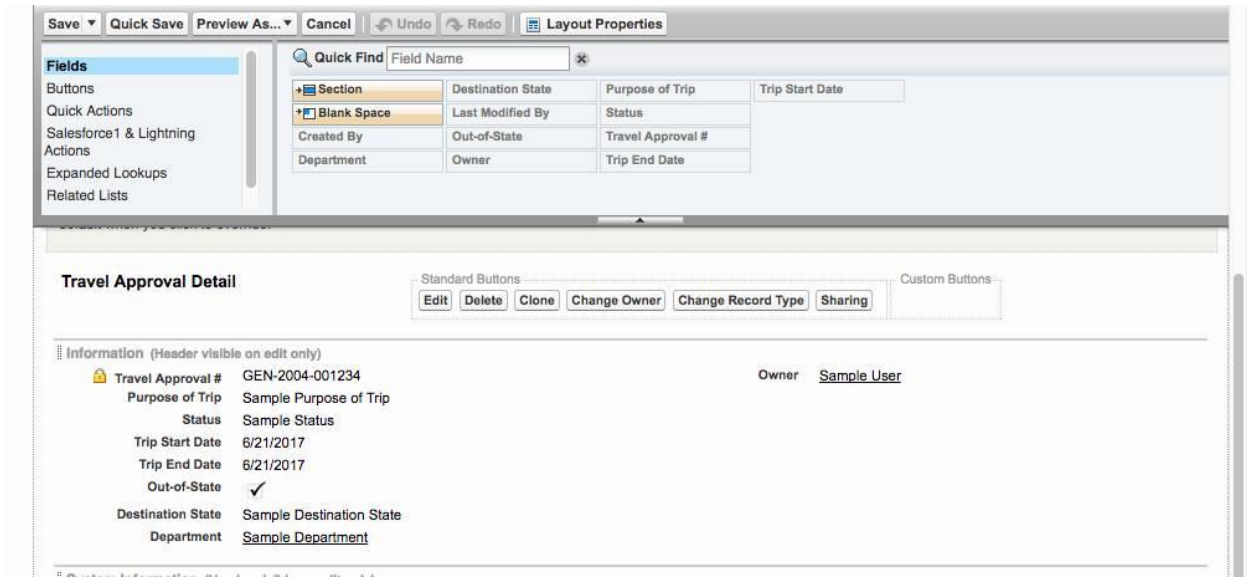


3. Left-click once in the middle of the form to select it. You should see a light blue border around the form. On the right-hand side, click **Travel Approval Layout**

(previewed).



4. Scroll down to the **Travel Approval Detail** section. Here's where you can change the order and position of fields and create a new section to group the trip detail fields.



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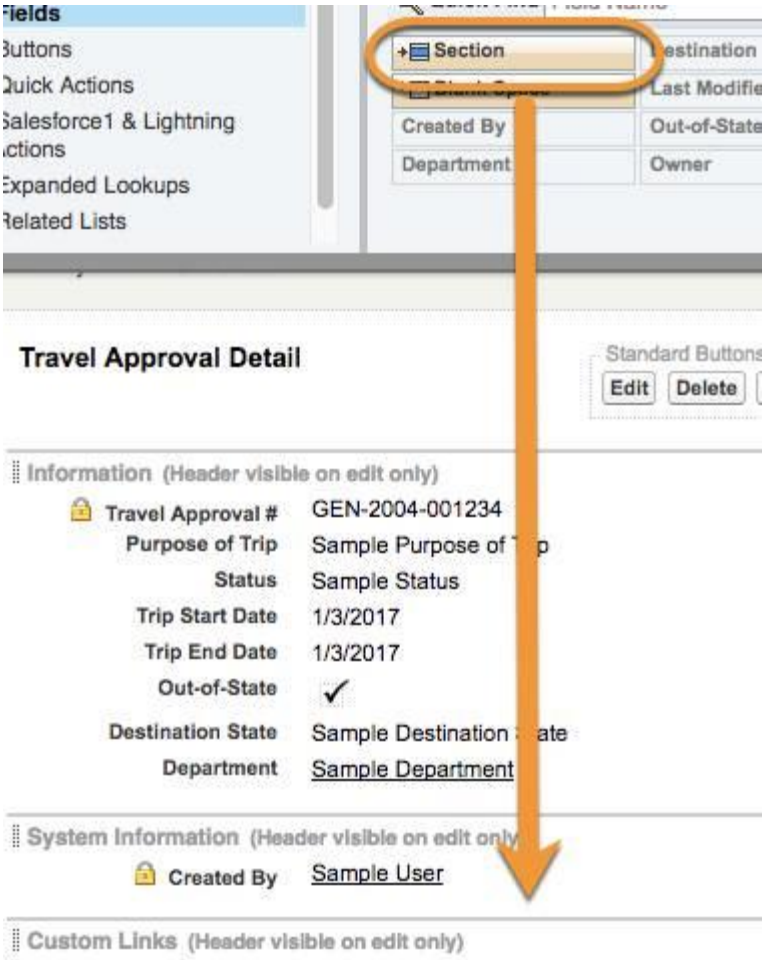

6. Name the section Trip Info and leave the rest of the settings at their default values, then click **OK**.
7. Drag **Purpose of Trip**, **Trip Start Date,** and **Trip End Date** from the Information section to the left-hand column of the Trip Info section.
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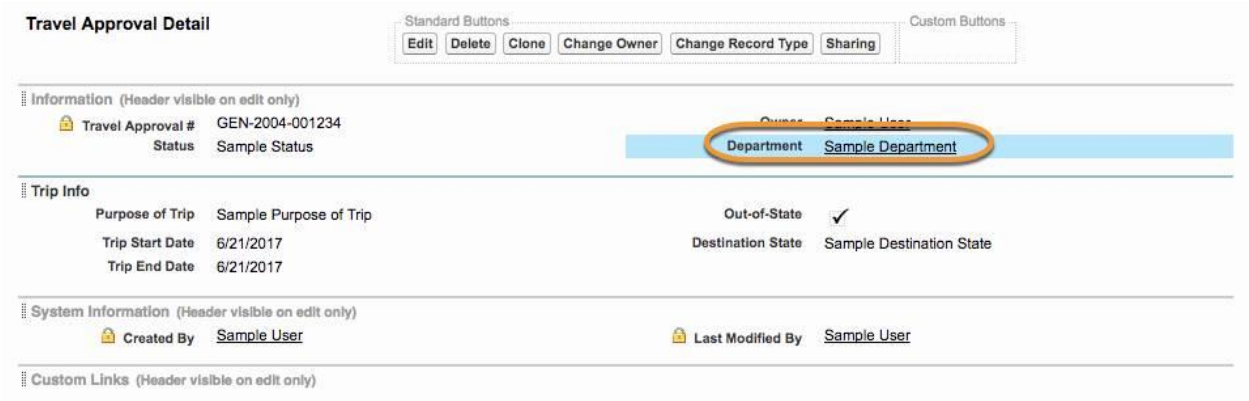

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Now when you view the Expense Items from a Travel Approval record, it only shows the Expense Item Numbers and not other fields/columns. To allow managers to see details of each expense item without having to drill down to those records, you simply change the related list.

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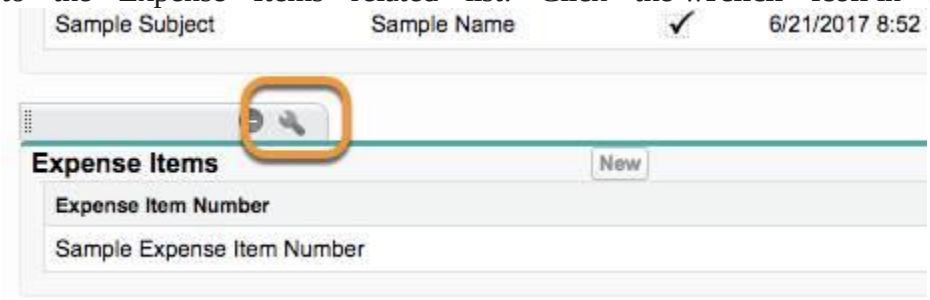
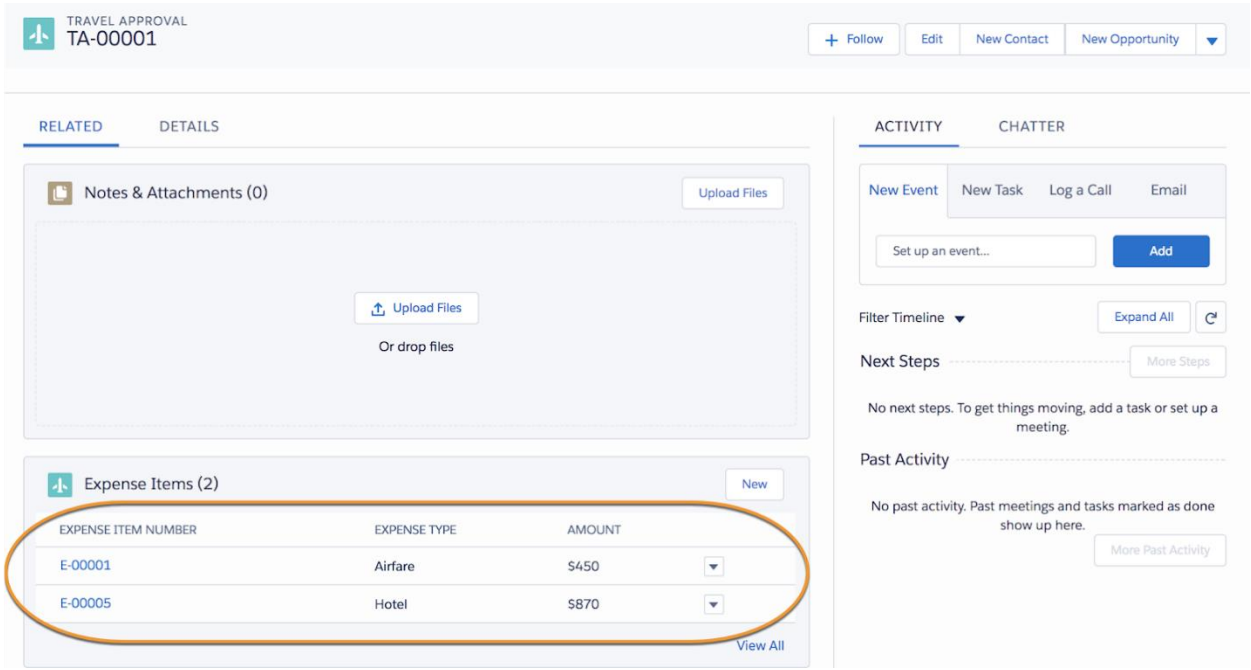


2. Move the **Expense Type** and **Amount** fields from Available Fields to Selected Fields.
3. Click **OK**. Click **Yes** if you're asked if you want to Overwrite Users' Related Lists Customizations.
4. Click **Save**.

5. Navigate back to a Travel Approval record and look at the related lists. You should see the extra columns you added to the expense item related list.



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Enable Chatter feed tracking on the Travel Approval object.

1. From Setup, enter Feed Tracking in the Quick Find box, then select **Feed Tracking**.
2. In the list of available objects, click **Travel Approval**.

3. Select **Enable Feed Tracking**.
4. Select these fields:
    - Destination State
    - Status
5. Click **Save**.

Test Collaboration

1. Via the App Launcher, navigate back to the **Travel App** and click the **Travel Approvals** tab. Click the **TA-00001** record. For record collaboration, notice you have a tab called Chatter. If not, follow the directions below to make the tab to appear:
    - Click on the **gear icon** and select **Edit Page.**
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        - Click **Assign as Org Default.**
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2. Click the **Chatter** tab. Note: By default you have the option to make a Post, submit a Poll for feedback, or ask a Question.
3. Click the **Post** sub-tab. Click in the area labeled **Share an update…** and enter @E and select **Eric Executive** from the popup window. Add the remainder of the message: Which department should I associate this travel request with?.
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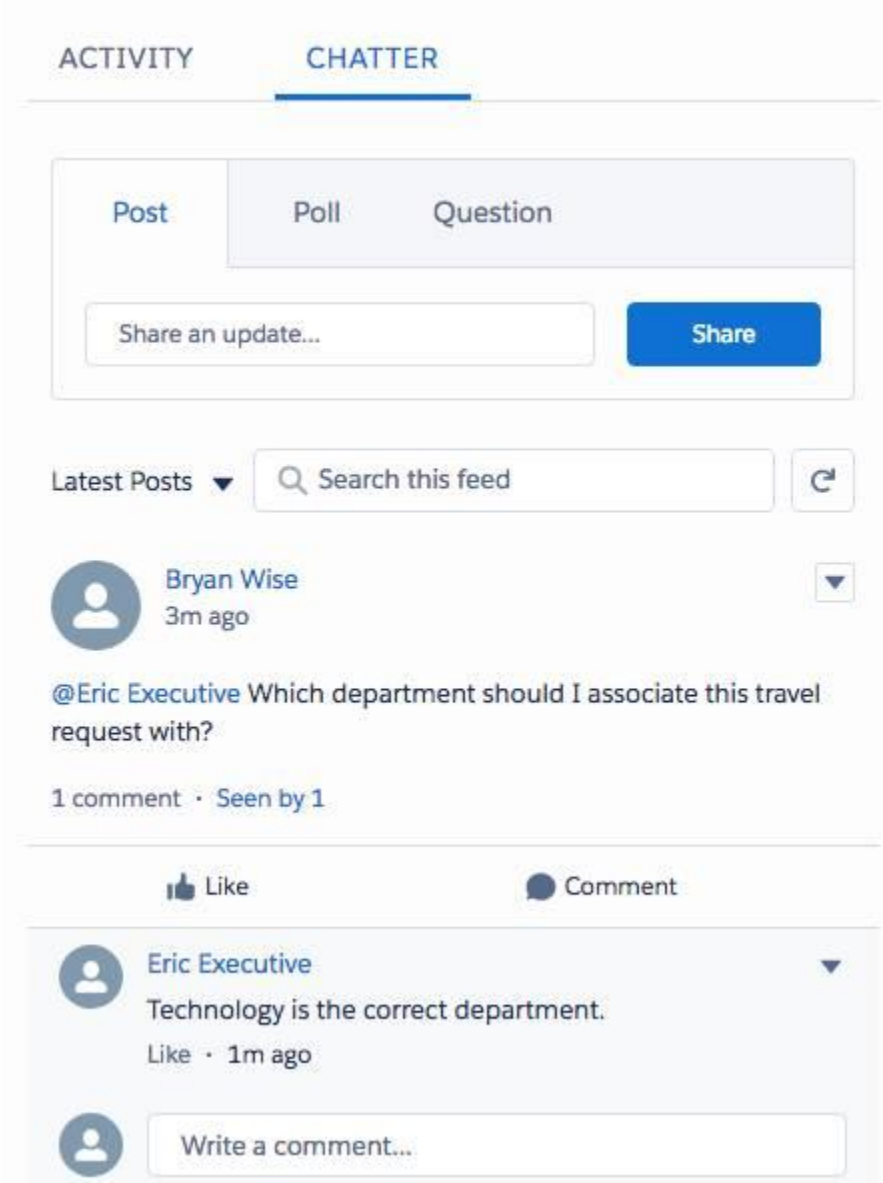

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Assignment: 03

Title: Add Business Logic to a Travel Approval App

Create Validation Rules

Learning Objectives

After completing this project, you'll be able to:

- Enforce data integrity with validation rules.
- Create roll-up summary and formula fields.
- Automate business processes with workflow tools.

Introduction

Within the Salesforce Platform there are a number of features and tools that let you streamline and automate your business processes. For example, if users are supposed to check the **Out of State** box every time they submit an out of state travel request, wouldn't it be nice if that step was done automatically? How about an approval process? Your application might not be adopted if users still have to send an email for approval from their manager and other executives. As you discover in this project, the Salesforce Lightning Platform makes business process automation a snap and doesn't require any code.

Launch Your Trailhead Playground

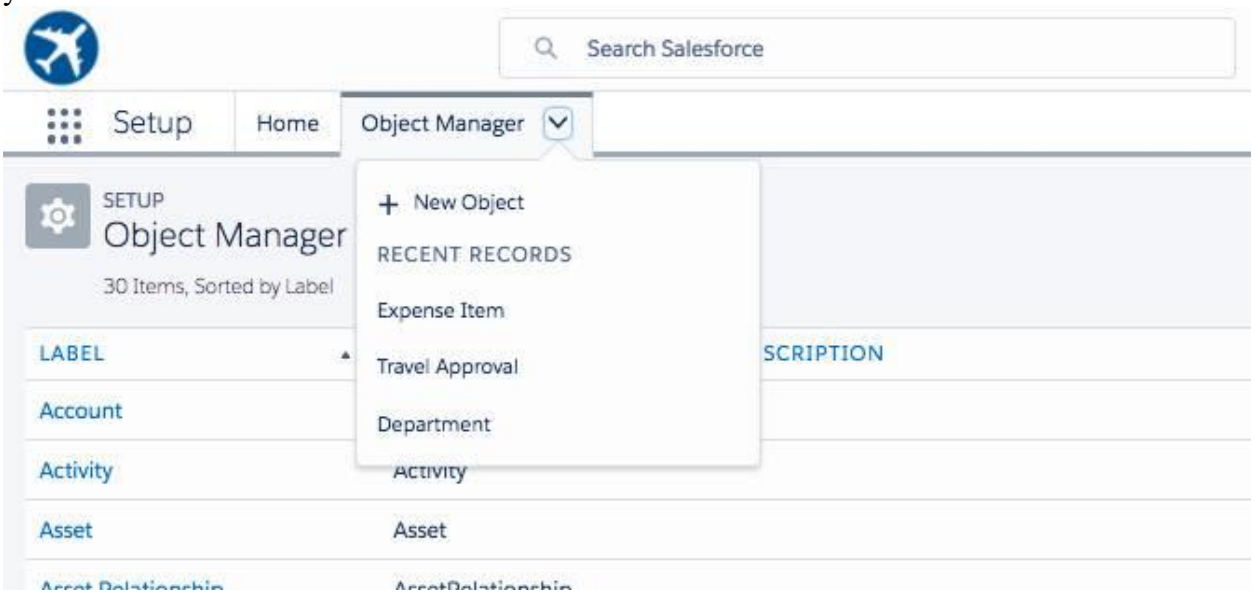
You complete this hands-on project in your own personal Salesforce environment, called a Trailhead Playground. Get your Trailhead Playground now by first logging in to Trailhead, and then clicking **Launch** at the bottom of this page. Your playground opens in a new browser tab or window. Keep the playground window open while you do this project. After you complete the project steps in your playground, come back to this window and click **Verify step** at the bottom of this page.

Create Validation Rules

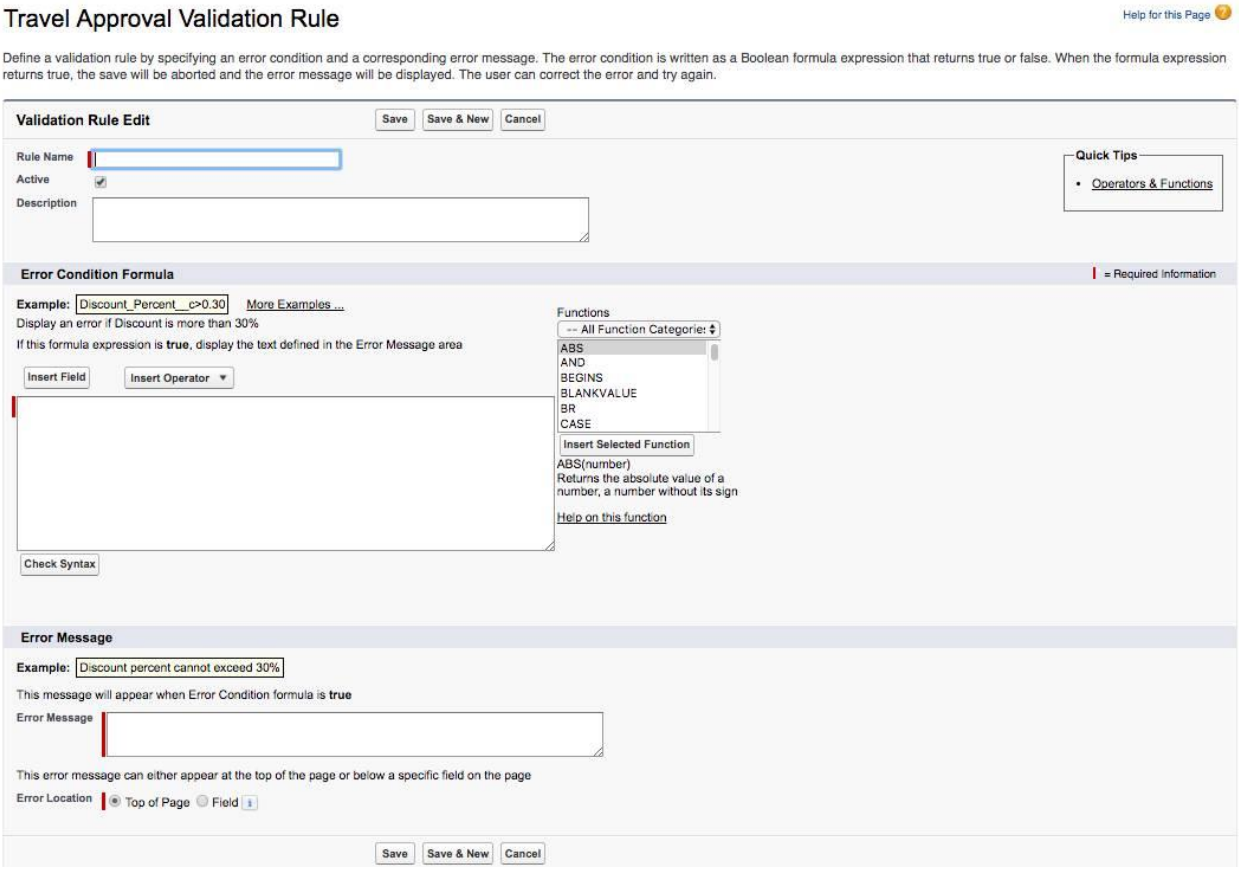
Let's start with validation rules. Validation rules let you set up business-specific criteria to prevent users from saving invalid data in one or more fields. A validation rule evaluates a formula when a record is saved. If a rule's criteria aren't met, users see a custom error message and the record doesn't save. If a rule's criteria are met, the record saves. Use validation rules to improve data quality by applying conditions, ensuring proper formatting, and enforcing consistency.

Let's create a validation rule to enforce that a trip end date must always be greater than (>=) the trip start date.

1. Click and select **Setup**.
2. Click **Object Manager** and then click the icon. This provides a list of recent objects you've edited.



