Visual Workflow: Summer '14

Cloud Flow Designer Workbook

Last updated: June 14, 2014

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About the Cloud Flow Designer Workbook

This workbook provides a simple introduction to many of the features in Visual Workflow.

Visual Workflow allows you to automate business processes by building applications, known as *flows*, that collect, update, edit, and create Salesforce information, and then make those flows available to the right users or systems. Flows can execute logic, interact with the Salesforce database, call Apex classes, and guide users through screens for collecting and updating data.

About Flows and the Cloud Flow Designer

Elements, resources, and connectors are the building blocks of flows. Each element represents an action that the flow can execute, such as reading or writing Salesforce data, displaying information and collecting data from flow users, executing business logic, or manipulating data. Each resource represents a value that you can reference throughout the flow. Connectors determine the available paths that a flow can take at runtime.

The goal of these tutorials is to give you a sampling of what Visual Workflow can do. They increase in complexity as you go through the workbook. Each tutorial can stand alone, so if you're a beginner with flows, we recommend starting with Tutorial #1 to get your feet wet. While touring along, feel free to experiment—change things a little, substitute a different element—and have fun!

Before You Begin

These tutorials are designed to work in an Enterprise, Unlimited, Performance, or Force.com Developer Edition environment. You can get a Developer Edition organization for free at http://developer.force.com/join.

Note: Because the platform is continually evolving, you might find that the screenshots you see in this book vary slightly from what you see on your screen. These changes should be minor and shouldn't affect your understanding.

System Requirements

To use the Cloud Flow Designer, we recommend:

- Windows® Internet Explorer® versions 8 through 11, Google® Chrome™, or Mozilla® Firefox®. Internet Explorer 6 and 7 are not supported.
- Adobe® Flash® Player version 10.1 and later. The minimum version required to run the Cloud Flow Designer is 10.0.
- A minimum browser resolution of 1024x768.

Tutorial #1: Creating a Tip Calculator

If you're new to flows and the Flow Designer, this tip calculator tutorial is a simple introduction to the basic elements of a flow and how they work together.

Optional Step: Pre-configure Your Flow Using Step Elements

A Step is a placeholder element you can use to quickly sketch out a draft of a new flow or make conceptual changes to an existing flow. Once you have your flow set up using Steps, you can then convert them into Screens or replace them with other elements.

In this step, we'll pre-configure the tip calculator flow using Step elements.

When thinking about how to draft our tip calculator flow, we know we need to do two things for the users: give them a place to enter the bill amount and service quality, then show them the recommended tip amount. Let's start with those.

1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.
2. Click **New Flow**.
3. From the Palette in the left pane, click and drag a Step element onto the canvas.
4. Enter `Bill Information Step` into the `Name` field.
5. Press TAB, and the `Unique Name` field should automatically fill in.
6. In the `Description` field, enter `Capture bill amount and service quality.`
7. Click **OK**.
8. From the Palette in the left pane, click and drag another Step element onto the canvas, beneath the first one.
9. Enter `Tip Amount Step` into the `Name` field.
10. In the `Description` field, enter `Display tip amount.`
11. Click **OK**.
12. Click and drag an arrow connector from the bottom of the Bill Information Step onto the Tip Amount Step.

From the user's perspective, all we need are two screens, representing input (bill amount, service quality) and output (tip amount). However, at least one thing needs to happen that the user will never see: the calculation of the tip amount. We'll use a Formula resource for that later on.

Note: Steps aren't valid elements for active flows. You can have a draft flow with Steps in it and can run it in the draft state as an administrator, but you must replace the Steps with other elements before you can activate the flow and let users run it.

Step 1: Add a Screen Element to Capture the Bill Information

In the first screen of the flow, we'll ask the user to input the bill amount and rate the level of service they received.

If you bypassed the optional step to pre-configure your flow with Step elements:

1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.
2. Click **New Flow**.

3. From the Palette in the left pane, click and drag a Screen element onto the canvas.
4. Enter `Bill Information` into the `Name` field.
5. Press TAB, and the `Unique Name` field should automatically fill in.

If you did the optional step to pre-configure your flow with Step elements, we need to convert the Step into a Screen.

1. Hover over the Bill Information Step and click .
2. Remove `Step` from the `Name` field. It should just read `Bill Information` now.
3. Remove `_Step` from the `Unique Name` field. It should just read `Bill_Information` now.

The first thing we want to gather on the screen is the bill amount, so we need to add an input field for it.