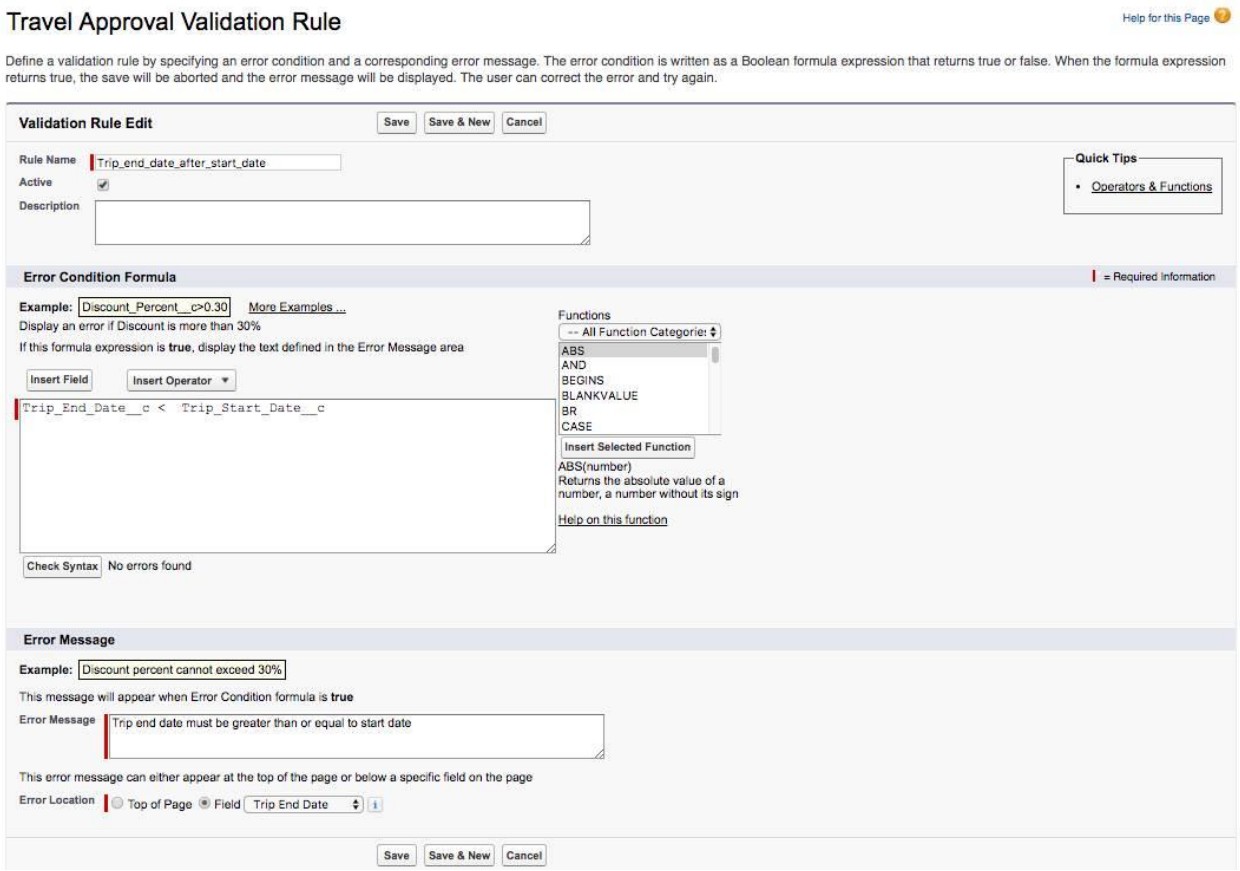
3. Select **Travel Approval** to open the configuration page for the Travel Approval object.
4. Click **Validation Rules**.
5. Click **New**.



6. Enter the following values.

Parameter	Value
Rule Name	Trip end date after start date
Active	*Make sure to keep this selected/checked.*
Condition Formula	Trip_End_Date__c < Trip_Start_Date__c **NOTE:** When writing a validation rule, your condition formula should return "true" for your error condition.
Error Message	Trip end date must be greater than or equal to start date
Error Location	Select **Field** and pick **Trip End Date** as the location for the error

Here's what the rule should look like.



7. If everything looks good, click **Save**.

8. Next, click the **Back to Travel Approval** link.

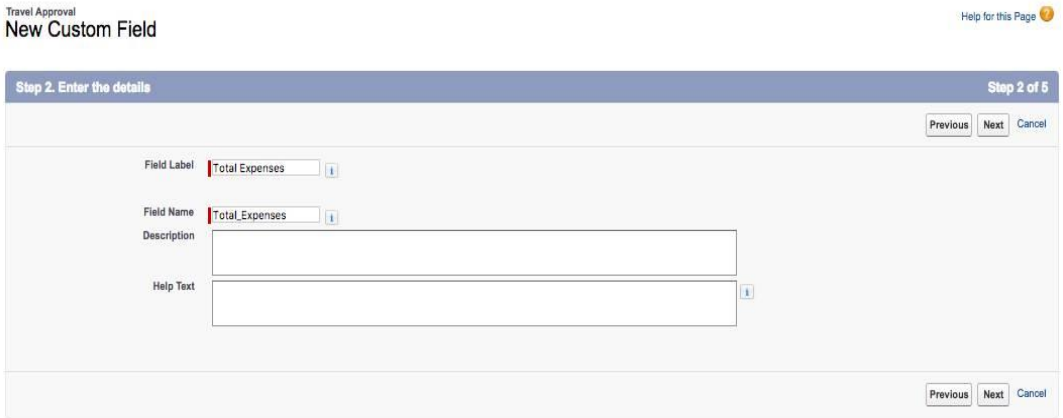
Great job! You added a validation on the Travel Approval object to ensure the trip end date is after the trip start date. In the next section, you add a roll-up summary field to total up the trip expense items.

Create a Roll-Up Summary Field

Create a Summary Field

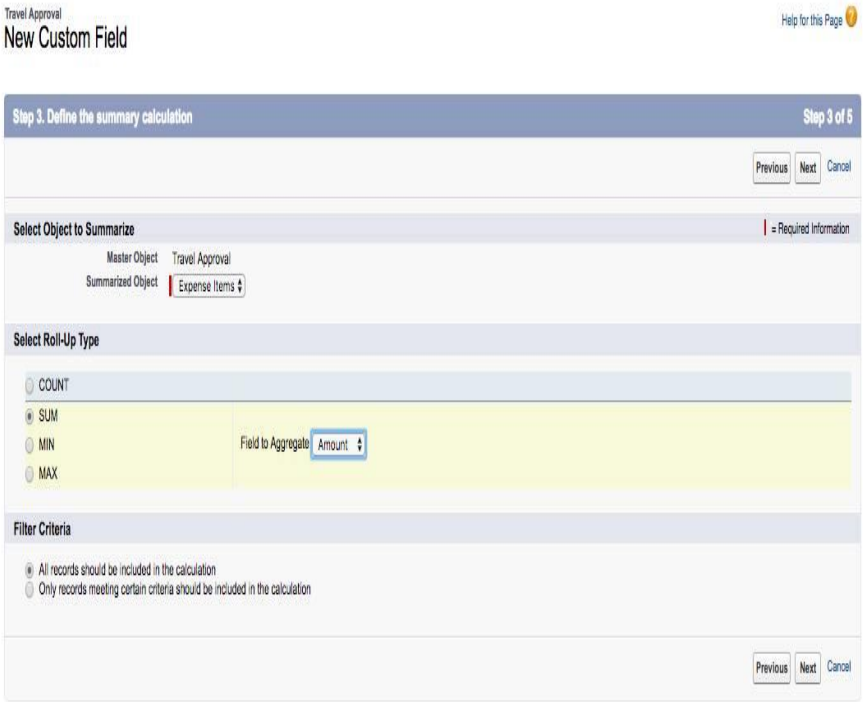
Next, you create a field on the Travel Approval object that automatically sums up the total amount of expenses from the related Expense Items. Salesforce has a field called a roll-up summary field that provides this functionality.

1. From the Travel Approval object, select **Fields & Relationships**.
2. Click **New**.
3. Select the **Roll-Up Summary** data type.
4. Click **Next**.
5. Enter the following values for the field details:
    a. Field Label: Total Expenses
    b. Field Name: Total_Expenses (this automatically gets set when you tab out of the Field Label field)



6. Click **Next**.
7. Configure the roll-up calculation.
    a. Summarized Object: **Expense Items**
    b. Roll-Up Type: **SUM**
    c. Field to Aggregate: **Amount**

d. Filter Criteria: **All records should be included in the calculation.**



8. Click **Next**, **Next**, **Save**.

Nice job! You now have a new field on your Travel Approval object that automatically sums up your expenses. It has also been automatically added to your page layout. On to the next step, where you learn about formula fields.

Create Formula Fields

Add a Static Resource

Next, you create a field on the Travel Approval object that shows a visual indicator (that is, image file) based on the value of the Status field. For example, one image displays for Rejected approvals and a different image for Approved approvals. This provides a quick and simple way for users of the system to get an indicator of the status of a travel approval.

First, we need to upload a zip file to your Salesforce environment that contains all the images we use. You should have a file titled StatusImages.zip that is part of the project files you downloaded at the beginning of the project. We now upload that zip file as a static resource file in Salesforce.

1. Click the **Home** tab to navigate back to the main setup page.
2. Click **Custom Code | Static Resources** (or enter Static in the Quick Find to filter down the options).
3. Click **New**.
4. Enter the following values for your static resource:

Parameter	Value
Name	StatusImages (**Important**: there are no spaces, and the S and I are capitalized)
File	StatusImages.zip
Cache-Control	**Public**

Here's what the it should look like:

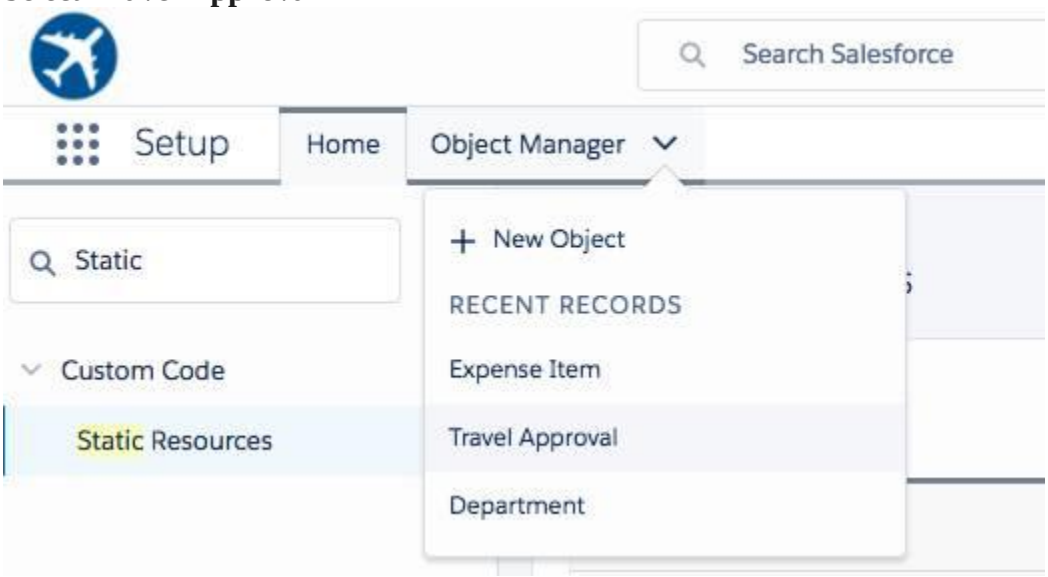
5. If everything looks good, click **Save**.

Add a Field

Next, create a new field on the Travel Approval object to show an image based on the Status field. Salesforce has a formula field data type that can be used for this.

1. Click the icon next to the **Object Manager** tab. This provides a shortcut to the Object Manager for the recent objects you have edited.

2. Select **Travel Approval**



3. Select **Fields & Relationships**.
4. Click **New**
5. Select **Formula** data type.
6. Click **Next**.
7. Enter the following values:
    a. Field Label: Status Indicator
    b. Field Name: Status_Indicator (This automatically gets sent when you tab out of the Field Label field)
    c. Formula Return Type: **Text**
8. Click **Next**.
9. Copy and paste the following formula into the formula editor.

```
IF(ISPICKVAL(Status__c, 'Approved'),IMAGE("/resource/StatusImages/thumbs-up.png","Accepted",20,20),

IF (ISPICKVAL(Status__c, 'Rejected'),IMAGE("/resource/StatusImages/thumbs-down.png","Rejected",20,20),

IMAGE("/resource/StatusImages/draft.png","In-Process",20,20)))
```

Copy

10. Click **Next**, **Next, Save**.

Congratulations, you now have a new field **Status Indicato**r setup on your **Travel Approval** object. In the next step, you learn how to automate your application with Flow Builder.

Create a Flow

The last business rule functionality to implement before testing your application is a rule to set the Out-of-State checkbox field on the Travel Approval object if out-of-state travel has been chosen. Salesforce offers workflow capabilities that provide a declarative, drag-and-drop design environment to build our business process logic.

Get Started with Flow Builder

You may have heard several terms used interchangeably when referring to flows. As a reminder, the official terms are:

- **Salesforce Flow**—The product that encompasses building, managing, and running flows and processes.
- **Flow Builder**—A point-and-click tool for building flows.
- **Flow**—An application that automates a business process by collecting data and doing something in your Salesforce org or an external system.

In short, the Salesforce Flow product includes a couple of tools. One of them, Flow Builder, lets you create flows.

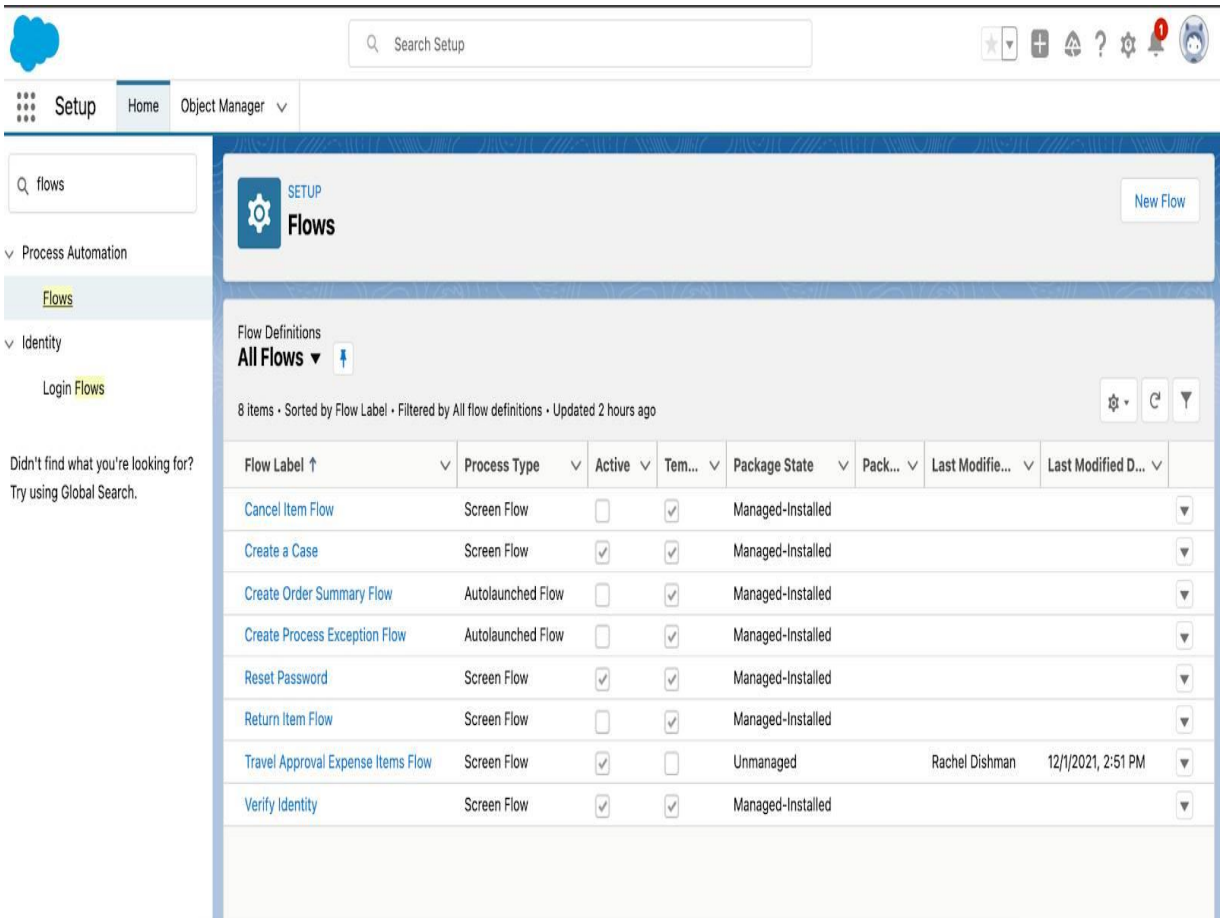
Flow Building Blocks

Every flow is made up of three building blocks.

- **Elements (1)** appear on the canvas. To add an element to the canvas, drag it there from the toolbox.
- **Connectors (2)** define the path that the flow takes at run time. They tell the flow which element to execute next.
- **Resources (3**) are containers that represent a given value, such as field values or formulas. You can reference resources throughout your flow. For example, look up an account's ID, store that ID in a variable, and later reference that ID to update the account.

Now, create a flow that uses the **update record** node to set the out-of-state flag.

1. From Setup, click the **Home** tab.
2. Select **Process Automation | Flows** (or use the Quick Find and search for flows).



3. Click **New Flow**.
4. Select **Record-Triggered Flow** then click **Create**.
5. Enter these values:

Parameter	Value
Object	Travel Approval
Configure Trigger	Trigger the flow when: **A record is created or updated**
Condition Requirements	None
Optimize the Flow For:	Fast Field Updates

Configure Start

Select Object

Select the object whose records trigger the flow when they're created, updated, or deleted.

*Object

Travel Approval

Configure Trigger

*Trigger the Flow When:

- ○ A record is created
- ○ A record is updated
- ● A record is created or updated
- ○ A record is deleted

Set Entry Conditions

Specify entry conditions to reduce the number of records that trigger the flow and the number of times the flow is executed. Minimizing unnecessary flow executions helps to conserve your org's resources.

If you create a flow that's triggered when a record is updated, we recommend first defining entry conditions. Then select the **Only when a record is updated to meet the condition requirements** option for When to Run the Flow for Updated Records.

Condition Requirements

None

***Optimize the Flow for:**

Fast Field Updates

Update fields on the record that triggers the flow to run. This high-performance flow runs *before* the record is saved to the database.

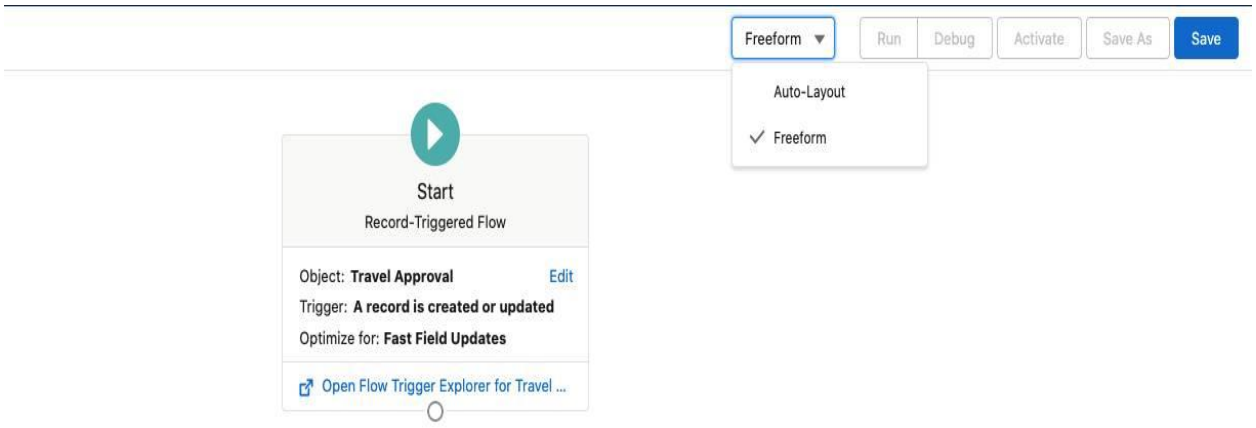
Actions and Related Records

Update any record and perform actions, like send an email. This more flexible flow runs *after* the record is saved to the database.

☐ Include a Run Asynchronously path to access an external system after the original transaction for the triggering record is successfully committed

Cancel | Done

6. Click Done



7. In the Layout dropdown, select **Freeform.**

Add a Decision Element

1. From the left-hand toolbox column, drag a **Decision** element onto the flow builder screen.
2. Set the following parameters:

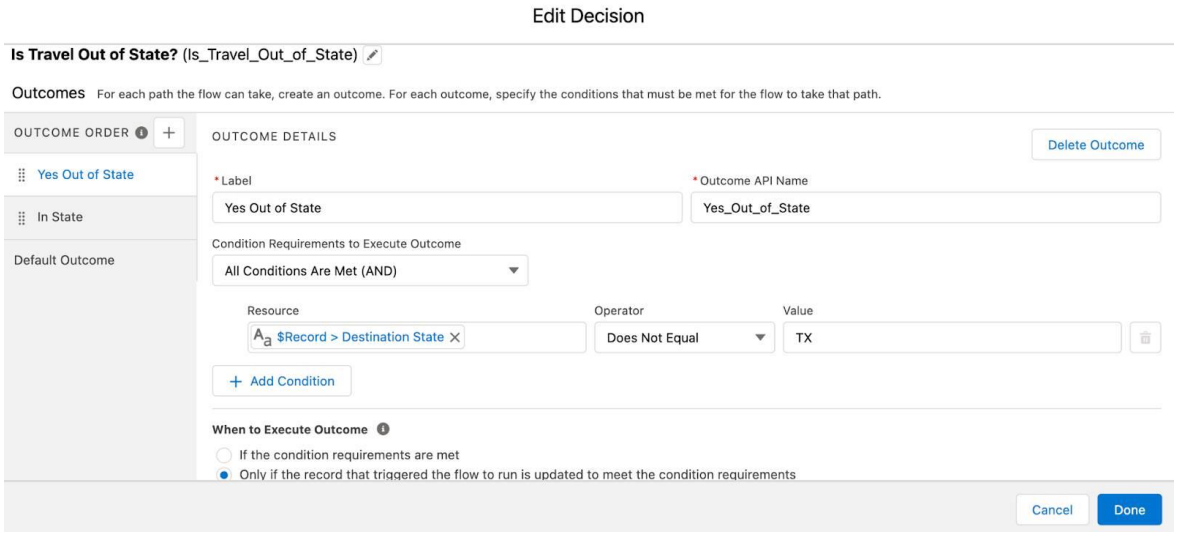
Parameter	Value
Label	Is Travel Out of State?
API Name	Is_Travel_Out_of_State (This automatically gets set when you tab out of the Label field)
Description	Leave blank

3. Set the **Outcomes**.
4. For the first outcome, set these parameters:

Parameter	Value
Label	Yes Out of State
Outcome API Name	Yes_Out_of_State (This automatically gets set when you tab out of the Label field)

Parameter	Value
Condition Requirements to Execute Outcome	**All Conditions Are Met (AND)**
Resource	**$Record > Destination State**
Operator	**Does Not Equal**
Value	TX
When to Execute the Outcome	**Only if the record that triggered the flow to run is updated to meet the condition requirements**

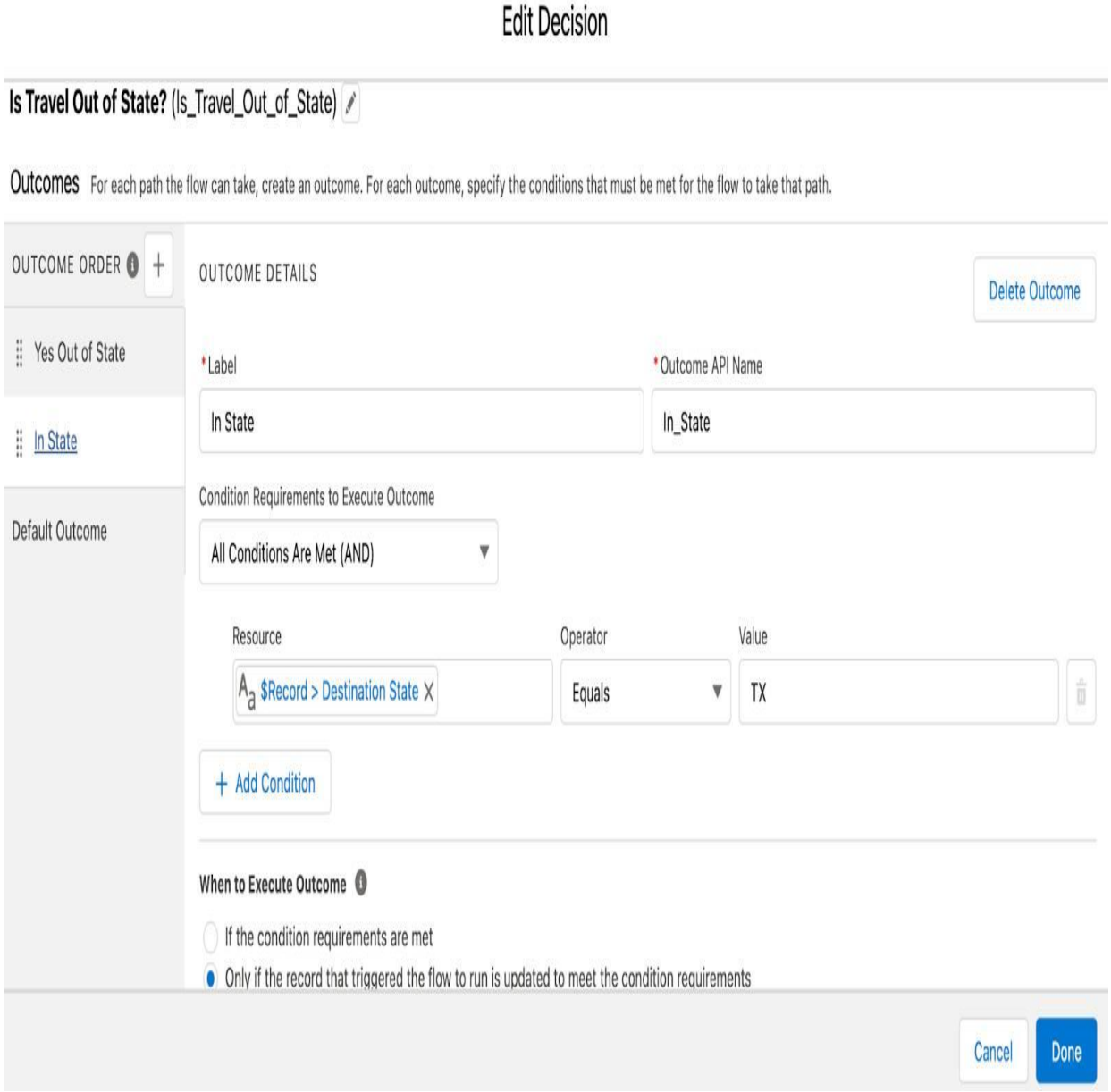
Your Edit Decision Screen should look like this:



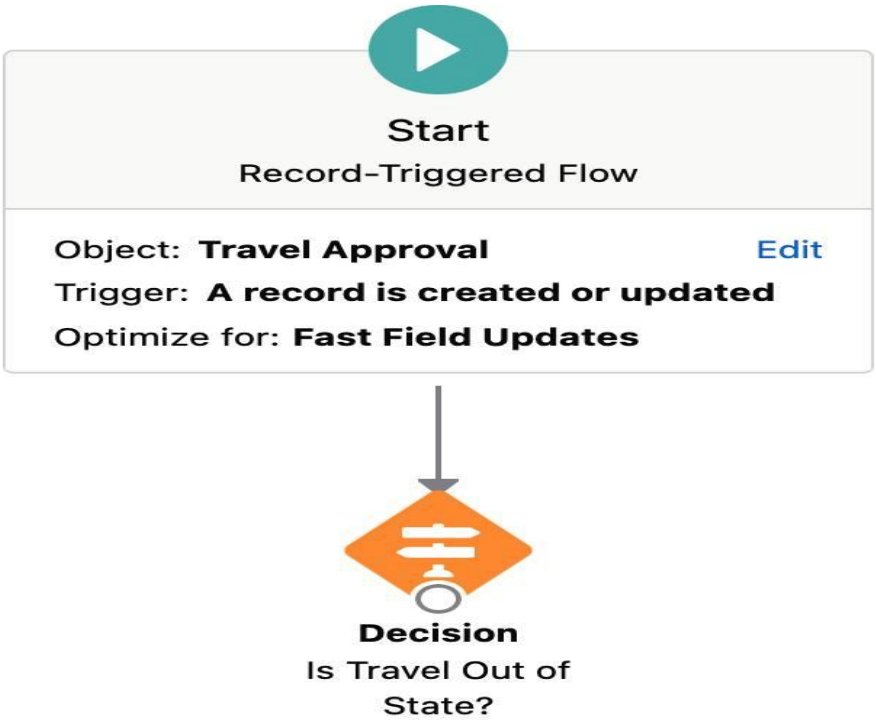
5. Next to Outcome Order click the **+ button** to add another outcome.
6. Set these parameters:

Parameter	Value
Label	In State
Outcome API Name	In_State (This automatically gets set when you tab out of the Label field)
Condition Requirements to Execute Outcome	**All Conditions Are Met (AND)**
Resource	**$Record > Destination State**
Operator	**Equals**
Value	TX
When to Execute Outcome	Only if the record that triggered the flow to run is updated to meet the condition requirements

7. (



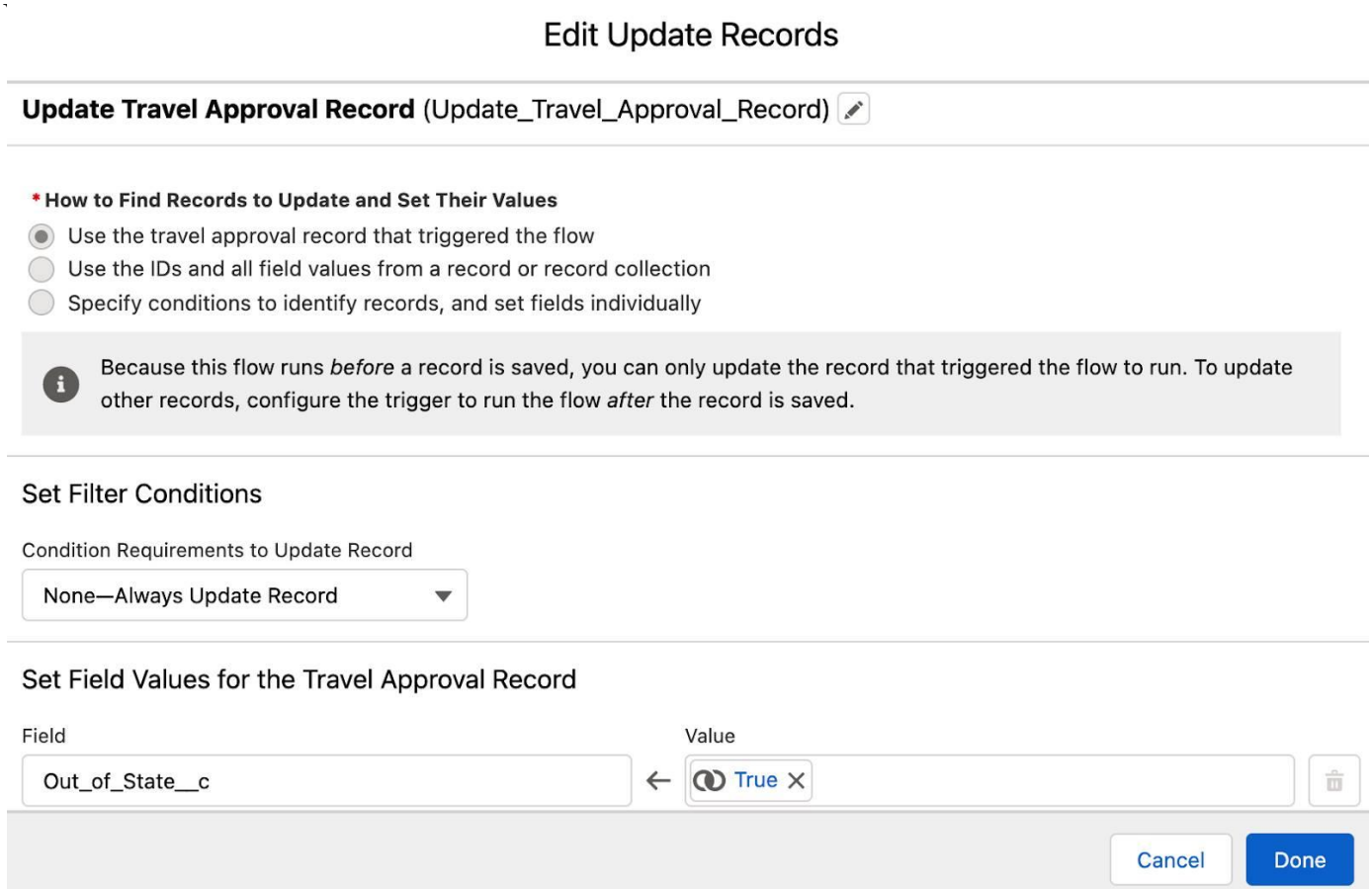
8. Drag the white circle from the Start Flow element to the Decision element you just created to link the direction of the arrow.



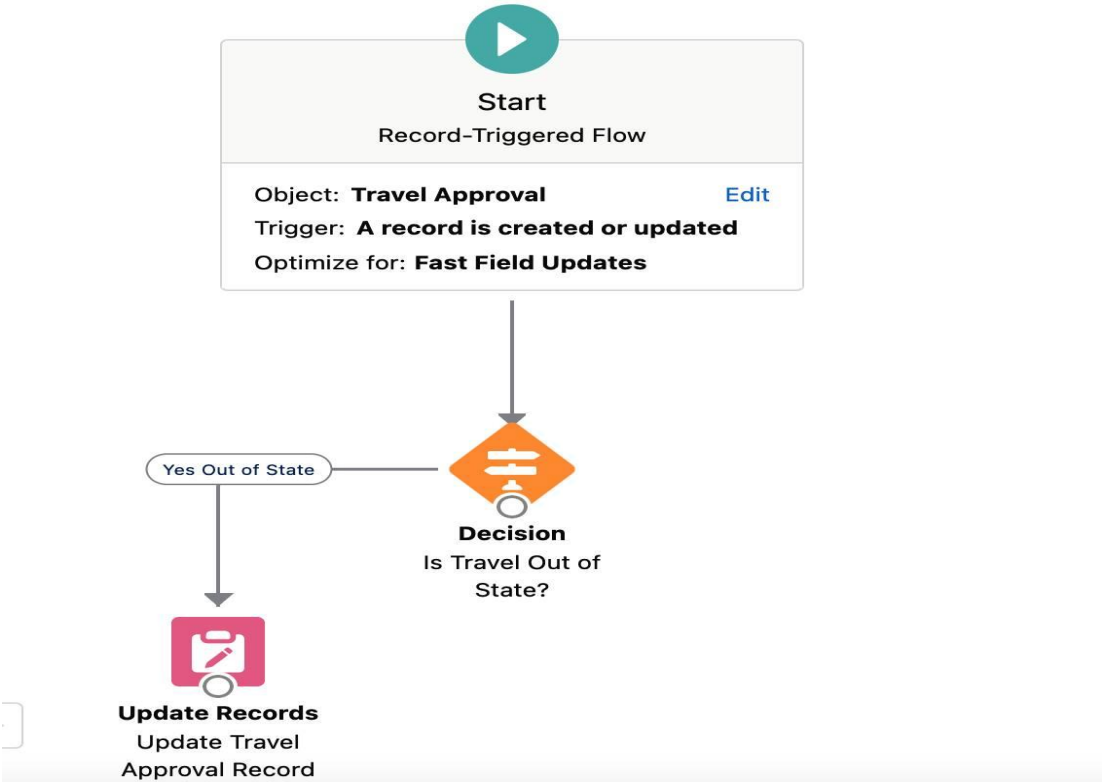
Create an Action for the Flow Using Update Records Elements

1. From the left-hand column, the flow toolbox, drag an **Update Records** element onto the flow screen.
2. Set the parameters for the element:

Parameter	Value
Label	Update Travel Approval Record
Outcome API Name	Update_Travel_Approval_Record (This automatically gets set when you tab out of the Label field)
How to find Records to Update and Set their Values	Use the travel approval record that triggered the flow
Condition Requirements to Update the Record	None—Always Update the Record
Field	Out_of_State__c
Value	$GlobalConstant.True (start typing True and this value will come up)



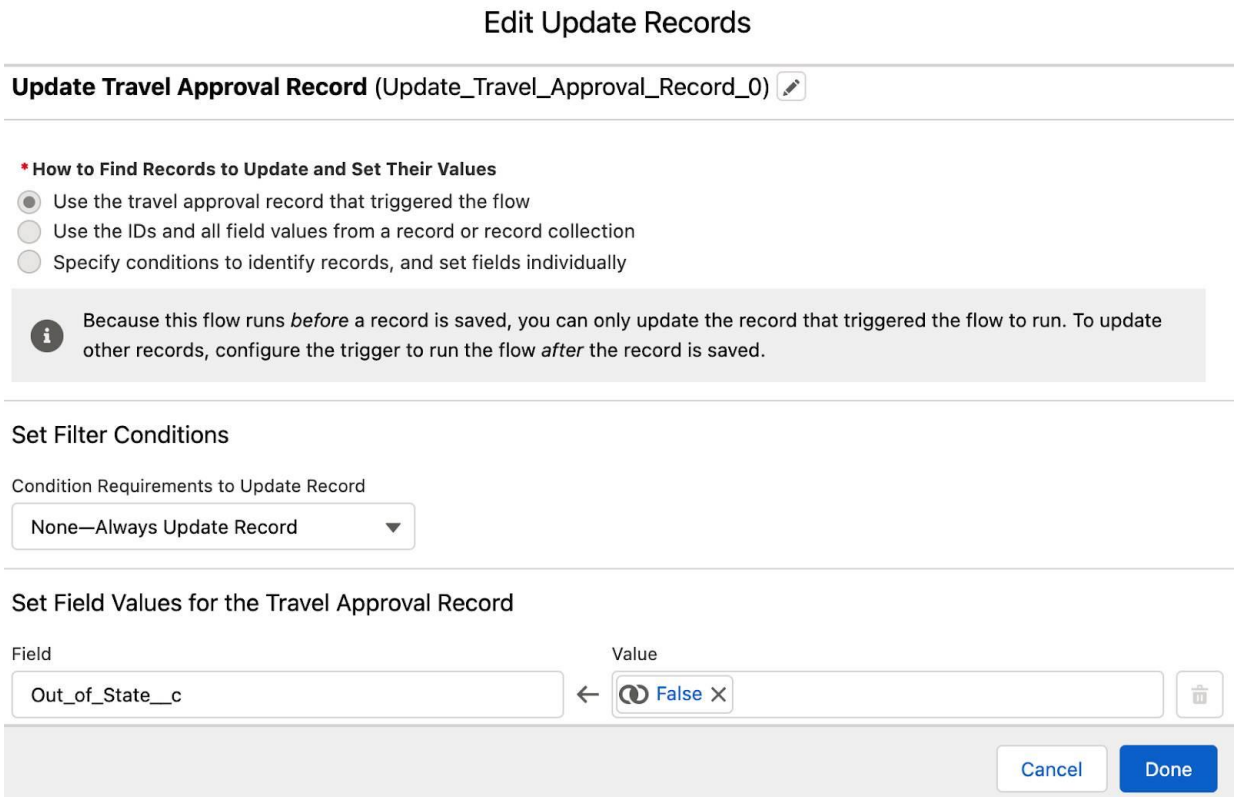
3. Click **Done**.
4. Drag the white circle from the Decision Node to the Update Records you just created, and select the decision **Yes Out of State | Done**.



To save time, you can simply duplicate the Update Records element you just created and update the criteria.

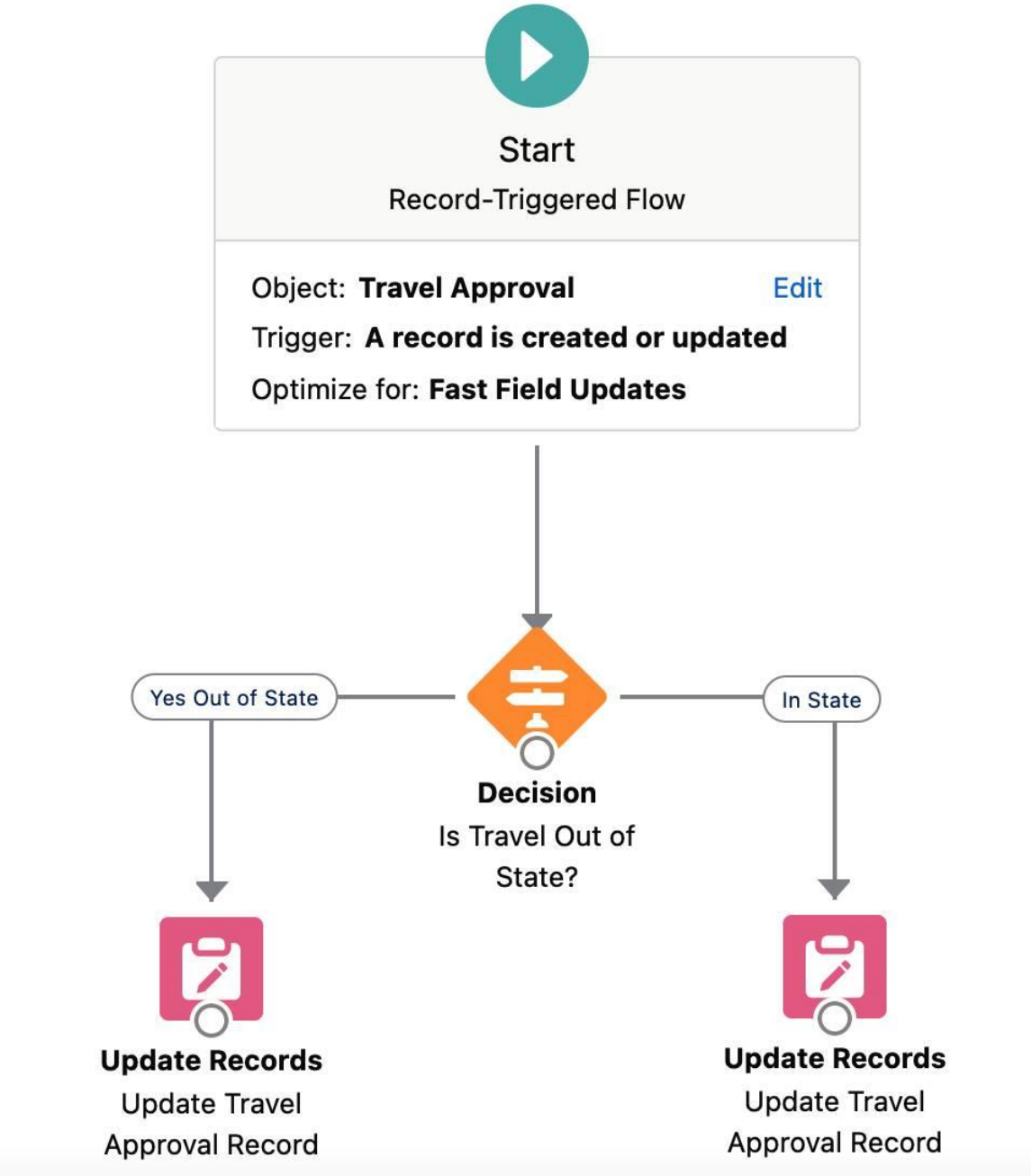
5. Click the Update Records node and make sure it is highlighted in blue. In the top-left corner of the Flow Builder screen, find the and click the duplicate button . Double-click on the new Update Records element just created. Note the API name has been automatically updated to Update_Travel_Approval_Record_0.
6. Then update the **Value of the Out_of_State__c** field to **FALSE**.

7. Delete the *True* Value and enter **False**. Select **$GlobalConstant.False**.



8. Click **Done**.

9. Drag the white circle from the Decision Node to the second Update Records you just created and select the decision **In State**.



Congratulations!! You've completed your first Record Triggered Automation Flow! Last but not least, make sure to save and activate the flow.

1. Click **Save**.
2. Flow Label: Out of State Travel Flag. Flow API Name will auto populate to Out_of_State_Travel_Flag. Leave Description blank and advanced settings as is.
3. Click **Save**.

4. Click **Activate**.

Your flow is now active and you are officially an automation expert!

Flow is a powerful tool that you use to automate many actions within your Salesforce Applications. Next, learn how to build an approval process for any Salesforce record.

Create an Approval Process

Introduction

Salesforce includes built-in approval process capabilities. An approval process is an automated process your agency can use to approve records in Salesforce. An approval process specifies the criteria a record must meet before it can be submitted for approval, the steps necessary for a record to be approved, and who must approve it at each step. A step can apply to all records included in the process or just records that have certain attributes. An approval process also specifies the actions to take when a record is approved, rejected, recalled, or first submitted for approval.