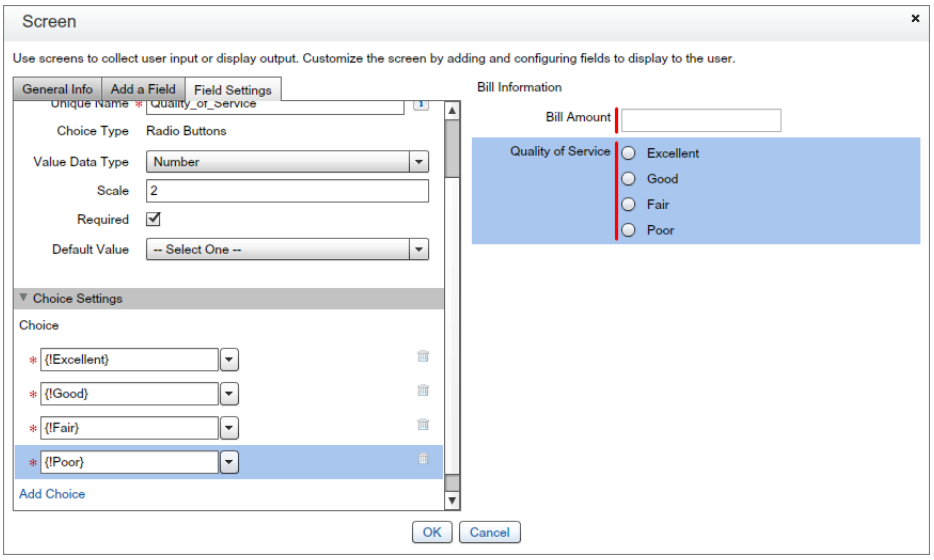
1. Click the Add a Field tab.
2. Double-click to add a Currency field. A blank currency field appears in the right preview pane.
3. Click the currency field in the preview pane to configure it.
4. On the Field Settings tab, enter `Bill Amount` in the `Label` field.
5. Enter `2` into the `Scale` field. The scale is the maximum number of digits allowed to the right of the decimal point. This number can't exceed 17. If you leave this field blank or set to zero, only whole numbers are displayed when your flow runs.
6. Make the field required.

The next thing we want to know is how the user rated their service, so we need a choice input field.

1. Click the Add a Field tab again.
2. Double-click to add a set of radio buttons.
3. Click the radio button field in the preview pane.
4. On the Field Settings tab, enter `Quality of Service` in the `Label` field.
5. Set `Value Data Type` to Number, because we'll be storing the service level choice as a number representing tip percentage.
6. Enter `2` into the `Scale` field.
7. Make the field required.

In the Choice Settings section, we need to set up four service level choices for the user. Choices are resources, and we can create them here in the Screen overlay.

1. Click to the right of the first Choice field, expand the CREATE NEW section, and select `Choice`.
2. In the `Label` field, type `Excellent`.
3. Set the `Value Data Type` to Number.
4. For `Stored Value`, enter `20`, representing a 20% tip.
5. Click **OK**.
6. Click **Add Choice** to repeat these steps three more times, adding new choices with the following values.
    - Label: `Good`; Stored Value: `15`
    - Label: `Fair`; Stored Value: `10`
    - Label: `Poor`; Stored Value: `0`
7. Verify that your Screen overlay looks like this, then click **OK**.



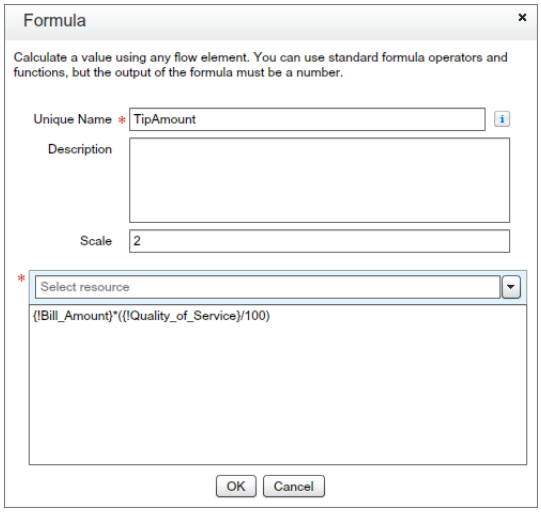
Step 2: Create Formulas to Calculate Tip Amount and Total Bill

To calculate the tip amount and the total bill, we need to create two formulas. The tip amount is based on the bill amount and service quality. The total bill adds together the bill amount and the result of the tip amount calculation.

Calculate the Tip Amount

The tip amount is the bill amount multiplied by the service quality value as a percentage. When setting up our screen in Step 1, we gave the `Quality of Service` choices numeric stored values, which correspond to tip percentages. We'll set up this formula to automatically calculate how much tip should be given based on what level of service quality the user chose.

1. Click on the Resources tab.
2. Double-click the Formula resource.
3. Enter `TipAmount` for `Unique Name`.
4. Select Number for `Value Data Type`.
5. Enter `2` into the `Scale` field. The scale is the maximum number of digits allowed to the right of the decimal point. This number can't exceed 17. If you leave this field blank or set to zero, only whole numbers are displayed when your flow runs.
6. Click ▼, expand the SCREEN INPUT FIELDS section, and select **Bill_Amount**. You should see `{!Bill Amount}` appear in the text box.
7. We want to multiply the bill amount by the service quality value, so after `{!Bill Amount}`, type an asterisk.
8. Put your cursor directly after the asterisk, click ▼, expand the SCREEN CHOICE FIELDS section, and select **Quality_of_Service**.
9. Since we want to represent the service quality as a percentage, type `/100` after `{!Quality_of_Service}`, then enclose both in parentheses, like so: `({!Quality_of_Service}/100)`.
10. Your final formula should look like this: `{!Bill Amount}*({!Quality_of_Service}/100)`.



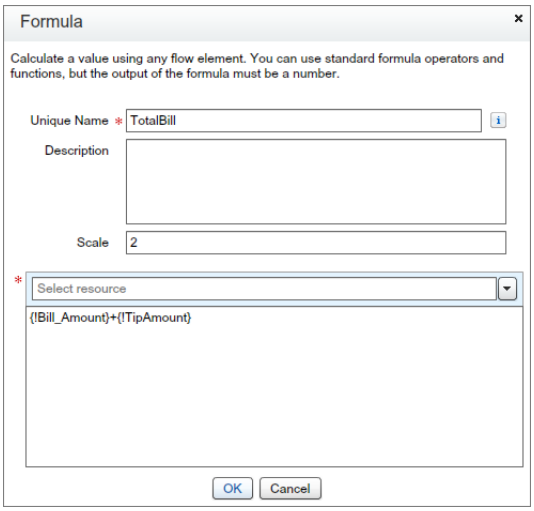
11. Click **OK**.

If you click the Explorer tab, you should now see TipAmount under the FORMULAS section.

Calculate the Total Bill

The total bill is the sum of the TipAmount formula plus the bill amount value the user entered in the first screen.

1. From the Resources tab, double-click the Formula resource again.
2. Enter `TotalBill` for `Unique Name`.
3. Select Number for `Value Data Type`.
4. Enter `2` into the `Scale` field. The scale is the maximum number of digits allowed to the right of the decimal point. This number can't exceed 17. If you leave this field blank or set to zero, only whole numbers are displayed when your flow runs.
5. Click ▾, expand the SCREEN INPUT FIELDS section, and select **Bill_Amount**. You should see `{!Bill Amount}` appear in the text box.
6. We want to add the bill amount and tip amount together, so after `{!Bill Amount}`, type a plus sign (+).
7. Put your cursor directly after the plus sign, and using ▾, expand the FORMULAS section and select **TipAmount**.
8. Your formula should look like this: `{!Bill Amount}+{!TipAmount}`.



9. Click **OK**.

If you click over to the Explorer tab again, you should now see TipAmount and TotalBill in the Formulas section.

Step 3: Add a Screen to Display the Results

We've created the formulas to calculate tip amount and total bill amount, and next we need to display those back to the user. To do this, we'll set up another Screen element.

If you bypassed the optional step to pre-configure your flow with Step elements:

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Show Tip Summary` into the `Name` field.
3. Press TAB, and the `Unique Name` field should automatically fill in.

If you did the optional step to pre-configure your flow with Step elements, we need to convert the second Step into a Screen.

1. Hover your mouse over the Tip Amount Step and click  .
2. Change the `Name` field to `Show Tip Summary`.
3. Change the `Unique Name` field to `Show_Tip_Summary`.

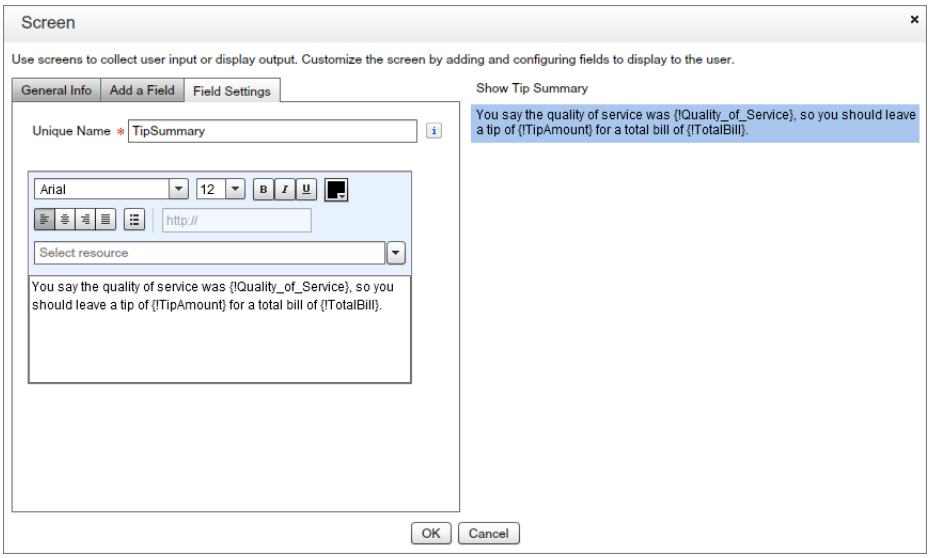
Now we can configure the fields for the Screen.