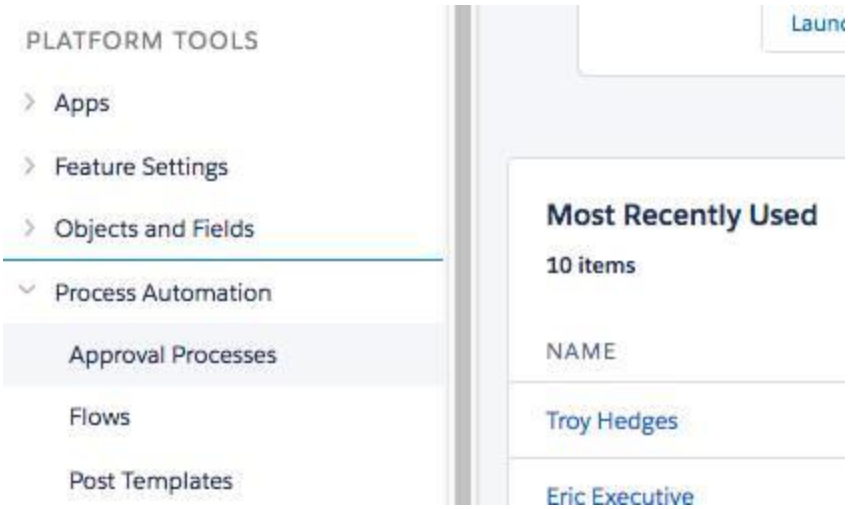
Create the Approval Process

In this section, you create an approval process that all travel approvals must follow. We keep it simple and use the following logic.

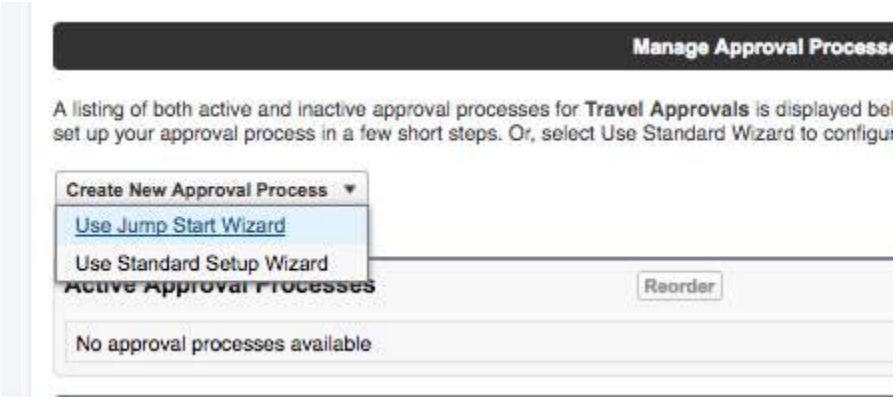
- All travel approvals are sent to the employee's direct manager for approval.
- If the trip is out of state, the approval is also sent to a travel coordinator for approval. If not out of state, this step is skipped.

Let's get started.

1. Click and select **Setup**.
2. Select **Process Automation | Approval Processes** (or use the Quick Find and search for Approval Processes).



3. In the Manage Approval Processes For list, select **Travel Approval**.
4. Click **Create New Approval Process** and select **Use Jump Start Wizard**



5. Enter the following parameters

Parameter	Value
Name	Travel Approval Request
Unique Name	Travel_Approval_Request (This automatically gets sent when you tab out of the Name field)
Approval Assignment Email Template	*Leave blank*
Add the Submit for Approval button and Approval History related list to all Travel Approval page layouts	*Leave this selected/checked*
Use Approver Field of Travel Approval Owner	*Leave unselected/unchecked.*
Specify Entry Criteria	Use this approval process if the following: **criteria are met**

Parameter	Value
Field	**Travel Approval: Total Expenses**
Operator	**greater than**
Value	0
Select Approver	• **Automatically assign an approver using a standard or custom hierarchy field** • Select **Manager** from the option list

6. Click **Save**.
7. Click **View Approval Process Detail Page**.

Notice in the Approval Steps section that it already created a rule to route all approvals to a user's manager.

Create an Approval Step for Out-of-State Travel

Now, let's create another approval step to send out-of-state travel to a travel coordinator.

1. Click **New Approval Step**.
2. Enter the following details:

Parameter	Value
Name	Travel Coordinator Approval
Unique Name	Travel_Coordinator_Approval (This automatically gets set when you tab out of the Name field)
Step Number	**2**

3. Click **Next**.
4. Ensure **Enter this step if the following** is selected and the **criteria are met** option is selected.
5. Enter the following formula criteria
   - Field: Travel Approval: **Out-of-State**
   - Operator: **equals**
   - Value: True
6. Click **Next**.
7. Select the **Automatically assign to the approver(s)** option.
8. Select **User** from the dropdown and select **your name** as the travel coordinator. **NOTE**: In the real world, a user would not be selected as an approver of their own request.

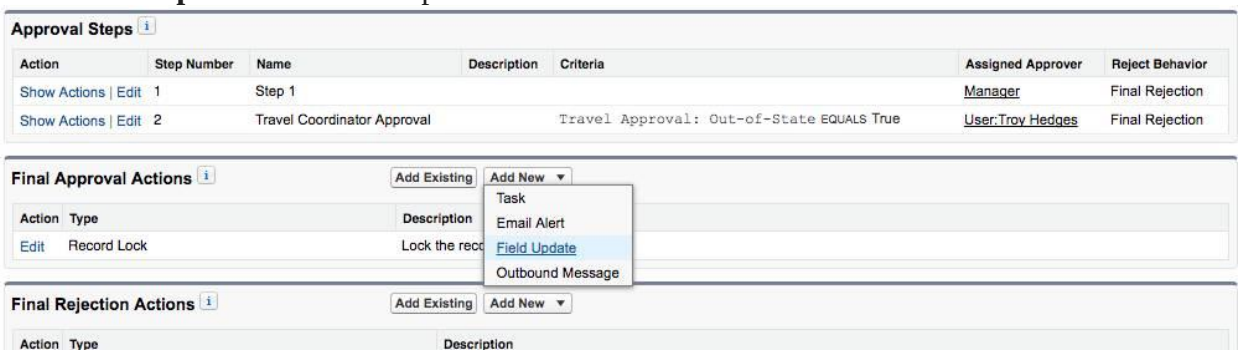
Salesforce demo orgs are limited to two Salesforce users. For this project, just use your user account for the travel coordinator.

9. Click **Save**.
10. Select **No, I'll do this later. Take me to the approval process detail page to review what I've created** and then click **Go!**

Add Logic

Next, add logic to set the status of the approval request based on if it was Approved or Rejected. We do this by creating a Final Approval action and a Final Rejection action. Let's start by creating an action if the request was approved by all approvers.

1. Click **Add New** in the Final Approval Actions area of the approval process form.
2. Select **Field Update** from the dropdown list.



3. Enter the following values.

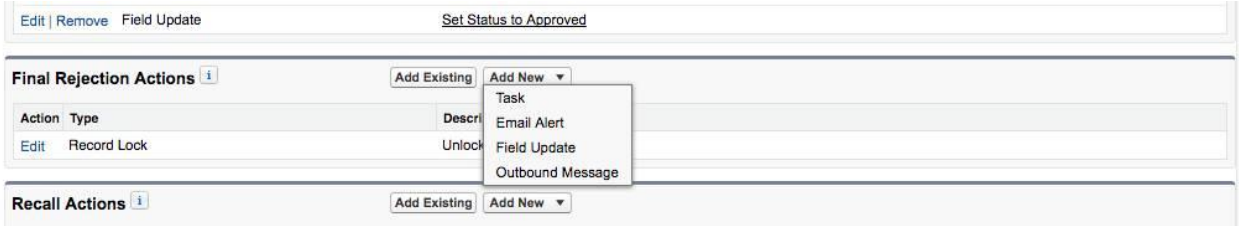
Parameter	Value
Name	Set Status to Approved
Unique Name	Set_Status_to_Approved (This automatically gets sent when you tab out of the Name field)
Field to Update	**Status**
Re-evaluate Workflow Rules after Field Change	*Leave unchecked*
Picklist Options	Select **A specific value** and select **Approved** from the dropdown list.

4. Click **Save**.

Next, let's set the status value to Rejected if any approver rejects the travel approval request.

1. Click **Add New** in the Final Rejection Actions area of the approval process form.

2. Select **Field Update** from the dropdown list.



3. Enter the following values.

Parameter	Value
Name	Set Status to Rejected
Unique Name	Set_Status_to_Rejected (This automatically gets sent when you tab out of the Name field)
Field to Update	**Status**
Re-evaluate Workflow Rules after Field Change	*Leave unchecked*
Picklist Options	Select **A specific value** and select **Rejected** from the dropdown list.

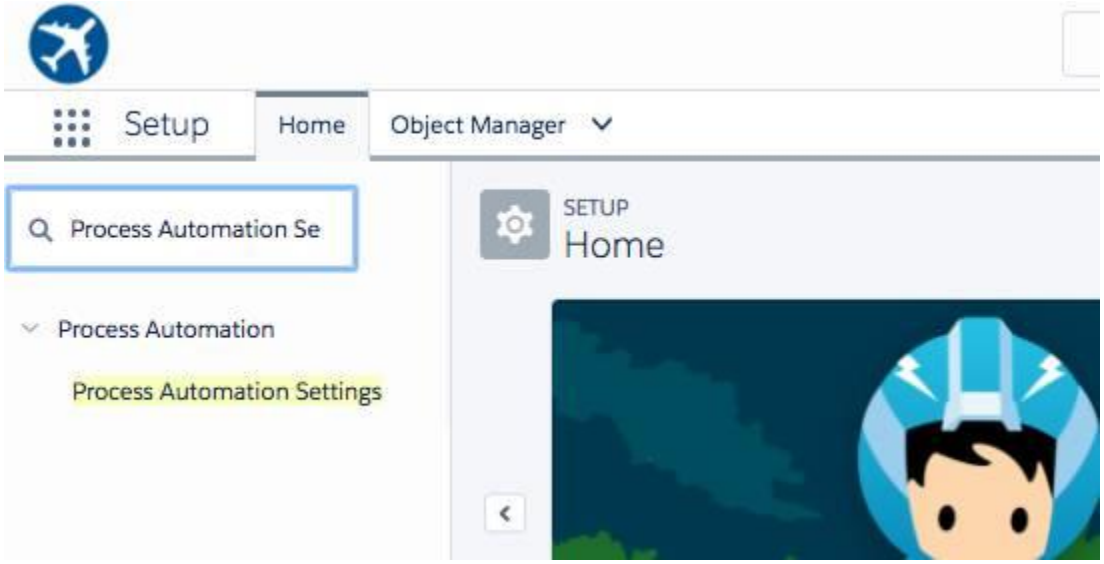
4. Click **Save**.
5. Click **Activate**.
6. Select **OK** in the popup window to confirm activation. Your approval process should now have the Active flag checked.

Next, you enable email approval responses.

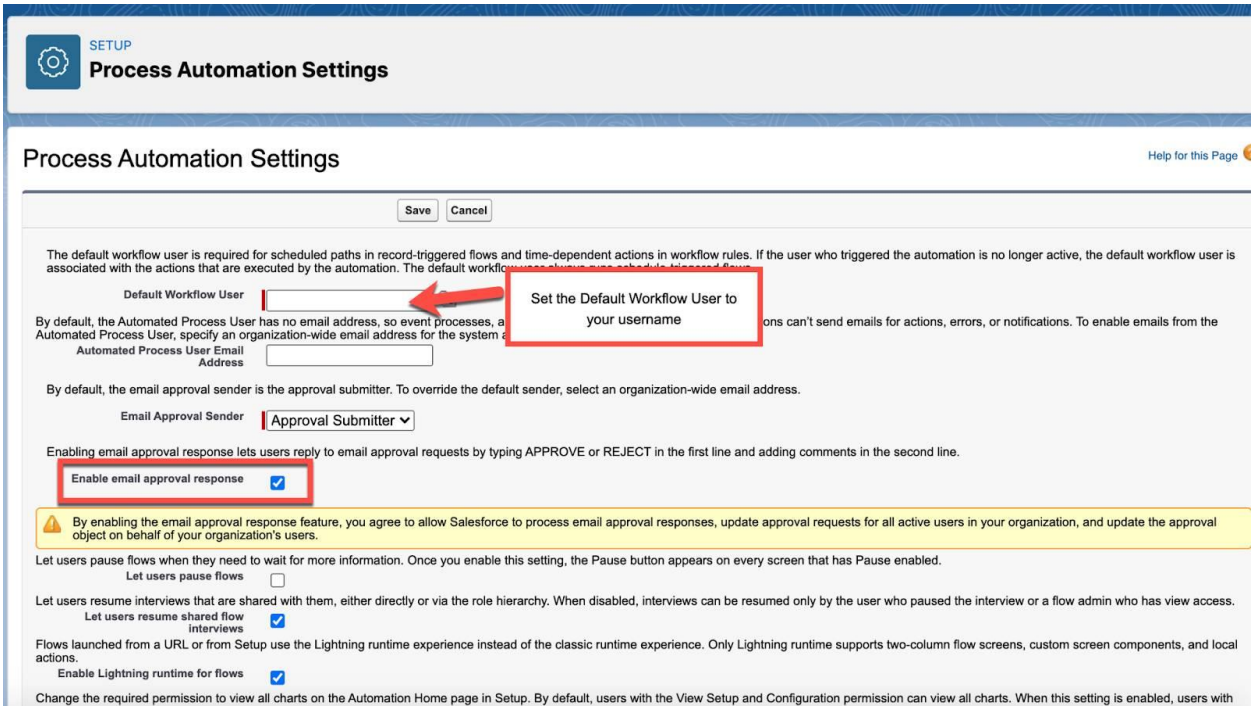
Enable the Email Approval Response

Along with being able to approve or reject travel approvals directly inside Salesforce, it's possible to let users approve via email. When an employee submits their travel approval request, an email is sent to the next approver in the approval process to notify them of the request. That email includes a URL link to the travel approval record so that the approver can access the details easily. It is also possible to allow the approver to just respond to the email with text like APPROVE, YES, REJECT, NO, and so on. Let's see how you do it.

1. Click and select **Setup**.
2. From setup, enter Process Automation Settings in the Quick Find box and select it.



3. Click the **Process Automation Settings** link.
4. Make sure **Enable Email Approval Response** is selected.



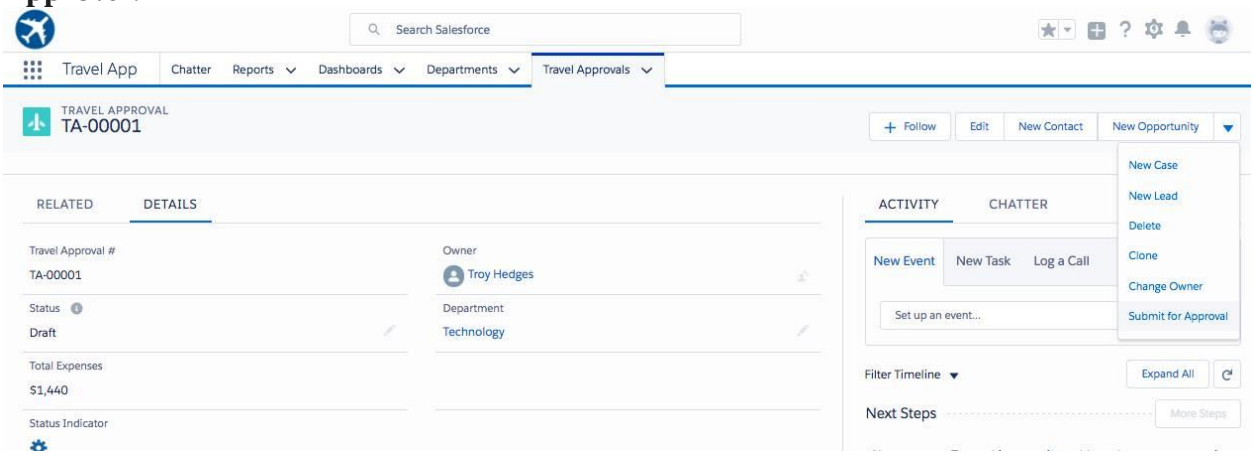
5. Set the Default Workflow User to your name.
6. Click **Save**.

Great job! Now let's test it out to make sure everything is working correctly.

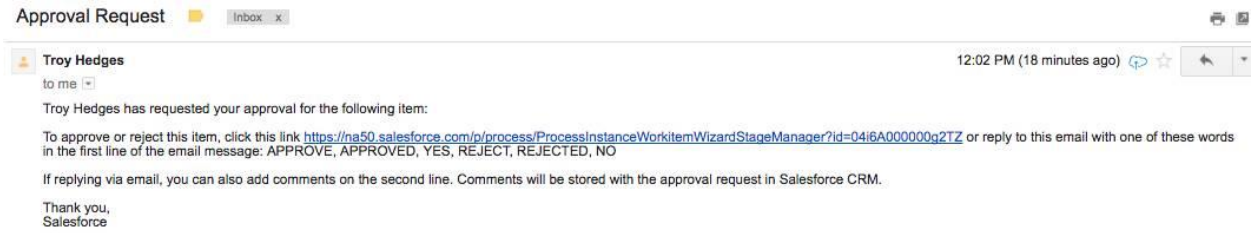
Test Your Approval Process
Time to Test

Now that you've created your approval process, let's test it out.

1. Using the App Launcher, navigate to the **Travel App** and click the **Travel Approvals** tab..
2. Select a record from the list. Make sure this is a travel approval record that has at least one expense item and a total expense amount greater than $0.
3. Click the **down arrow** next to the New Opportunity button and select **Submit for Approval**.



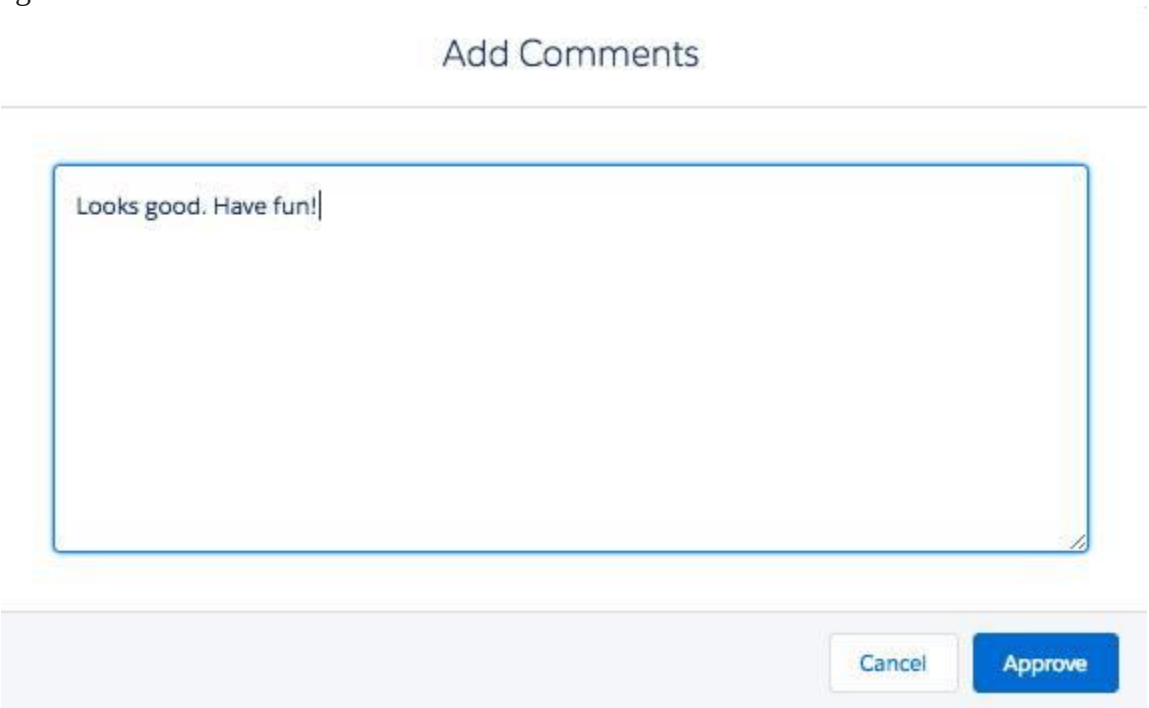
4. Enter a comment and click **Submit.**
5. You should receive an email alert like the following that lets Eric Executive know that he has a travel approval to process. Notice that it provides a link to directly access the Travel Approval record so that Eric could review it. Also, the email includes the option to just respond to the email and reply with text like APPROVE, YES, REJECT, NO.



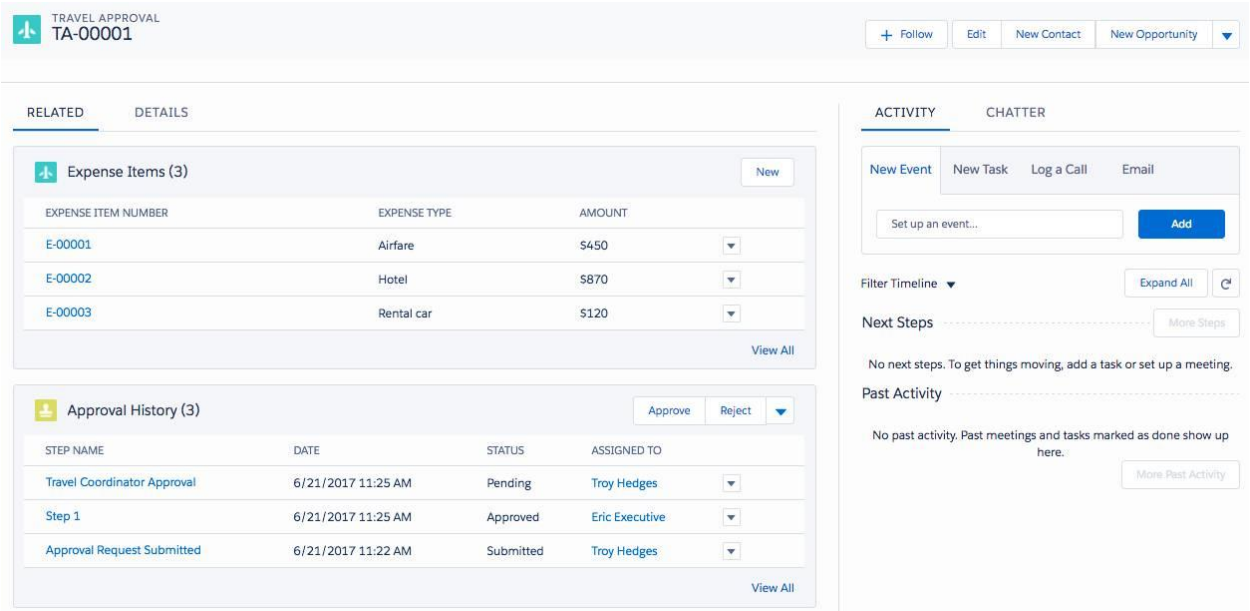
6. On your Travel Approval record, click the **Related** tab and you can see the new section titled Approval History that has details of your approval submission. Its status is **Pending** and it's **assigned to** Eric Executive.
7. At this point you could log out of Salesforce and log back in as Eric Executive. You can find this travel approval record (or click the link in the email) and see the same view as

above. Since you are a System Administrator, you have the authority to approve any requests even if they are pending on other users.