1. Click the Add a Field tab.
2. Double-click to add a **Display Text** field.
3. Click the Display Text field in the preview pane.
4. On the Field Settings tab, enter `TipSummary` for the unique name.
5. In the text box, type: `You say the quality of service was X, so you should leave a tip of Y for a total bill of Z.` We'll replace `X`, `Y`, and `Z` with values from the flow.
   a. Click ▾ next to the Select resource field.
   b. Expand the SCREEN CHOICE FIELDS section and select **Quality_of_Service**.
   c. Replace the `X` in the sentence with `{!Quality_of_Service}`.
   d. Click ▾ again, expand the FORMULAS section, and select **TipAmount**.
   e. Replace the `Y` in the sentence with `{!TipAmount}`.
   f. Click ▾ again, expand the FORMULAS section, and select **TotalBill**.
   g. Replace the `Z` in the sentence with `{!TotalBill}`.

   The final text in the preview pane of the overlay should look like this:

```
You say the quality of service was {!Quality_of_Service}, so you should leave a tip of
{!TipAmount} for a total bill of {!TotalBill}.
```

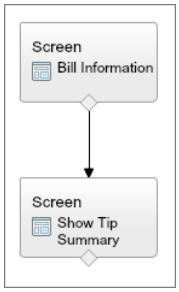
6. Verify your Screen overlay looks like this, then click **OK**.



7. If you didn't already do it in the optional first step, click and drag an arrow connector from the Bill Information screen element onto the Show Tip Summary screen element.

Tip: If you accidentally delete a selected element or connector from the canvas, don't panic! Go up to the button bar and click . If you undo too many changes, click .

Your Flow Designer main canvas should contain two Screen elements, as shown here.

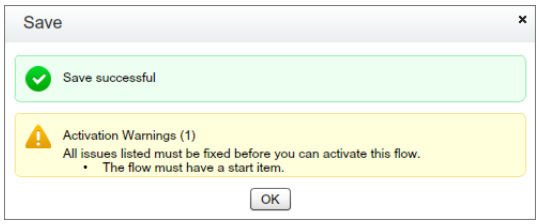


Step 4: Save the Flow

OK, we're done setting up our flow! Now we need to save it.

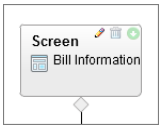
1. Click **Save** on the button bar.
2. Enter `Calculate Tip` in the `Name` field.
3. Press TAB, and the `Unique Name` field should automatically fill in.
4. Enter a description if you like.
5. Click **OK**.

You may have noticed this message on the Save dialog:



All flows must have an element designated as the start point. Let's do that now.

1. If you didn't already, click **OK** to close the save dialog box.
2. Hover your mouse over the Bill Information screen element and you'll see three icons appear in the upper right corner.

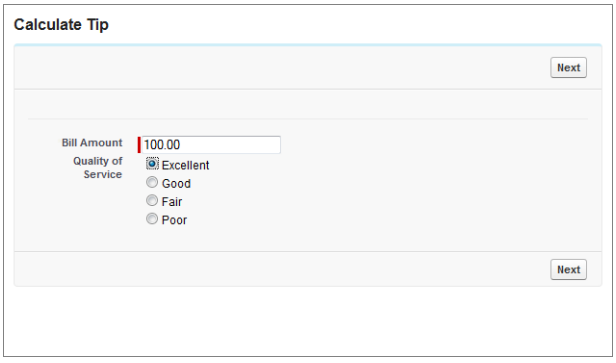


3. Click to set the Bill Information screen as the starting point for the flow.
4. Click **Save** again to save this change.
5. Click **Close**. You should be taken to the flow detail page.

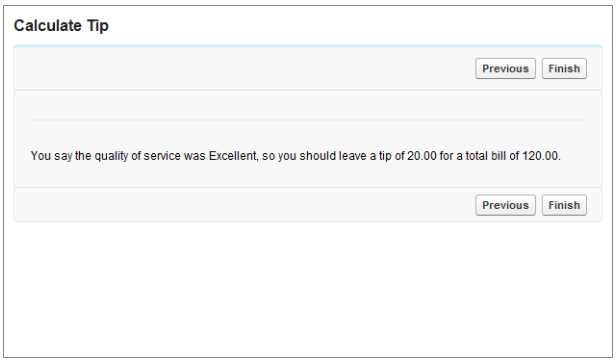
Step 5: Run the Flow

We've created and saved our flow, now let's run it to make sure everything works correctly. We'll fill it out as a user would, using some sample numbers.

1. From the flow detail page, click either the **Run** button at the top of the page, or the **Run** link in the Action column. The flow should open up in a new window.
2. In the `Bill Amount` field, enter `100.00`.
3. For Quality of Service, select `Excellent`.



4. Click **Next**.
5. The next screen should read: You say the quality of service was Excellent, so you should leave a tip of 20.00 for a total bill of 120.00.



6. Click **Finish**.
7. Close the flow window.

Tutorial #2: Creating a Sustainability Survey

This tutorial is slightly more complex than the Tip Calculator. This time we'll create a flow for a company that wants to find out the commute habits of its employees. Using a combination of display text, textboxes, and radio buttons, we'll capture employees' regions, commute hours, and email addresses. We're going to ask them to identify their region in the first screen, then we'll use a Decision element and a series of Screen elements to route them through the flow based on which region they choose.

Step 1: Add a Screen Element to Capture Users' Region

The first screen in the flow will introduce the survey and ask users what region they work in. So, we'll need to display some text and present users with a choice.

1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.

   Tip: If you completed the Tip Calculator flow, you'll see it here on the flow list page. In the Actions column, the **Edit** link lets you edit the flow properties, such as its name and description. The **Open** link opens the flow in the Flow Designer. Clicking the flow name takes you to the flow detail page.

2. Click **New Flow**.
3. From the Palette in the left pane, click and drag a Screen element onto the canvas.
4. Enter `Welcome to the Sustainability Survey` into the `Name` field.
5. Press TAB, and the `Unique Name` field should automatically fill in.

The first thing we want to do on this screen is to welcome the user and tell them a little bit about the survey.

1. Click the Add a Field tab.
2. Double-click **Display Text**. A display text field appears in the preview pane.
3. Click the display text field to configure it.
4. On the Field Settings tab, enter `SurveyIntro` in the `Unique Name` field.
5. In the text box, type in `Thank you for spending the next seven minutes on this commute survey. Your participation will help us assess our environmental footprint as a company and help us plan better transportation options as we grow. At the end of the survey, enter your email address for the chance to win a $250 gift card! One winner will be chosen at random.`

Next, we'll ask users to identify which region they work in.

1. Click back over to the Add a Field tab.
2. Under the CHOICES section, double-click **Radio Buttons**.
3. Click the Radio Button field in the preview pane.
4. On the Field Settings tab, enter `In which region do you work?` in the `Label` field.
5. In the Choice Settings section, we need to set up two region choices for the user. Choices are resources, and we can create them here in the Screen overlay.

   a. Click ▾ to the right of the first Choice field, expand the CREATE NEW section, and select `Choice`.
   b. In the `Label` field, type `AMERICAS`.
   c. For `Stored Value`, enter `AMERICAS`.
   d. Click **OK**.
   e. Click **Add Choice**

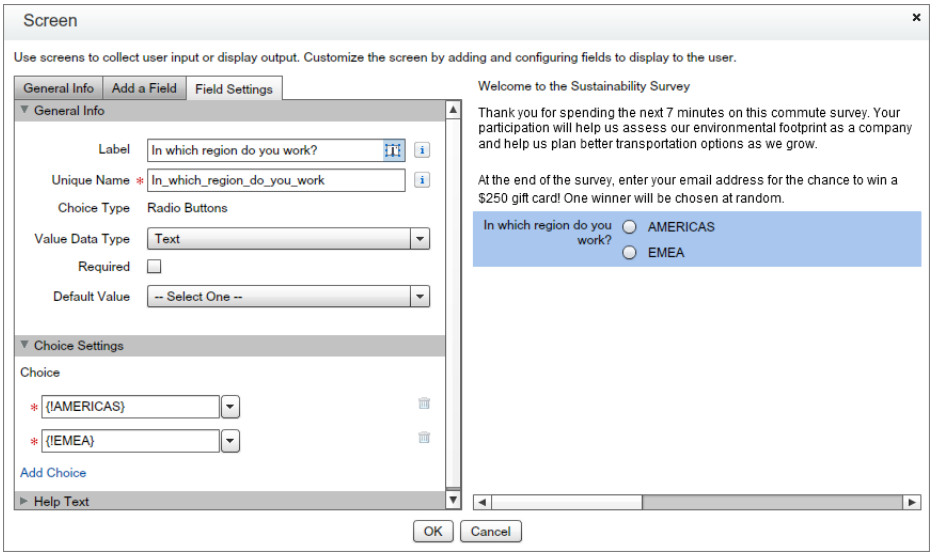
f. Click ▼ to the right of the new Choice field, expand the CREATE NEW section, and select `Choice`.

g. In the `Label` field, type `EMEA`.

h. For `Stored Value`, enter `EMEA`.

i. Click **OK**.

6. Verify that your Screen overlay looks like this, then click **OK**.



Step 2: Add and Configure a Decision Element

You may be wondering why we need a Decision element, since we set up a set of radio buttons in the last screen for the user to choose their region. The Decision element is what provides the logic behind the scenes to direct users down a branch of the flow based upon the choices they make. Users won't see it.