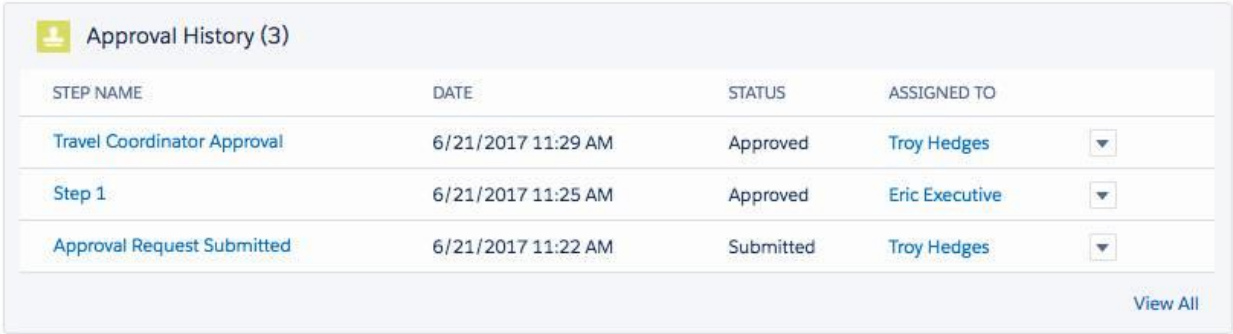
8. Click **Approve** in the **Approval History** section.
9. In the popup window, enter a comment and click the **Approve** button once again.



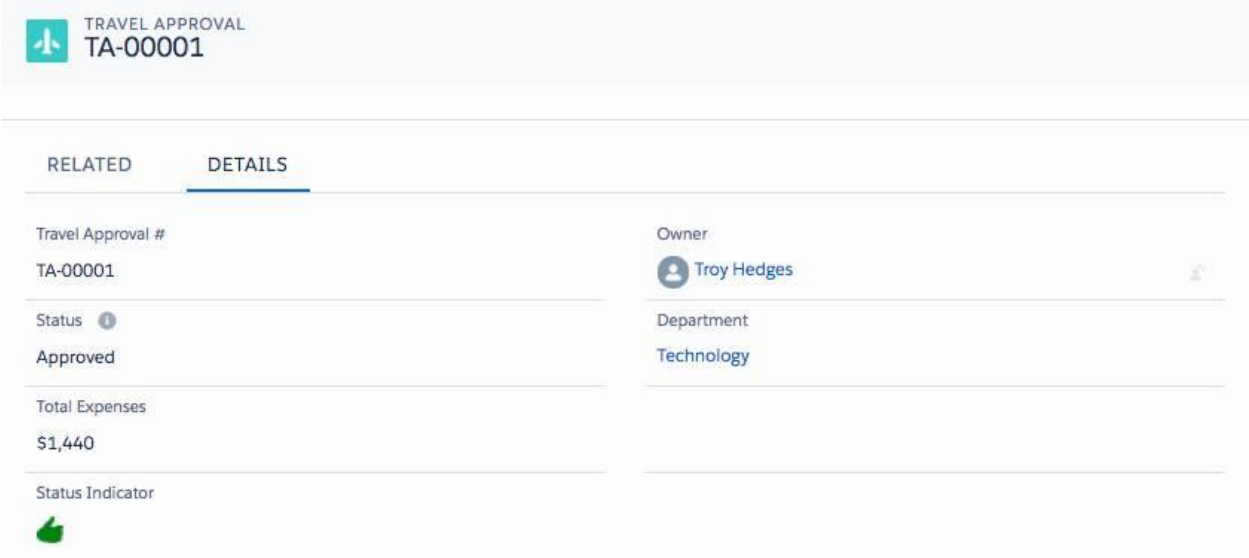
10. Since this was for out-of-town travel, the approval was sent to the Travel Coordinator (remember, this is the logic we defined for the Approval Process). The approval is actually pending on yourself since you are acting as the travel coordinator (obviously, this wouldn't be the case in a real-world implementation).



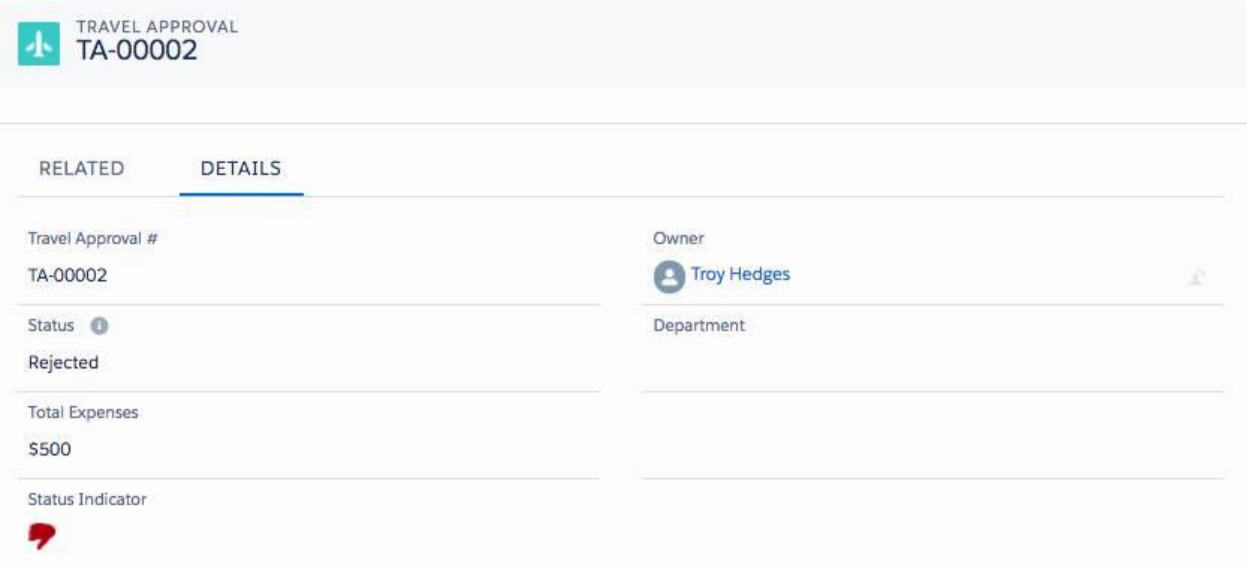
11. Click **Approve** in the Approval History section to finish the approval.
12. Enter a comment in the popup window and click **Approve**.
13. The **Approval History** section should now look like the following:



14. Click the **Details** tab for your travel approval record. You should also notice the status value has been updated to **Approved** and the Status Indicator field now shows a green thumbs-up icon.



15. Pick or create another travel request record and submit it for approval. Check your email and respond to the email with **Reject**. Navigate back to this travel approval record (or just click the link in the email). You should get the status value of Rejected and a red thumbs-down icon.



Congratulations! You have added automation to your application using point and click tools such as:

- Validations Rules
- Formula Fields
- Roll-Up Summary Fields
- Flow Builder
- Approval Processes

Assignment: 04

Title: Add Reports and Dashboards to a Travel Approval App

Load Data Using the Data Import Wizard

Learning Objectives

After completing this project, you'll be able to:

- Use the drag-and-drop report builder to create new Travel Approval reports.
- Create a new dashboard and add your reports as visual components.

Introduction

How great would it be to get a report in your inbox every morning that shows the number of open travel requests waiting on your approval? Or access a report that provides all the key information of your travel approvals across your departments and their status? And see that information displayed as a graphical chart via a dashboard from your desktop or a mobile device? Good news because that is all possible.

The Travel Approval app you created earlier includes Reports and Dashboard tabs, where you can begin to create, edit, run, and schedule reports or dashboards.

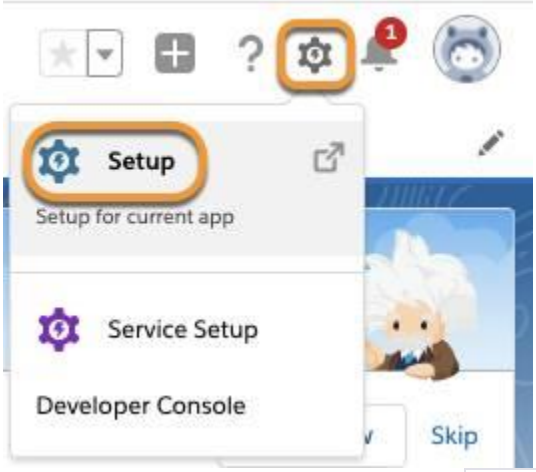
Launch Your Trailhead Playground

You complete this hands-on project in your own personal Salesforce environment, called a Trailhead Playground. Get your Trailhead Playground now by first logging in to Trailhead, and then clicking **Launch** at the bottom of this page. Your playground opens in a new browser tab or window. Keep the playground window open while you do this project. After you complete the project steps in your playground, come back to this window and click **Verify step** at the bottom of this page.

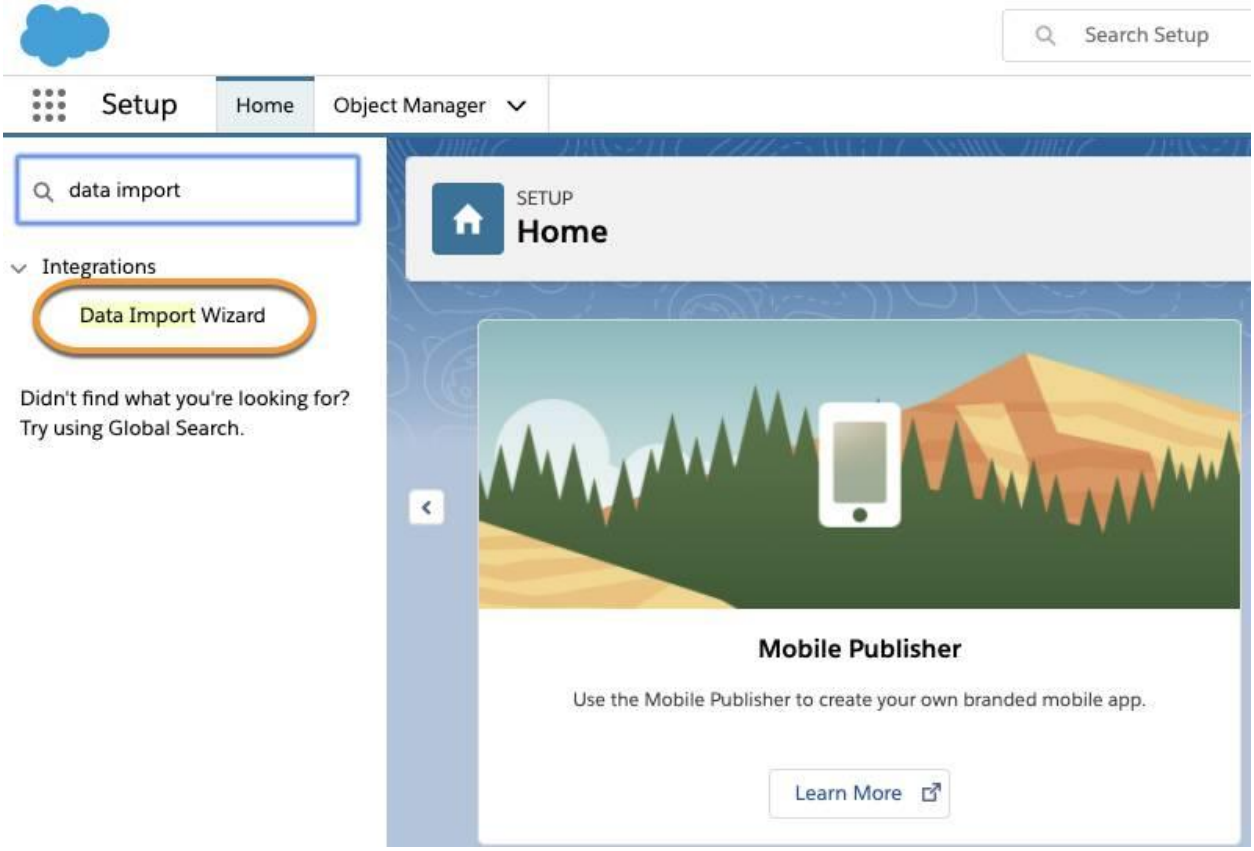
Load Data

Let's first load sample Travel Approval records so our reports and dashboards have more data.

1. Click and select **Setup**.

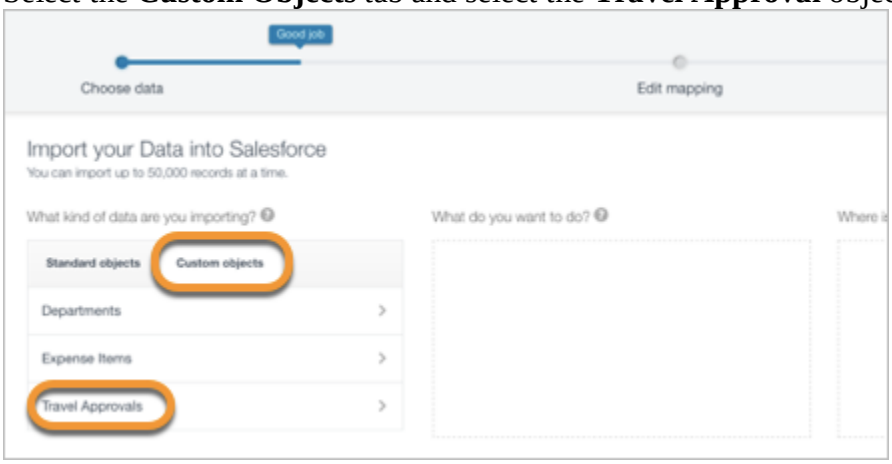


2. In the Quick Find search box, enter Data Import
3. Select **Data Import Wizard**.

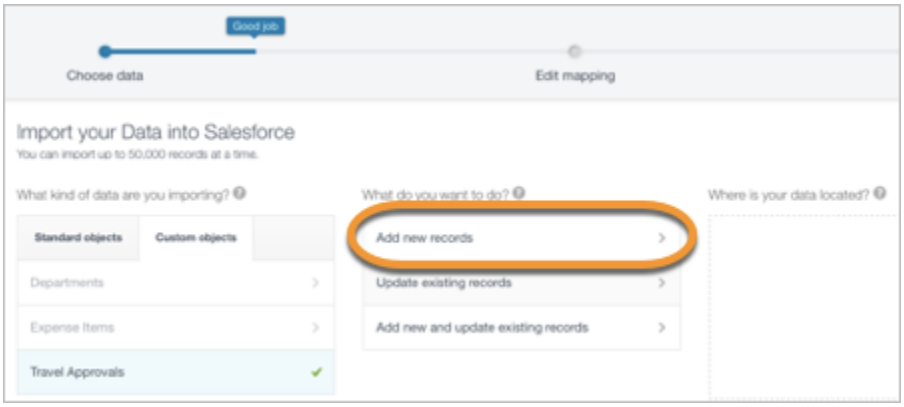


4. Select **Launch Wizard!**

5. Select the **Custom Objects** tab and select the **Travel Approval** object.



6. Select **Add new records**.



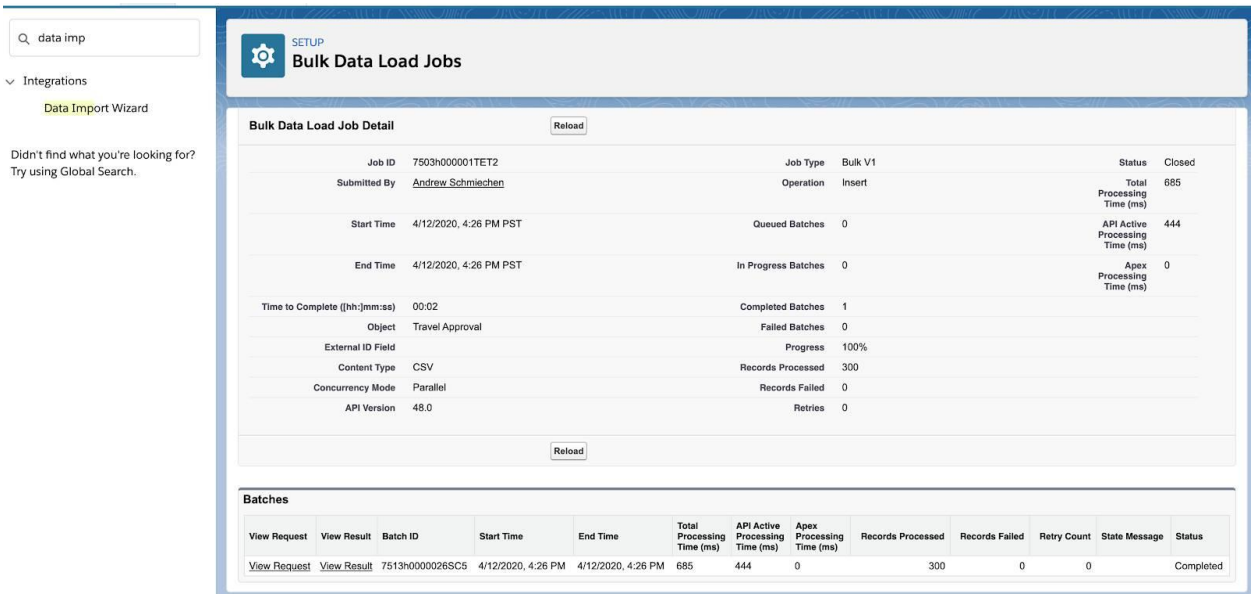
7. On the Add new record screen, enter the following values.

Parameter	**Value**
Match By	None
Which User field in your file designates record owners?	None
Which Department field in your file do you want to match against to set the Department lookup field?	**Department Name**
Trigger workflow rules and processes for new and updated records.	**Checked**

8. Drag the TravelApprovals.csv file (from the folder you downloaded in the Build a Data Model for a Travel Approval App project) to the **Drag CSV file here to upload** section.
9. Select **Next**.

10. Ensure the names in the CSV file are the same as your object (these are automatically mapped).
11. Click **Next**.
12. Click **Start Import**.
13. Click **OK**.

You are taken to the bulk import summary window. This shows the process has completed (that is, Closed) and that 300 records have been successfully imported or processed.



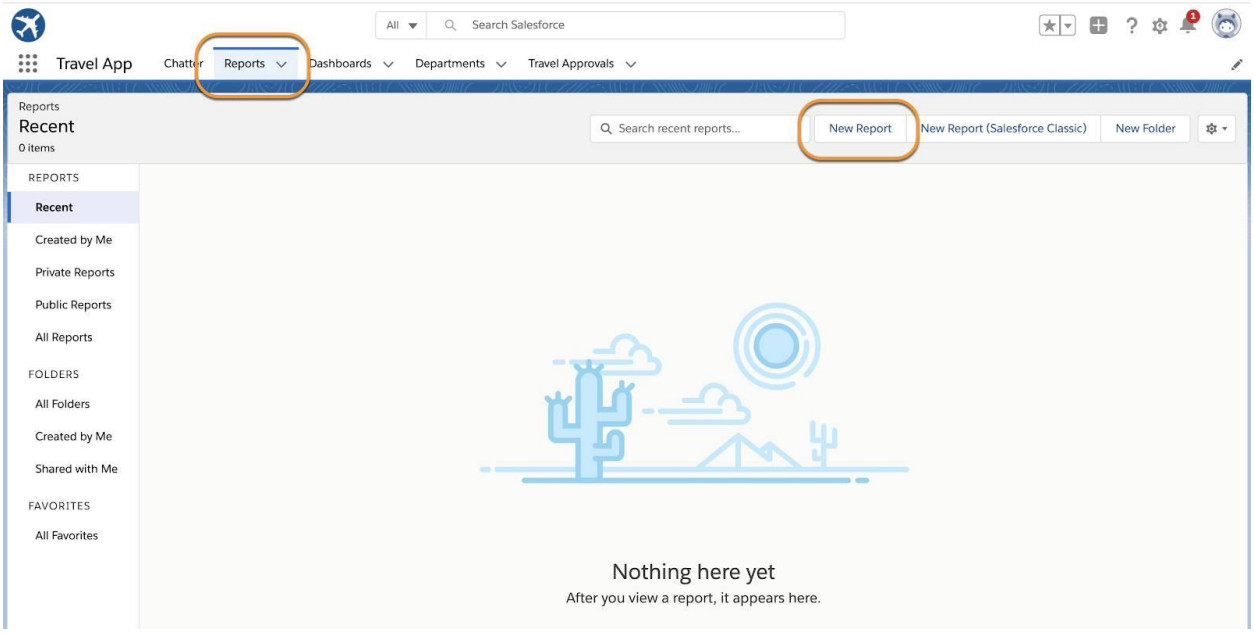
Great job! Your Travel Approval object is now populated with hundreds of records. In the next step, you display this data in a Salesforce report.

Create a Travel Requests by Department Report

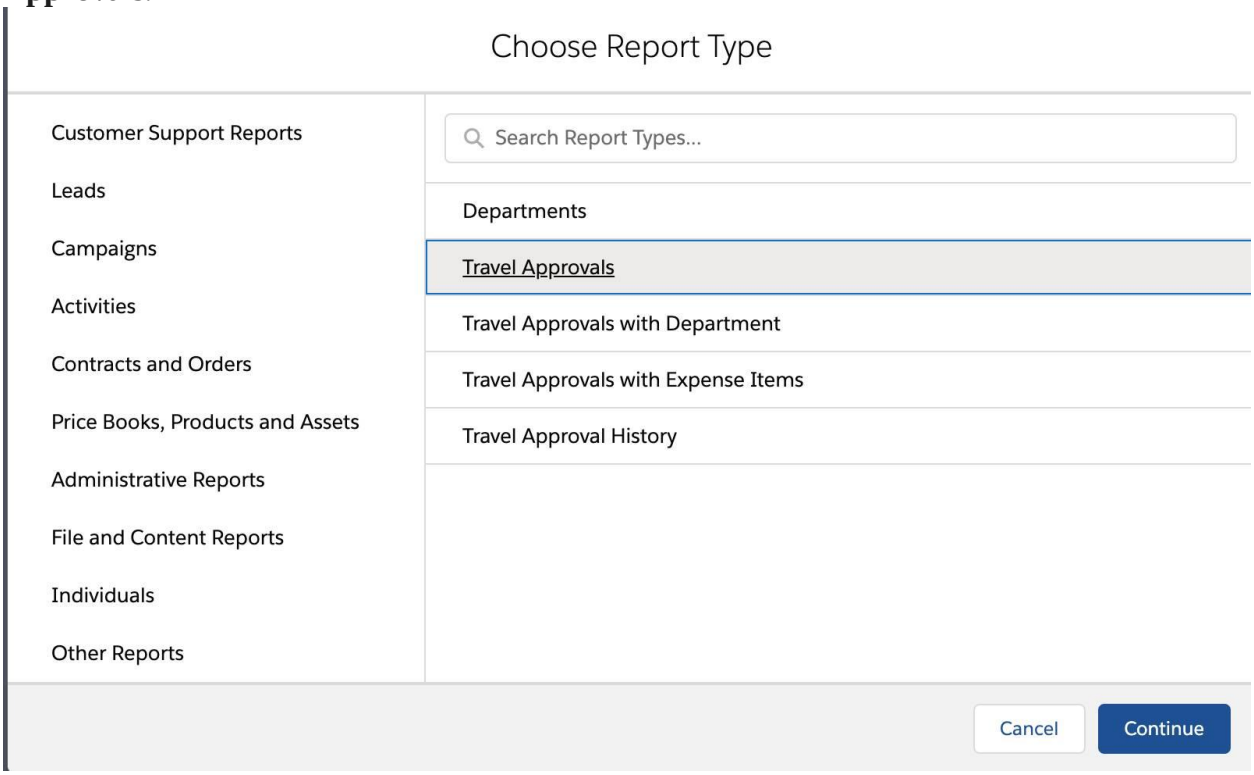
Select the Report Type

Next, we create a report to show the number of travel approval requests by department.