For our example, we have only two choices, AMERICAS or EMEA, so we can set the decision to a simple Boolean outcome: true or false. We'll set AMERICAS as the "True" path, so by default, any user choosing EMEA will travel down the "False' path of the flow.

1. From the Palette tab, click and drag a Decision element onto the canvas directly below the Screen you just created.
2. Enter `Route based on region` for `Name`.
3. In the Outcomes section, we'll configure the conditions for each outcome.

   a. For `Name`, enter `Region: AMERICAS`

   b. In the `Resource` field, click and expand the CHOICES section and select **AMERICAS**.

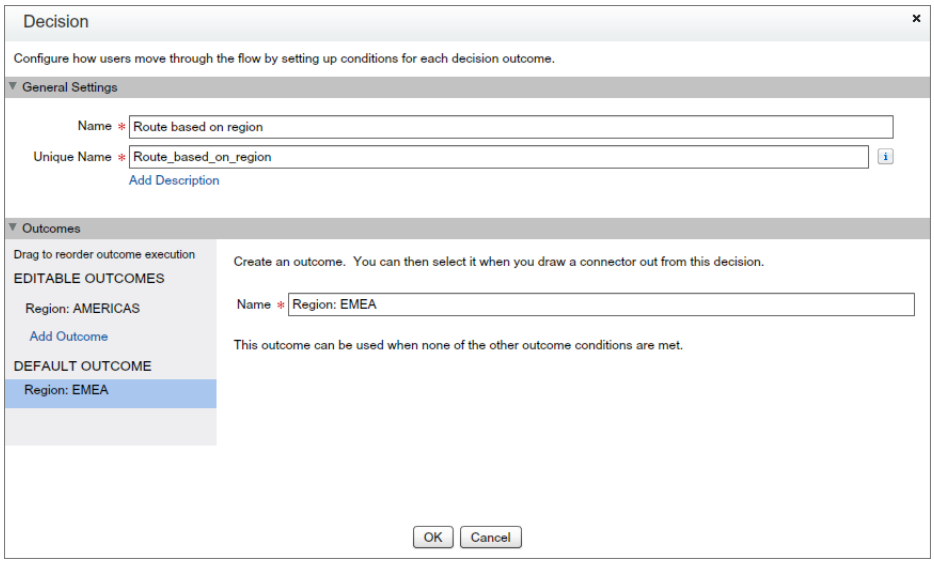
   c. Select **was selected** for the operator.

   d. In the `Value` field, click and expand the GLOBAL CONSTANT section and select **$GlobalConstant.True**.

   e. Click **[Default Outcome]**. The default outcome defines a path to which users will be routed if none of the other outcome conditions are met. Since our decision is a simple Boolean one, and we've already set our "True" path (AMERICAS), we can use the default outcome as our "False" path.

   f. For `Name`, enter `Region: EMEA`.

4. Verify that your Decision overlay looks like this, and click **OK**.



5. Click and drag an arrow connector from the Screen element onto the new Decision element.

Step 3: Add a Screen Element for the AMERICAS Option

We have two outcomes for our Decision element, so we need to set up two Screen elements asking the user for input based on which region they chose: one for AMERICAS and one for EMEA. In this step, we'll create the AMERICAS Screen element.

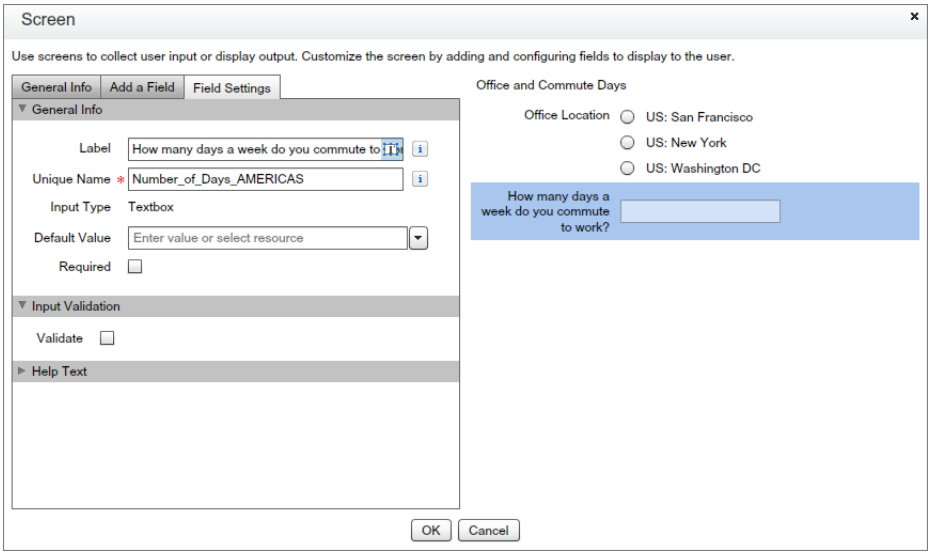
1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Office and Commute Days` into the `Name` field.
3. Change the `Unique Name` field to `Get_Office_and_Commute_Days_AMERICAS`.