1. Via the App Launcher, navigate to the **Travel App** and click the **Reports** tab.



2. Click **New Report**.
3. In the Choose Report Type screen, open the **Other Reports** folder and select **Travel Approvals**.



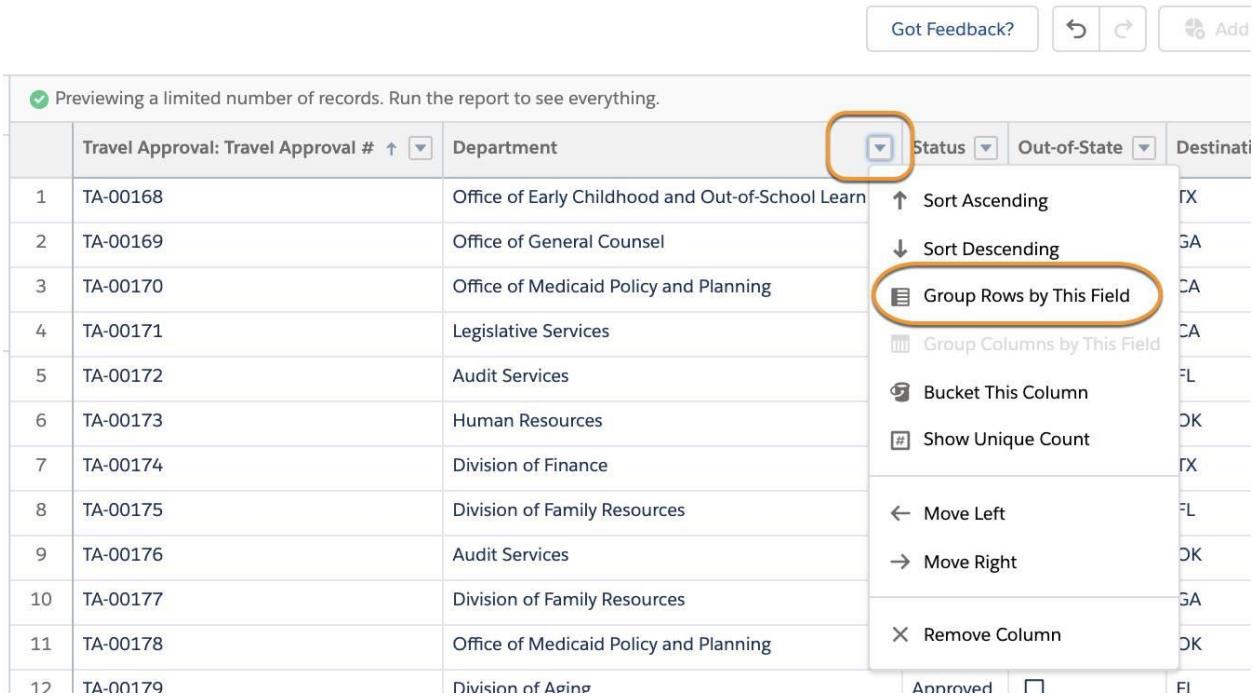
4. Click **Continue**.

Build Your Report

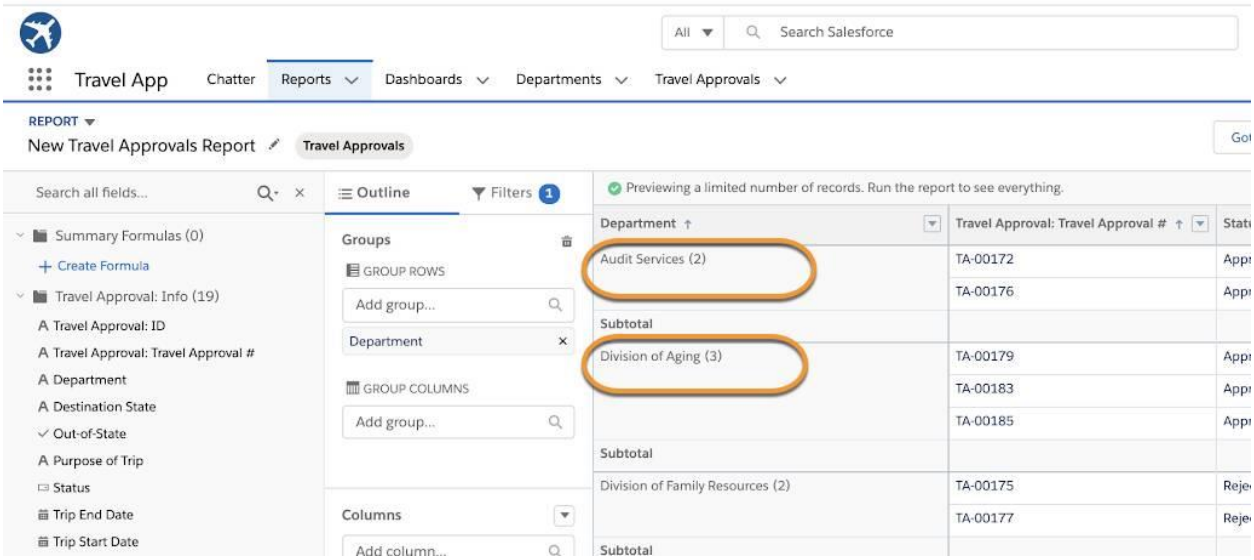
You are now presented with the report builder. The report builder provides a drag-and-drop interface to easily build and customize your reports. The report builder consists of four main sections.

- **Fields:** On the left-hand side, there is a list of all the fields you have accessible to create your report. You can easily scroll through the list of fields and drag them over to the Outline or Preview section to add them to your report. (You can double-click as well.) In addition, there is a Search Bar for longer lists of fields.
- **Outline:** This section lets you quickly view and add Groups to your report as well as Columns. While you can add Groups and Columns directly in the Preview Pane, the Outline Section provides a single view for both.
- **Filter:** This section lets you define all the filters for your report to filter down to exactly the data you want to include. You have options to filter by any field available on an object including some built-in date/time filters that let you apply an automatic sliding window for "current quarter" or "current fiscal year".
- **Preview:** This section is the primary data table section of your report. This is where you define the columns/fields for your report along with any data groupings that drive your dashboard visual components.

1. Enter and select the following fields to the Add column… box, in order:
    - **Department**
    - **Status**
    - **Out-of-State**
    - **Destination State**
    - **Trip Start Date**
    - **Trip End Date**
2. In the main report table section, left-click the **Department** column, and select **Group Rows by This Field**. Alternatively, you can search for the Department Field under Group Rows in the Outline Section, and add it here.



3. The report will now be grouped by Department.



4. Click **Save** and set the following parameters.

Parameter	**Value**
Report Name	Travel Requests by Department
Report Description	*Leave blank*
Report Folder	**Public Reports**

5. Click **Save**.

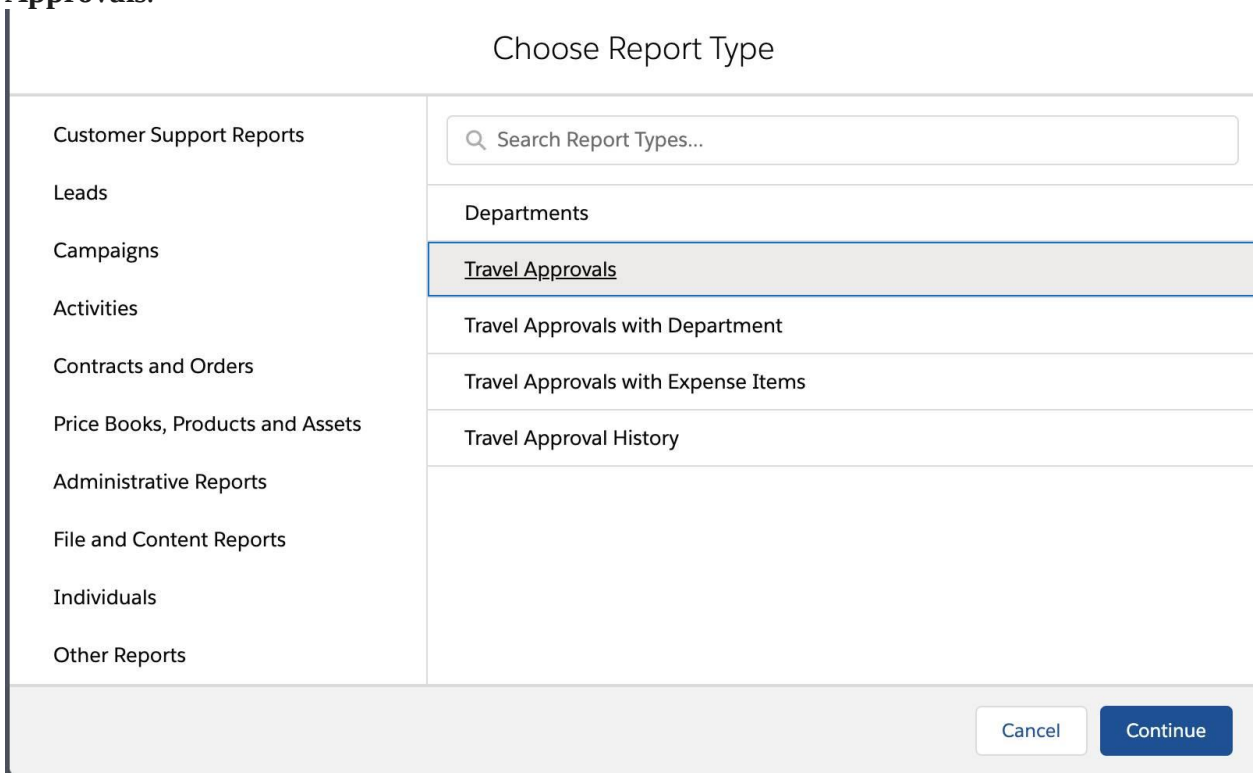
6. Click **Run**.

You now have a new report you can add as a component on a Salesforce dashboard. Let's create one more report for the dashboard.

Create a Travel Requests by Month Report
Select a Report Type

Let's create another report for our dashboard.

1. From the Reports Tab, click **New Report**.
2. From the Choose Report Type screen, open the **Other Reports** folder and select **Travel Approvals**.



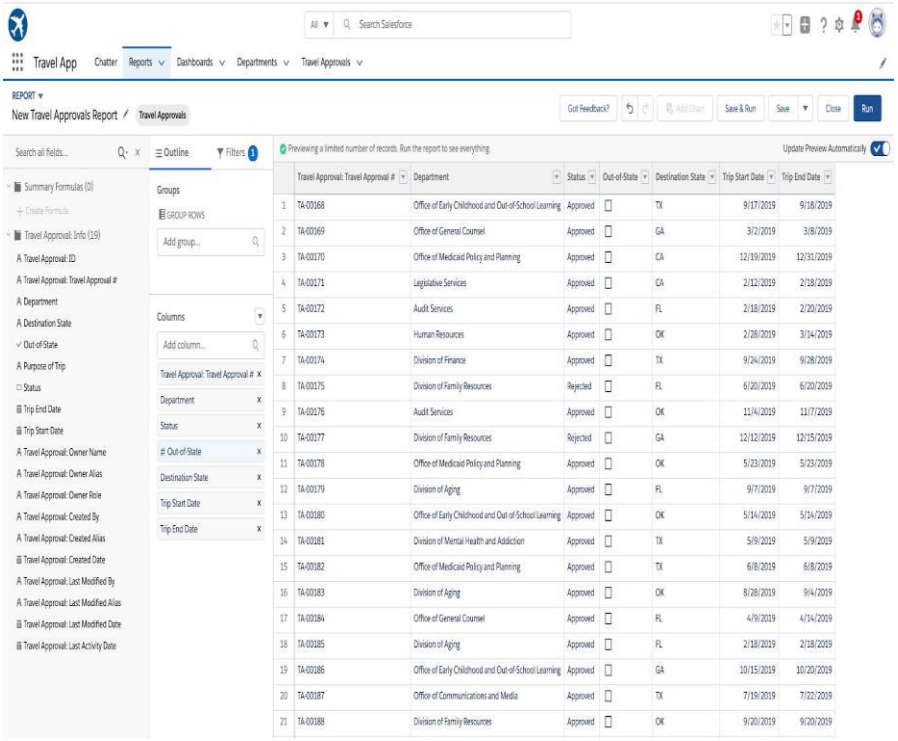
3. Click **Continue.**

Build Your Report

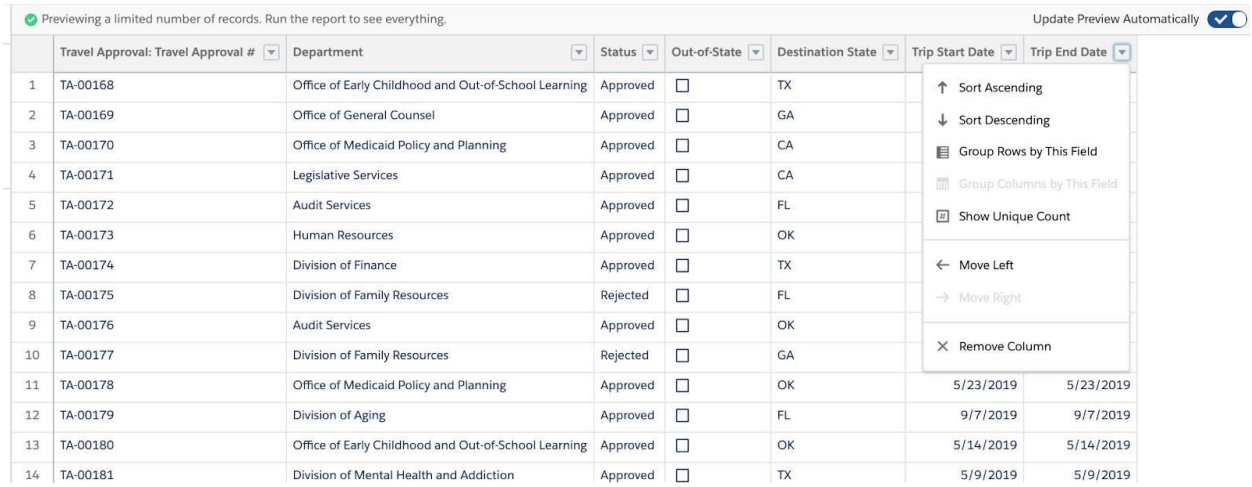
You are now presented with the report builder. The report builder provides a drag-and-drop interface to easily build and customize your reports.

1. Enter and select the following fields to the Add column… box, in order:
    - **Department**
    - **Status**
    - **Out-of-State**
    - **Destination State**
    - **Trip Start Date**

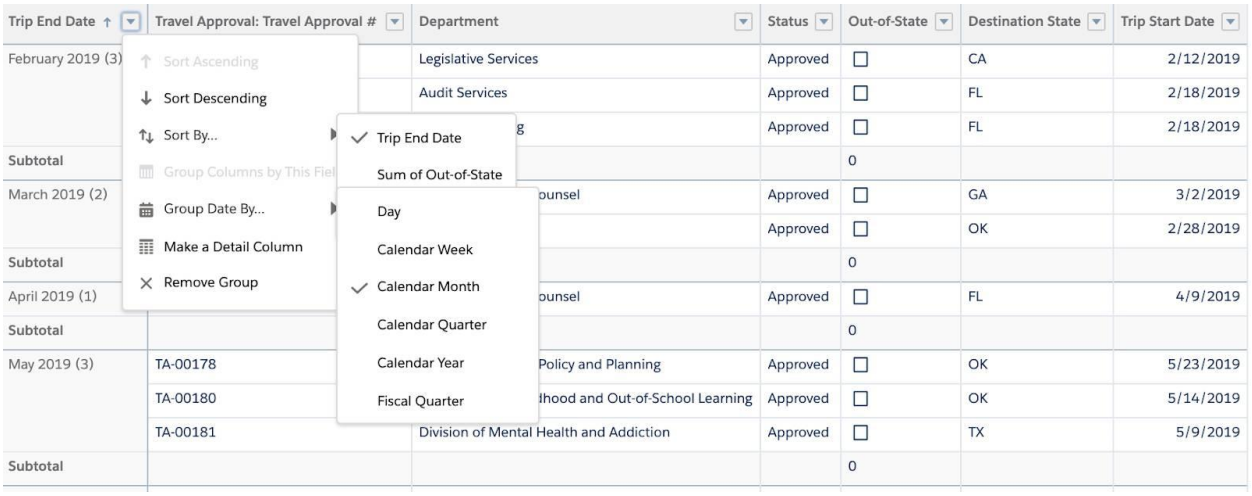
- **Trip End Date**



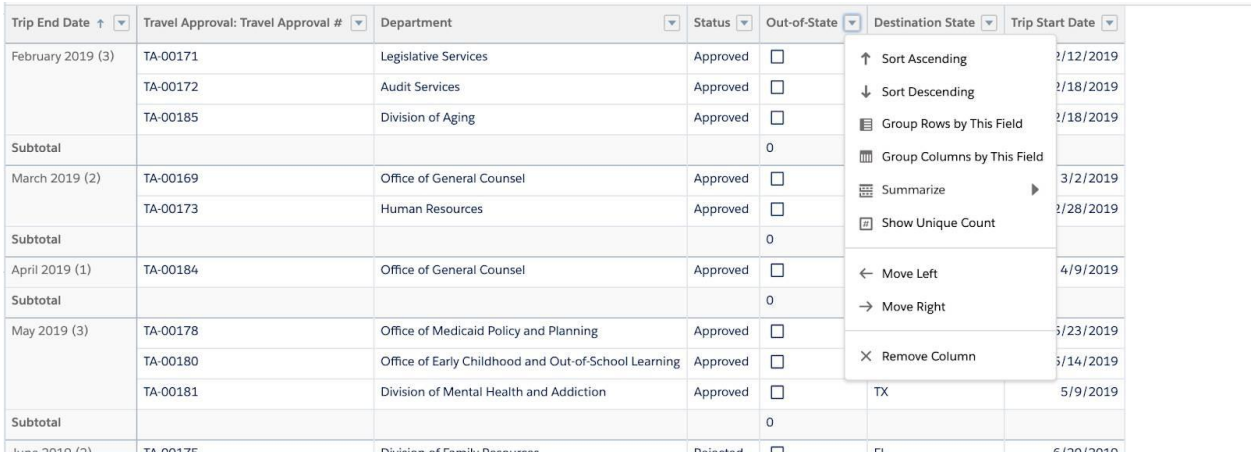
2. In the main report table section, left-click the **Trip End Date** column and select **Group Rows by This Field**. You can also search for the **Trip End Date** field under Group Rows in the Outline Section and add it here.



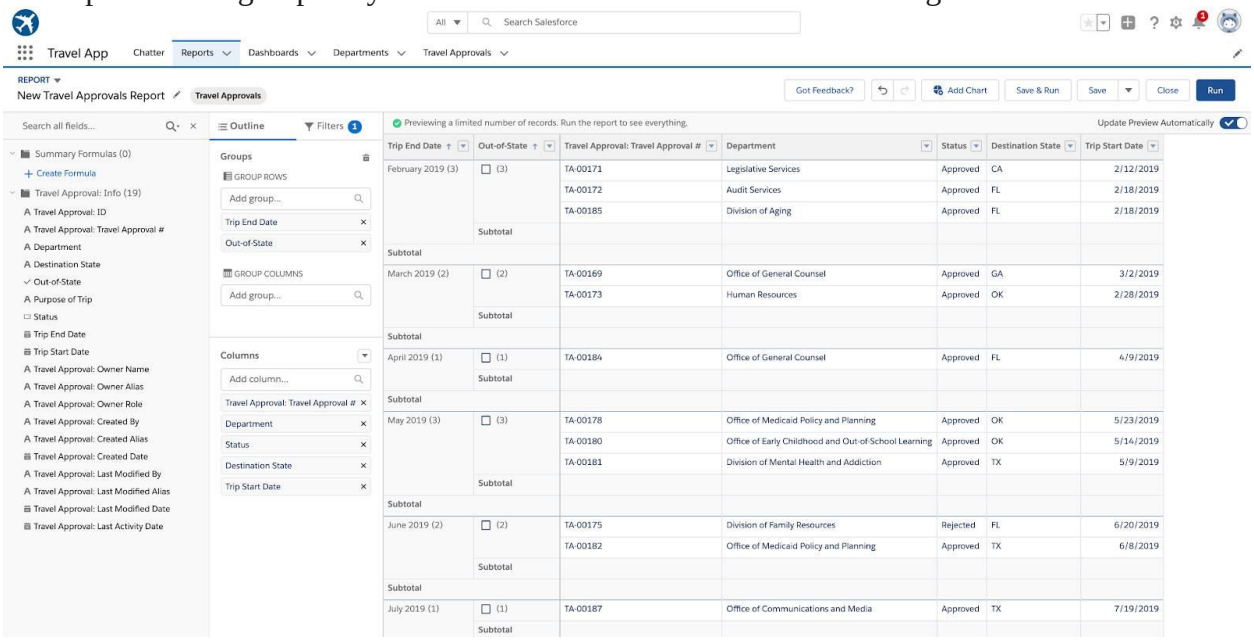
3. Instead of grouping by each individual day, let's group by calendar month. In the preview pane, click the **down arrow** in the Trip End Date heading and select **Group Dates By | Calendar Month.**



4. Click the down arrow in the **Out-of-State** heading and select **Group Rows by This Field.**



5. The report is now grouped by Calendar Month and then Out-of-State flag.

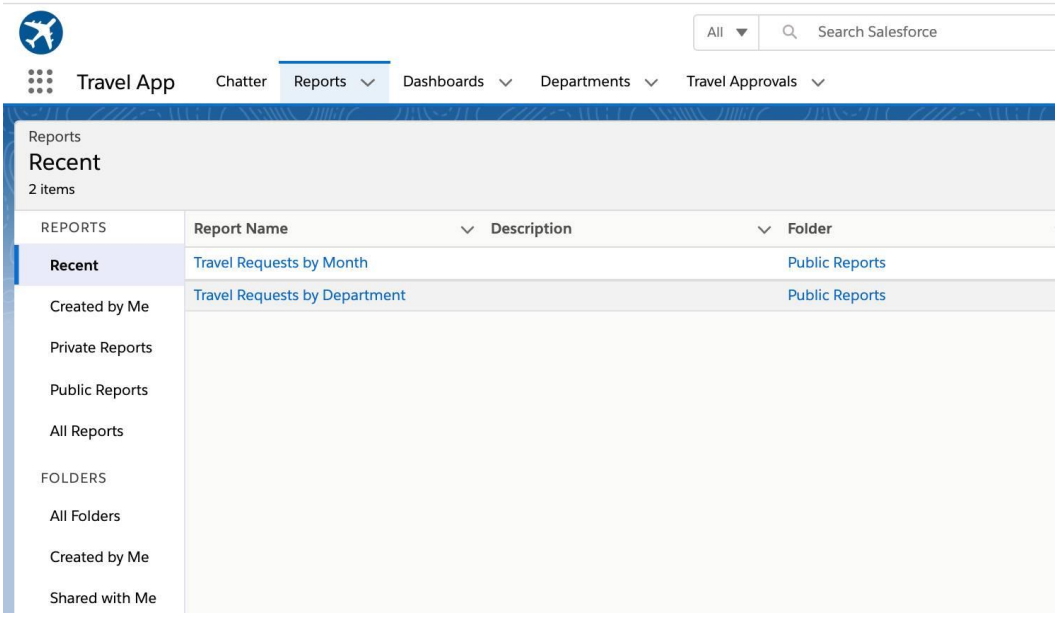


6. Click **Save** and set the following parameters for the report.

Parameter	Value
Report Name	Travel Requests by Month
Report Description	*Leave blank*
Report Folder	**Public Reports**

7. Click **Save**.
8. Click **Run**.

Congratulations! You now have two reports that you can use as the basis for your dashboard.



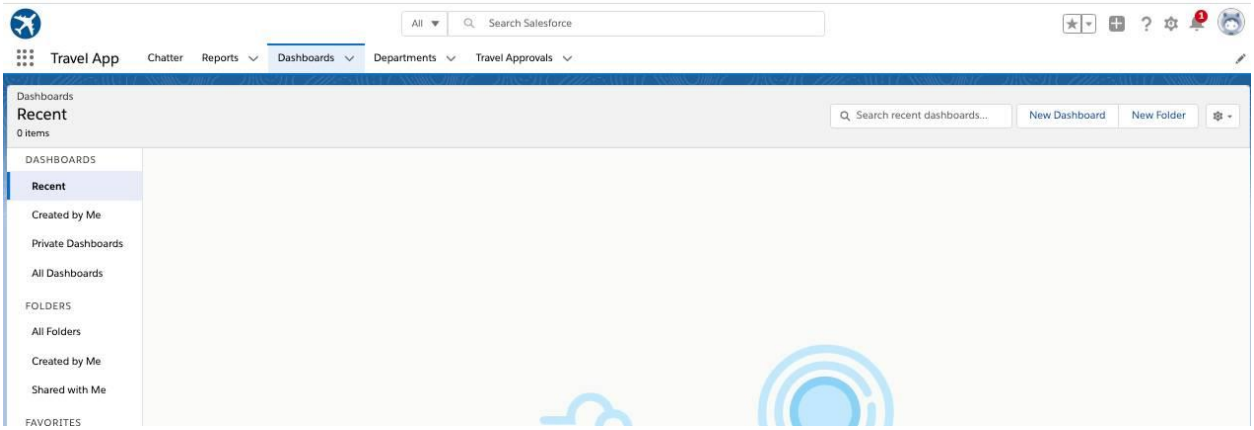
In the next step, you add these reports as components on your Salesforce dashboard.

Create a Travel Approvals Dashboard
Create a Dashboard

You can take your analysis to the next level by placing your reports on a Salesforce dashboard for quick and easy viewing. A dashboard provides an interactive visual display of key metrics and trends. Multiple dashboard components can be shown together on a single dashboard layout, creating rich visual displays of multiple reports that have a common theme.

1. Click the **Dashboards** tab.

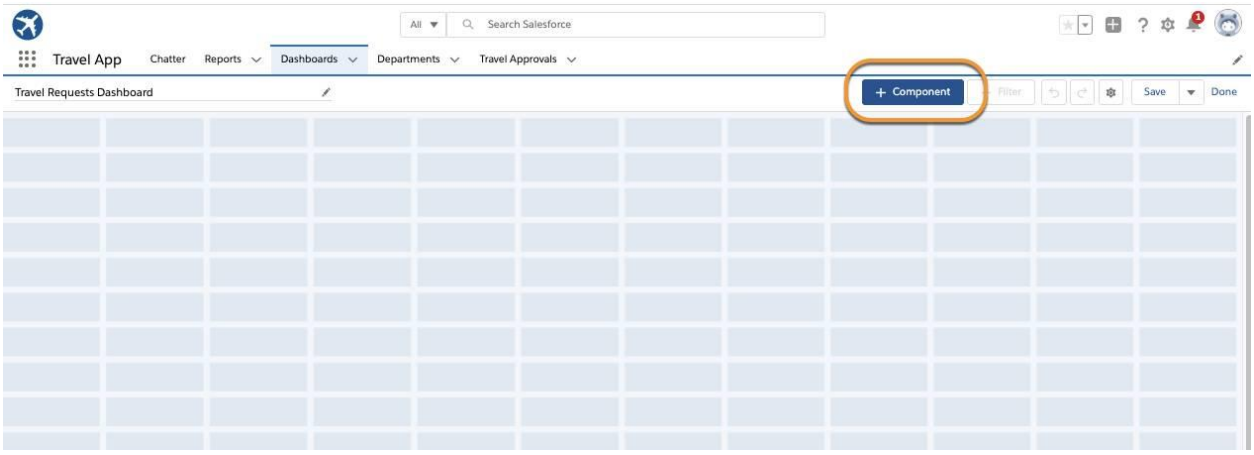
2. Click **New Dashboard**.



3. Enter the following values.

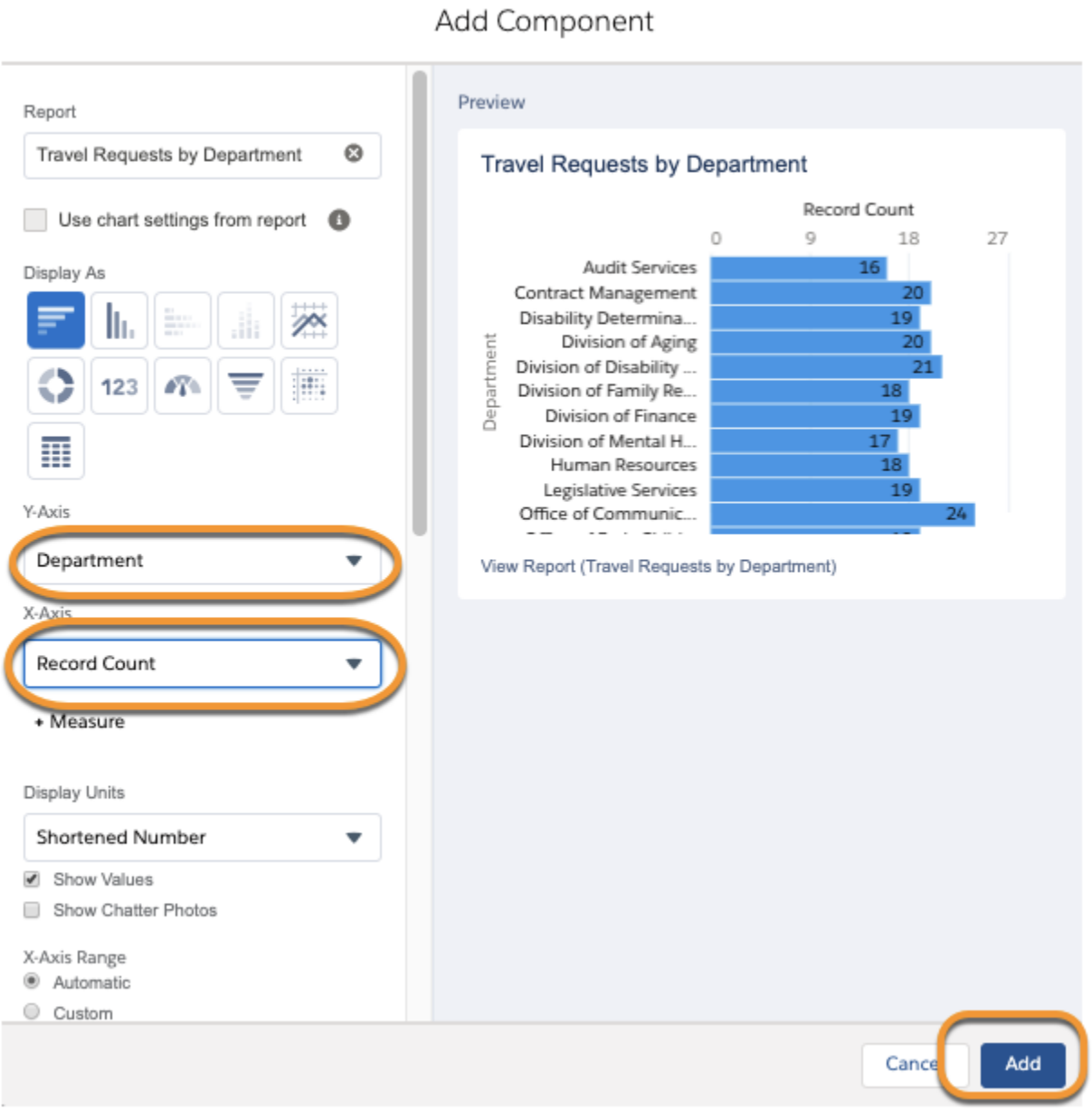
Parameter	Value
Name	Travel Requests Dashboard
Description	*Leave blank*
Folder	**Private Dashboards**

4. Click **Create**. You can now add reports to your dashboard and move them on to different sections of the dashboard. You can also stretch the components across the grid to have the exact layout of components you need for your dashboard.

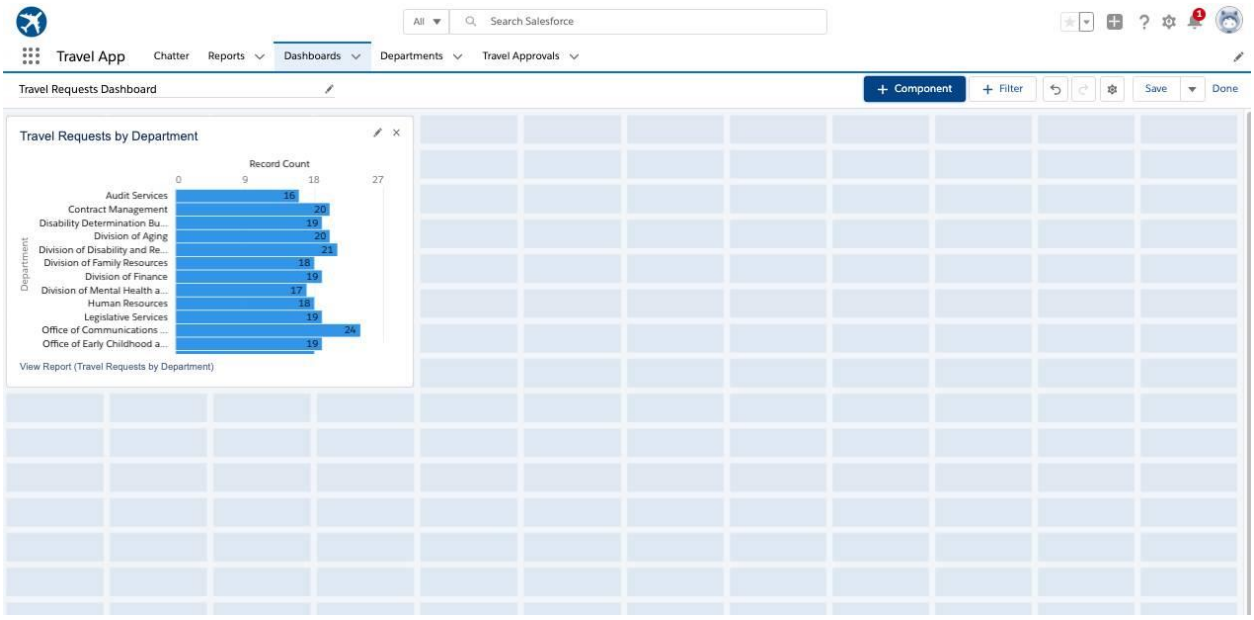


5. Click **+ Component**.
6. Click the **Travel Request by Department** report and click **Select**. You are presented with options to configure this component for the dashboard.

7. Make sure the Y-Axis is set to **Department** and the X-Axis is set to **Record Count**.

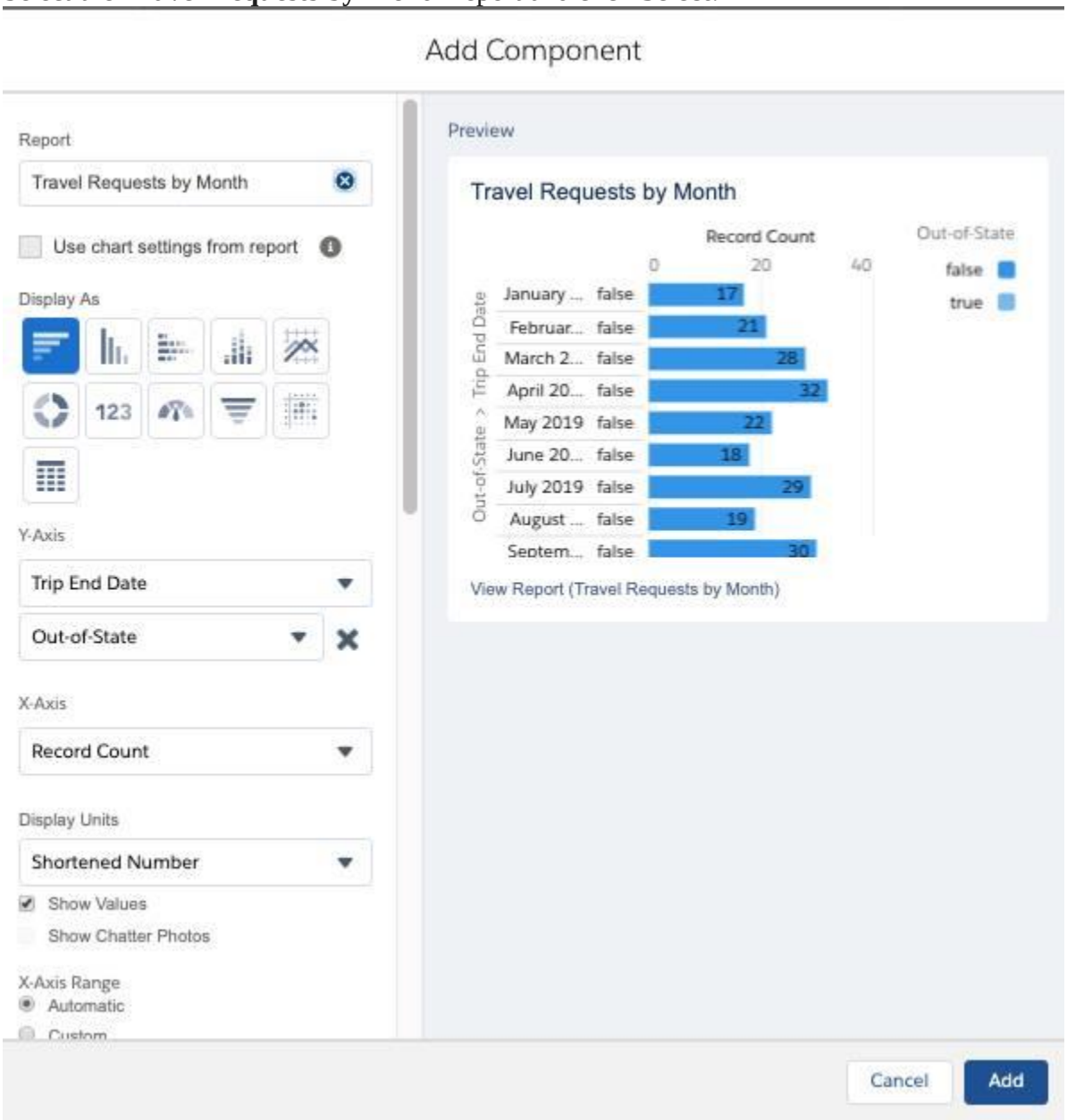


8. Click **Add**.



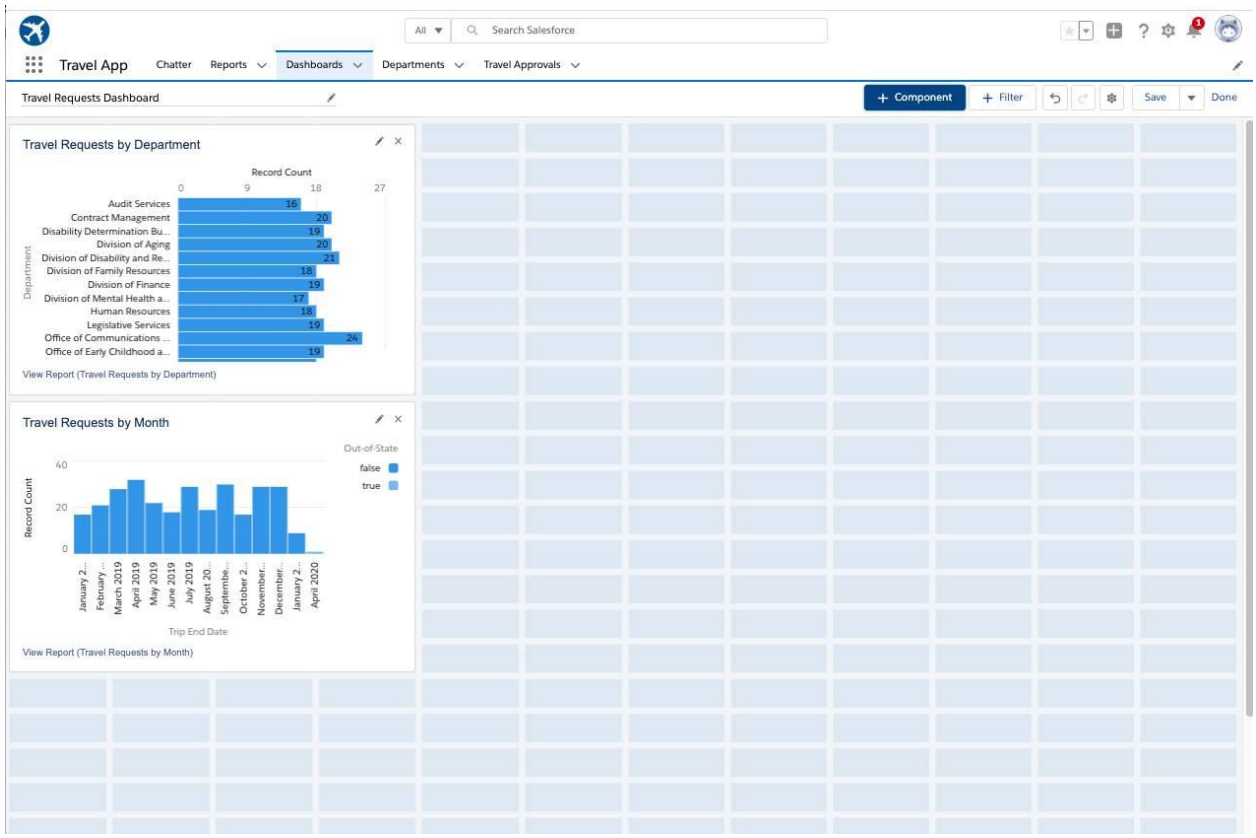
9. Click **+ Component** to add our other report.