We need two different bits of information from the user: what office they're in, and the number of days they commute to work. First we'll ask for their office location.

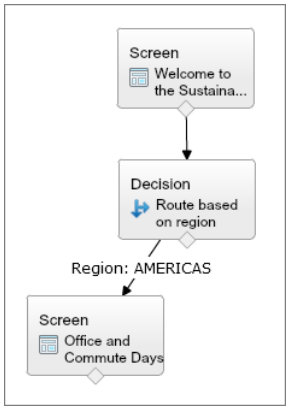
1. Click the Add a Field tab.
2. Under the CHOICES section, double-click to add a set of radio buttons.
3. Click the Radio Buttons field in the preview pane to configure it.
4. On the Field Settings tab, enter `Office Location` in the `Label` field.
5. Change the `Unique Name` to `Office_Location_AMERICAS`.
6. In the Choice Settings section, we need to set up three region options for the user. Choices are resources, and we can create them here in the Screen overlay.
   a. Click ▾ to the right of the first Choice field, expand the CREATE NEW section, and select `Choice`.
   b. In the `Label` field, type `US: San Francisco`.
   c. For `Stored Value`, enter `SF`.
   d. Click **OK**.
   e. Click **Add Choice** to repeat these steps two more times, adding new choices with the following values.
      - Label: `US: New York`; Stored Value: `NY`
      - Label: `US: Washington DC`; Stored Value: `DC`

Next, we'll ask users to tell us how many days they commute to work every week.

1. Click back over to the Add a Field tab.
2. Under the INPUTS section, double-click to add a Textbox.
3. Click the Textbox field in the preview pane.
4. On the Field Settings tab, enter `How many days a week do you commute to work?` in the `Label` field.
5. Change the unique name to `Number_of_Days_AMERICAS`.
6. Verify that your Screen overlay looks like this, then click **OK**.



7. Click and drag an arrow connector from the Decision element onto this Screen element. A Decision Routing dialog box appears.
8. Make sure Region: AMERICAS is selected, then click **OK**. A connector labeled as Region: AMERICAS should appear between the Decision and the Screen we just created.



Step 4: Add a Screen Element for the EMEA Option

We created the Screen element for the AMERICAS choice path, now we need to create the EMEA Screen element.

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Office and Commute Days` into the `Name` field.

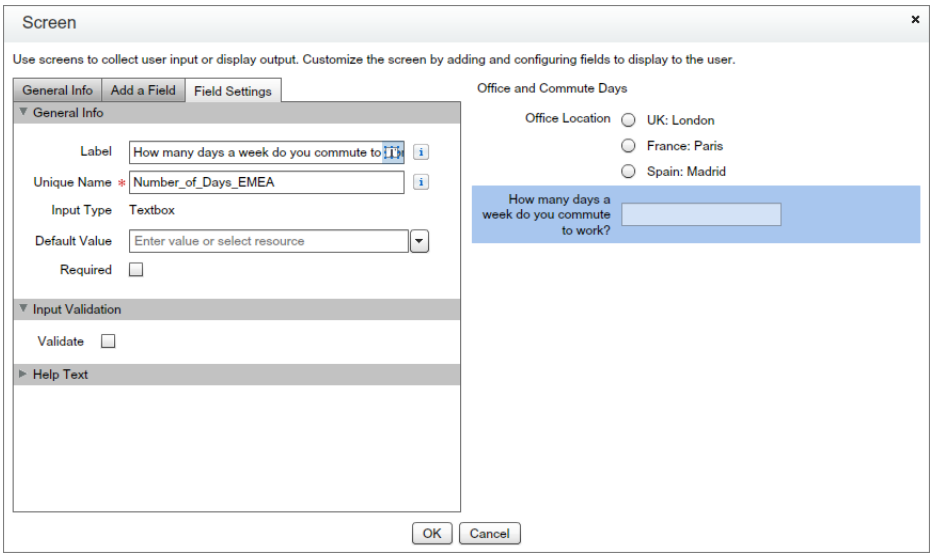
3. Change the `Unique Name` field to `Get_Office_and_Commute_Days_EMEA`.

Again, we need two different bits of information from the user: what office they're in, and the number of days they commute to work. First we'll ask for their office location.