10. Select the **Travel Requests by Month** report and click **Select**.

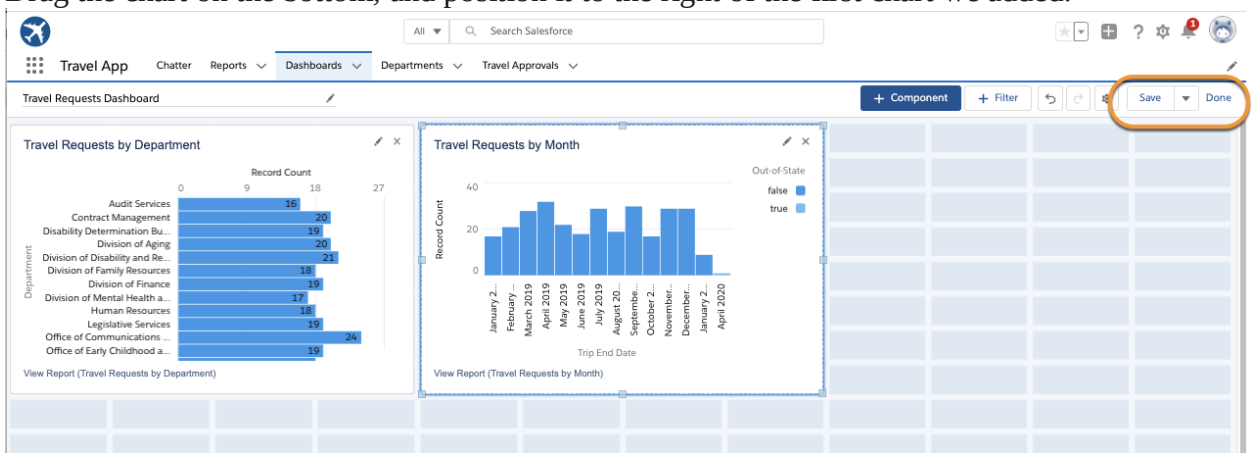


11. Let's make this a vertical, stacked bar chart that sorts data from oldest to newest by adjusting the following: [2x2 table]
    - Display As | **Stacked Vertical Bar Chart**
    - Sort By | **Trip End Date**

12. Click **Add**.

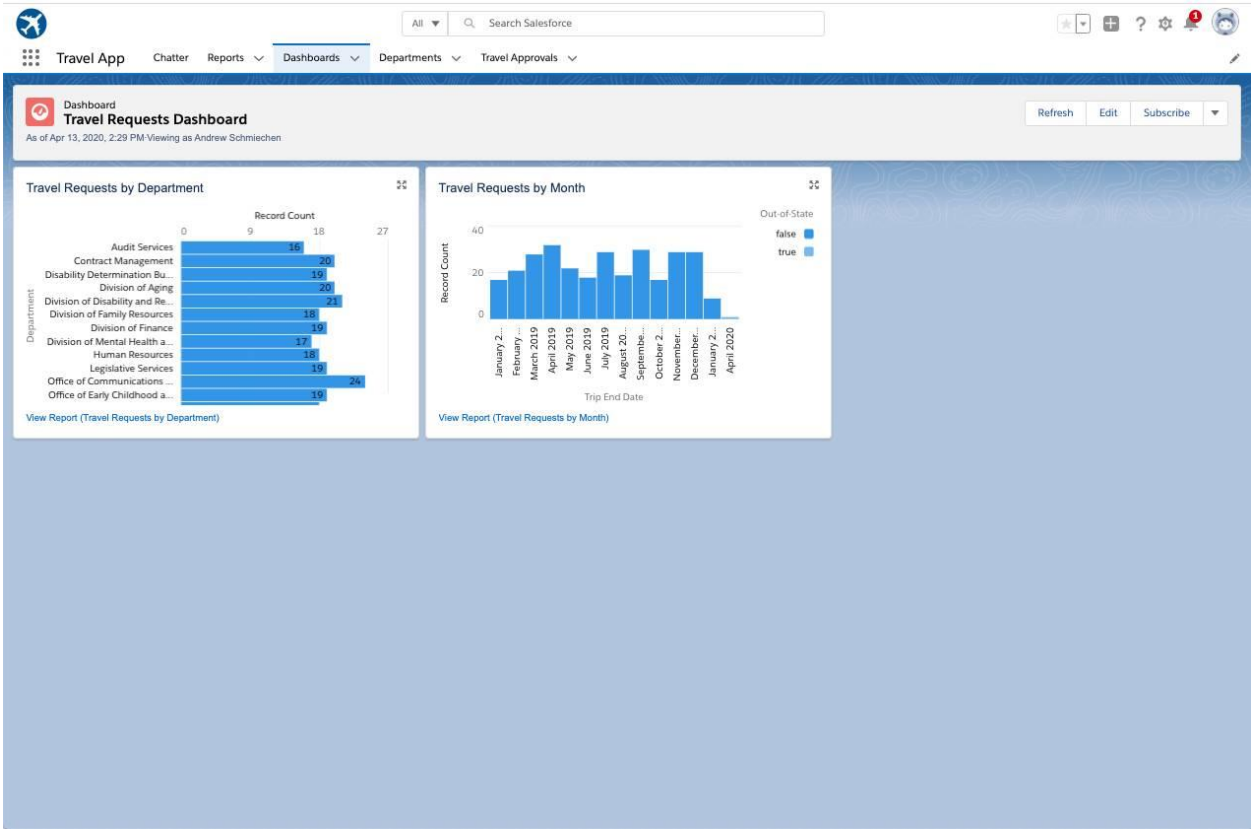


13. Drag the chart on the bottom, and position it to the right of the first chart we added.



Notice that you have a very flexible grid structure. Play around with stretching your dashboard components to various shapes on the grid.

14. Click **Save** and then the **Done**. Your dashboard will look like the following.



For real-world scenarios, you can add other reports to the dashboard and show data and key performance indicators (KPIs) from multiple objects from your database.

Congrats on completing the Travel App! You now have a single source of truth that can help control costs and limit unwarranted travel.

- Each employee must submit an electronic request in the system for future travel.
- Each request includes a list of estimated expenses for airfare, hotel, rental car, and so on.
- Each request must be approved by the employee's manager, and all out-of-state travel must be approved by a travel coordinator.
- Managers **have** reports and **a dashboard** to track key travel request trends and KPIs.

ORAL Question:

1. What is Salesforce?

This is one of the most basic salesforce interview questions, where the interviewer is simply checking if you can club your knowledge into a quick answer or not! Here's a short and straightforward answer to this salesforce interview question - Salesforce is the most effective Customer Relationship Management (CRM) product that is delivered to subscribers as a cost-effective software-as-a-service (SaaS).

2. What is a custom object in Salesforce?

In Salesforce, custom objects refer specifically to database tables that store data related to your company in Salesforce.com.

3. What does a custom object permit the user to do?

Once the custom object is defined, the subscriber can perform the following tasks:

- Create custom fields
- Relate the custom object to other records
- Track events and tasks
- Build page layouts
- Create a custom tab for the custom object
- Analyze custom object data
- Create dashboards and reports
- Share custom tabs, custom apps, custom objects, and various other related components.

None of these tasks can be accomplished until the custom object has a definition.

4. What is Self-Relationship?

A Self-Relationship is a lookup relationship to the same object. It is this premise that allows users to take the object "Merchandise" and create relationships with other objects.

5. What is Object Relationship Overview?

In Salesforce, the object relationship overview links custom object records to standard object records in a related list. This is helpful to track product defects in related customer cases. Salesforce allows users to define different types of relationships by creating custom relationship fields on an object.

6. What can cause data loss in Salesforce?

Data loss in Salesforce can be caused by a number of reasons, including:

- Changing data and date-time.
- Migrating to percent, number, and currency from other data types.
- Changing from the multi-select picklist, checkbox, auto number to other types.
- Altering to multi-select picklist from any type except picklist.
- Changing to auto-number except for text.
- Changing from text-area to e-mail, phone, URL, and text.

7. How is SaaS beneficial to Salesforce?

SaaS is subscription-based, so clients can choose not to renew and discontinue using the program at any time without penalty other than not being able to use Salesforce. SaaS is intended to help users avoid heavy initial startup fees and investments. SaaS applications use a simple Internet interface supported by easy integration.

8. How does Salesforce track sales?

Salesforce is a tracking program that records a number of helpful basic details, such as:

- Number of customers served daily
- Daily sales volume
- Detailed reports from Sales Manager
- Sales figures by month or quarter
- Most importantly, Salesforce tracks and reports repeat customer activity, which is the key to any sales organization.

9. How many types of relationships are offered by Salesforce.com?

Salesforce recognizes two relationship types: Master-detail relationships and Lookup relationships.

10. What is the difference between Trigger and Workflow?

This is one of the most frequently asked Salesforce interview question. Workflow is an automated process that fires an action based on evaluation criteria and rule criteria. As described above, Trigger is the code that is executed on or after the record is updated or inserted.

11. What is a static resource in Salesforce?

With Salesforce's static resource, subscribers can upload zip files, images, jar files, JavaScript, and CSS files that can be referred in a Visualforce page. The optimum size of static resources in Salesforce is 250 MB.

12. What is the difference between Force.com and Salesforce.com?

Force.com is Platform-as-a-Service (PaaS), while Salesforce.com is Software-as-a-Service (SaaS).

13. Is there a limit for data.com records?

Salesforce users can see their limit form setup easily by simply clicking data.com administration/Users. From the data.com users section, the users can see their monthly limit and exactly how many records are exported during the month.

14. What are the three types of object relations in Salesforce?

The three types of object relations in Salesforce are:

- One-to-many
- Many-to-many
- Master-detail

The relation types are quite logical once the user becomes familiar with the software program.

15. What are the different types of reports available in Salesforce?

The different types of reports in Salesforce are:

- Tabular report that displays the grand total in table form
- Matrix report where grouping is based upon both rows and columns
- Summary reports are detailed reports in which the grouping is based on columns.
- Joined report which allows two or more reports to be joined in a single report

16. Is it possible to schedule a dynamic dashboard in Salesforce?

In Salesforce, it is not possible to schedule a dynamic dashboard.

17. What is the junction object and what purpose does it serve?

Junction objects are used to build many-to-many relationships between objects. For example, the user can take a recruiting application where a position for a job can be linked to many candidates or can link a candidate to many other jobs. In order to connect the data model, a third party object is referred to as a junction object. In the given example, the junction object is "job application."

18. What is an Audit Trail?

The Audit Trail function in Salesforce is useful for gaining information or for tracking all the recent setup changes that the administration has done in the organization. The audit trail can preserve data for up to six months.

19. What is the difference between SOQL and SOSL?

SOQL is Salesforce Object Query Language and SOSL is Salesforce Object Search Language. If you are sensing that Salesforce is a culture unto itself, you are correct!

20. What is a Wrapper Class?

A Wrapper Class is a class whose instances are a collection of other objects and is used to display different objects on a Visualforce page in the same table.

21. What are some benefits of using Salesforce?

Salesforce comes with a number of benefits. The most major ones are:

- Helps to understand the needs of the customer
- Provides a single communication platform for all the team members of a project
- Reporting is quick and seamless
- Has a very high degree of adaptability
- Very easy to manage
- Can integrate with countless apps (eg: Dataloader, Mailchimp, Ebsta)

22. What is an object in Salesforce?

An object is a database table that contains data specific to an organization (columns are fields and rows are records). There are two types of objects in Salesforce - custom object and standard object.

- Standard object - A standard object is created by default in Salesforce. Eg: Contact, Account, and Lead.
- Custom object - A custom object is created by the user and can contain any information that the user wants. Eg: You can create a custom "Location" object to store information about the location of various branches of a company.

23. What is the difference between static and dynamic dashboards?

Static dashboards are the default dashboards which are visible to any user. You can use it to show organizational-wide data to a set of users.

Dynamic dashboards display data tailored for a specific user. You can use it to show one user's specific data, such as the number of sales closed, leads converted, etc.

24. What do you mean by governor limits?

Governor limits control how much data can be stored on a shared database. They help to ensure that no one monopolizes the shared resources (Storage, CPU, Memory).

Here are some few examples of governor limits in Salesforce:

- Maximum CPU time on the Salesforce servers - 10,000ms
- Total number of sendEmail methods allowed - 10
- Total number of records retrieved by a SOQL query - 50,000
- Total number of callouts in a transaction - 100

25. What are some things that you can do to prevent governor limits?

Here are some best practices you can follow to ensure that a code does not hit the governor limits.

- Bulkify your Code
- Use @future Appropriately
- Don't make any SOQL, DML operation inside a loop
- Queue large datasets
- Use batch apex for more than 50,000 records

26. What happens to master-detail and lookup relationships when a record is deleted?

In a master-detail relationship, all the details are deleted when the master record is deleted. However, in a lookup relationship, the child record remains even when the parent record is deleted.

27. What do you mean by a sandbox in Salesforce?

In this salesforce interview question, the interviewer expects a thorough answer. Try giving as detailed answer as you can to prove your salesforce knowledge. A sandbox is an exact replica of a database that can be used for testing and development. It is very helpful because it allows you to test out new ideas on the duplicate database without disturbing the original one.

There are four types of sandboxes in Salesforce:

- Developer Sandbox - It contains a copy of the production org's metadata and is intended for both development and testing in an isolated environment.
- Developer Pro Sandbox - It performs the same function as the developer sandbox, but can contain larger datasets.

- Partialcopy sandbox - It is intended to be used only as a testing environment. It contains a sample of the production org’s data and its metadata.
- Full sandbox - It is intended to be used only as a testing environment. It contains all the data of the production org, including objects, attachments and metadata.

28. How can you edit apex classes in a production environment?

You cannot edit apex classes directly in a production environment. It needs to be first done in the sandbox, then deployed in production where a user with Author Apex permission can make the changes.

29.State the important features of Salesforce.

- Contact management: Easier contact management via access to interaction history and customers' critical data.
- Opportunity management: Enables users to view the activity timeline of their customers, representing several stages of a deal for taking the next move.
- Quote management: In-built quoting mechanism that quotes client data tracking the deal products, including their standard price, quantity, product code, and price.
- Lead management: An activity timeline providing access to up-to-date contacts. The CRM app is a quick lead converter machine informing its users about the lead's original source.
- Sales data: Provides accurate sales data at the right time and a faster connection with key decision-makers.
- Mobility: The mobile app allows users to access CRM data conveniently.
- Workflow and approvals: Enables visual workflow for rapid designing and automating business processes via drag-drop ability. Users can manage flexible approval processes for expenses or discounts.
- File sync and share: Ease of sharing, discussing, and publishing content in real-time.
- Dynamic dashboards and custom reports: Users gain a real-time picture of their business performance in the market. They can also build their custom dashboard via drag and drop icons, adjust the fields, and view data with filters. Charts give real-time data for the latest insights.
- Sales forecasting: Tracks leads' journey and gives forecasting on sales by analyzing them.

30. What is an App in Salesforce?

An App is a logical container holding various details pertaining to the company like the name, logo, business operations, and more. The user can customize apps to suit their needs or develop new apps by combining standard and custom tabs. The following process is for creating an app in Salesforce: Setup → Build → Create → App → Click on new.

31. What are the different types of apps you can use in Salesforce?

- Custom app: Suitable for business owners to build apps that cater to business requirements from time to time.
- Console app: Suitable only for a client service business, where the main focus is on tackling the client's issues. It is comparatively less used in the market.

32. State the main differences between role and profile.

Role	Profile
Defines data visibility for a user.	Sets the limitation for what a user can do in an organization.
Defines what user data a user can see based on the hierarchy.	Defines permissions.
Not mandatory	Mandatory to define a profile.

33. What is a profile in Salesforce? Can two different users have the same profile?

A profile is a collection of permissions and settings that define all a user can do in Salesforce, giving them the authority to access certain records. There are various profiles, such as a sales profile, that can access contacts, leads, campaigns, and more.

People under a department can have the same profiles. For instance, several people are assigned the same sales profile in a sales department. So, any number of people can have the same profile.

34. What do you understand about the Master-Detail relationship in Salesforce?

Master-Detail is a relationship between a child and a parent where the parent is the master, and the detail represents a child. It is useful to control the display of detail records based on the value in the master record.

The master object has complete control over the Detail object behavior. Also, the child's survival depends on the parent because if the parent gets deleted, the child will automatically get deleted. Creating Roll-up summary fields in master records calculates the child records' SUM, MIN, and AVG.

35. What do you understand about workflow in Salesforce?

Workflow allows automation of standard internal processes for saving time across an organization. It helps in evaluating records as they are created or updated. It also determines whether an automated action must occur, such as functions like follow-up emails, marketing activities, tracking the customer map journey, and more.

A workflow rule is a container for various workflow instructions, usually summed up in an if/then statement.

36. What are the key benefits of the Salesforce CRM?

- Communication: Salesforce Einstein Bots help automatically respond to chats on time and avoid delay.
- Data syncing: Data syncing from other applications like MailChimp and G Suite helps avoid the challenges of moving from one software to another. The Salesforce mobile app allows data tracking anytime and anywhere.
- Data analytics tools: Salesforce's Einstein Analytics provides insights for users to address the changing data instantly. It has several reporting tools and dashboards for data collection and work.
- Track customer activity: The user can understand the customer's journey via the sales cloud for easier access to their background and behavior.
- Provide assistance via chat: The service cloud's live agent provides a chatbox depending on the customer interaction and followers on the web page.

- Consistent engagement: The gathered data in Salesforce's CRM allows the creation of consistent marketing campaigns for current customers.
- Building apps: Force.com simplifies building and customizing apps for any device.

37. What is Apex in Salesforce?

Apex is a strongly typed OOP language that allows developers to execute transaction control statements and flow on Salesforce platform servers in conjunction with calls to the API. Its syntax is similar to Java and serves as database stored procedures. The code can be initiated via triggers on objects and requests from web services, and they run on the Lightning platform.

Apex enables developers to incorporate business logic to system events, including button clicks, Visualforce pages, and related record updates.

38. What are Permission sets?

Permission sets are a collection of permissions/settings useful for giving the user access to numerous functions and tools. Permission sets can be used for various users to extend their functional access without altering their profiles. So, one can create a permission set instead of a separate profile every time.

39. What is the Force.com platform?

Force.com is the framework and codebase for the Salesforce application. It is a Platform as a Service (PaaS), allowing users to simplify the design and deployment of cloud-based websites and applications. Developers working on the Cloud IDE can deploy the applications on the servers of Force.com.

40. What are the various components of the Salesforce dashboard?

Some important components of the Salesforce dashboard are:

- Gauge: Displays a single value from a custom value range.
- Visualforce page: Helps in forming a custom component as a display of information unavailable in other component types.
- Metric: Shows a single pair of key–values.
- Table: Displays report data in list form.

- Charts: Provide comparisons and are divided into six types: line chart, horizontal bar chart, vertical bar chart, donut, funnel, and pie.

41. What do you understand about validation rules in Salesforce?

Validation rules comprise a formula/expressions for evaluating the data in one or more fields in a record for meeting the standards one specifies before the user saves the record. Based on the data evaluation, the result is a "True" or "False" value.

They display an error message to the user if the condition is "True" due to an invalid value.

These rules are helpful for the enforcement of integrity constraints against the data. If a rule fails, Salesforce proceeds to check other validation rules. One can create validation rules for objects, fields, case milestones, or campaign members.

42. What is Visualforce in Force.com?

Visualforce is the UI for the Force.com platform, allowing developers to create sophisticated, custom UI suitable for native hosting on the Lightning platform.

Its framework has a tag-based markup language and standard server-side controllers for basic database operations like queries. Every Visualforce tag corresponds to a UI component such as a field, related list, or page section.

Visualforce works on the standard MVC model. A developer can control its components by utilizing the logic used in standard Salesforce pages. They can also associate their own logic written in Apex with a controller class.

43. What are record types in Salesforce?

Record types allow you to associate different business processes and present various page layouts and picklist values to users based on the user profile.

Administrators can associate record types with user profiles. Consequently, different users can see different page layouts and picklist values in the record's detail page. The two prominent benefits of record types are as follows:

- They modify user interaction experience as per business needs.
- Allow simple administration as there are fewer fields to maintain.

44. What are page layouts in Salesforce?

Page layouts control the layout and organization of fields, buttons, Visualforce, custom links, and related lists on object record pages. They help organize user interface pages by determining which custom links, fields, and related lists are required, read-only, and visible to the user.

For a customized experience, one can create multiple page layouts and apply them to various user groups.

45. What are the different types of Apex triggers in Salesforce?

The two main types of Apex triggers are as follows:

- Before triggers: For updating and validating record values before they are saved to the database.

```
trigger TriggerName on ObjectName(before event) //Here event can be insert, update or delete

{

   code_block

}
```

- After triggers: For accessing field values of the records set by the system and stored in the database. You can use these field values for making changes in other records.

```
trigger TriggerName on ObjectName(after event) //Here event can be insert, update or delete

{

   code_block

}
```

46. What do you understand about the term fiscal year or economical year in Salesforce?

The economical or fiscal year is a time period used for calculating annual financial statements. It is based on a company's financial year's starting and ending date. The business that Salesforce conducts and the Salesforce revenue are considered. The two types of economical years in Salesforce are:

- Normal or standard fiscal year: It follows the Gregorian calendar for estimations and has a 12-month structure. It can begin with the first day of a month of your choice belonging to a particular year.
- Custom fiscal year: It is applicable for the companies following weekly or quarterly financial planning.

47. What is a skinny table, and what are the major considerations for a skinny table?

Skinny tables are useful in accessing the frequently used fields while avoiding joins. They enhance the performance of certain read-only operations like reports, list views, and more. They are highly effective as they stay in sync with source tables even in case of a modification in the source table.

Without contacting Salesforce customer support, one cannot create, access, or modify skinny tables.

The major considerations for skinny tables are as follows:

- It can contain a maximum of 100 columns.
- It is incapable of holding fields from other objects.

48. What are the different ways to share a record?

- Role hierarchy: When a user is added to a role, all users above the current user in the role hierarchy have access to reading and sharing the records and inheriting permissions. The steps for role hierarchy are:

Setup → Manage Users → roles → set up roles and click on 'add role', → create a name and click on save.

- OWD: Organization-Wide Defaults allow you to define an organization's baseline setting and give permissions to the organization-wide. It helps define a user's accessibility level where they can view other users' records. For OWD, follow these steps:

Setup → Security Controls → click on 'sharing settings' → Edit.

- Manual sharing: For sharing a single record/file to a particular user/group of users via manual access. A button is available on the detail page of the record when the OWD setting is private.
- Criteria based sharing rules: We have to share records based on conditions. For instance, share records with a user/group with the criteria of the country- India. The steps for sharing are:

Setup → security controls → sharing settings → select the object, provide name and conditions, and then click on save.

- Apex sharing: One can share every object in Salesforce by creating a record for the shared object.

49. What do you understand about the Future annotation(@future)?

Future annotations specify methods that are executed asynchronously. These methods with future annotation should be static and can only return a void type. The arguments mentioned should be primitive data types/collections of primitive data types/ arrays of primitive data types.

A method specified with @future annotation will be executed once Salesforce has available resources.

50. Explain the types of SOQL statements in Salesforce.

The Salesforce Object Query Language or SOQL is employed in querying the records from database.com as and when required. The two types of SOQL statements are as follows:

- Static SOQL: It is written using [] (array brackets) and is similar to IINQ (Ion Integrated Query). It is suitable when there are no dynamic changes in the SOQL query.
- Dynamic SOQL: It is suitable for referring to the SOQL string creation at run time with Apex code. It allows the creation of more flexible applications. For instance, you can create a search based on updated records or end-user input with varying field names.

51. What are the various types of email templates available in Salesforce?

- Text: All the users in an organization have access to creating or changing these templates.
- HTML with letterhead: Users with the "Edit HTML Templates" permission and administrators can create these templates based on a letterhead.
- Custom HTML: These are an extension of HTML with a letterhead. Administrators and users with "Edit HTML Templates" permissions can create them without using the letterhead.
- Visualforce: Administrators and developers can create them using Visualforce. They have advanced functionalities such as merging with a recipient's data.

52. What is Salesforce Lightning?

Salesforce Lightning is a component-based application development framework with a collection of tools and technologies for effectively increasing the Salesforce platform performance. The tools include visual upgrades, optimized interfaces, and more. It simplifies processes for business users who have no programming experience.

It allows easy and quick creation of applications that solve business issues and enhance engagement. Some key features are:

- Provides a drag-drop facility for app creation and customization.
- Has tools and extensions for the development of reusable components.
- AppExchange for over 50 partner components.
- Has style guides and provides user experience practices for app development.
- Lightning Connect is an integration tool for applications of Force.com to consume data from an external source that meets the OData specification.

53. State two examples of Salesforce API and their usage.

Salesforce has several APIs for developers to interact with the system. Examples of Salesforce API are:

- Streaming: The Streaming API is useful for triggering and receiving notifications when a change is made to Salesforce data according to the defined SOQL query criteria. It can be used to push notifications from the server to the client based on defined criteria.
- Bulk: It provides programmatic access for quick loading and querying a huge amount of data into your Salesforce organization.