1. Click the Add a Field tab.
2. Under the Choices section, double-click to add a set of radio buttons.
3. Click the Radio Buttons field in the preview pane to configure it.
4. On the Field Settings tab, enter `Office Location` in the `Label` field.
5. Change the unique name to `Office_Location_EMEA`.
6. In the Choice Settings section, we need to set up three region options for the user.
   a. Click ▼ to the right of the first Choice field, expand the CREATE NEW section, and select `Choice`.
   b. In the `Label` field, type `UK: London`.
   c. For `Stored Value`, enter `UK`.
   d. Click **OK**.
   e. Click **Add Choice** to repeat these steps two more times, adding new choices with the following values.
      - Label: `France: Paris`; Stored Value: `FR`
      - Label: `Spain: Madrid`; Stored Value: `SP`

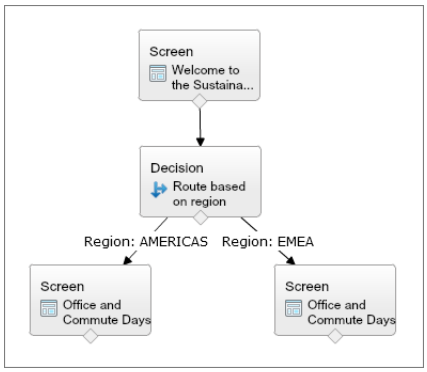
Next, we'll ask users to tell us how many days they commute to work every week.

1. Click back over to the Add a Field tab.
2. Under the INPUTS section, double-click to add a Textbox.
3. Click the Textbox field in the preview pane.
4. On the Field Settings tab, enter `How many days do you commute to work?` in the `Label` field.
5. Change the unique name to `Number_of_Days_EMEA`.
6. Verify that your Screen overlay looks like this, then click **OK**.



7. Click and drag a connector from the Decision element onto this new Screen element.

Because you already set up the path pointing to the AMERICAS Screen, the Flow Designer knows that the second connector coming out from the Decision element should automatically be labeled as Region: EMEA. Your diagram should look similar to this now:



Step 5: Collect Commute Information

The next set of information we need to collect from each user is how long they spend commuting each day and how much their commute costs them, in both time and money.

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Detailed Commute Information` into the `Name` field.
3. Change the `Unique Name` field to `Get_Detailed_Commute_Information`.

We need three different types of information from the user. First, we'll ask how long their round-trip commute is, in miles.

1. Click the Add a Field tab.
2. Under the INPUTS section, double-click to add three Textbox fields.
3. Click the first Textbox field in the preview pane to configure it.
4. On the Field Settings tab, enter `How long is your commute, round-trip?` in the `Label` field.
5. Change the unique name to `Distance`.
6. Expand the Help Text section. Text you enter here displays in an information tooltip as a help icon () to the right of the field. When the user clicks the icon during runtime, the help text appears.
7. Type in `Enter the distance in miles.`

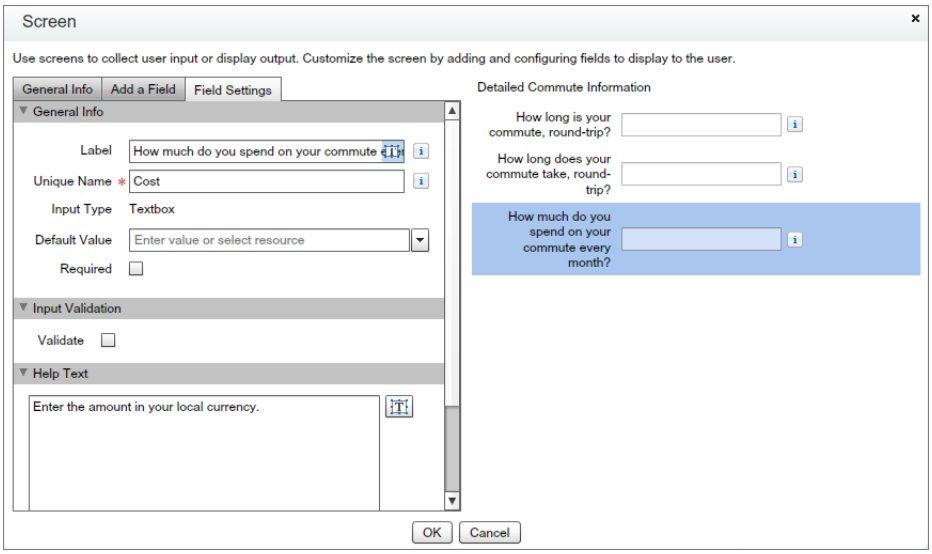
Next, we'll ask how long they spend commuting each day.

1. Click the second Textbox field in the preview pane.
2. On the Field Settings tab, enter `How long does your commute take, round-trip?` in the `Label` field.
3. Change the unique name to `Time`.
4. Expand the Help Text section.
5. Type in `Enter the time in hours.`

Lastly, we'll ask how much they spend on commute expenses every month.

1. Click the third Textbox field in the preview pane.
2. On the Field Settings tab, enter `How much do you spend on your commute every month?` in the `Label` field.
3. Change the unique name to `Cost`.

4. Expand the Help Text section.
5. Type in `Enter the amount in your local currency.`
6. Verify that your Screen overlay looks like this, then click **OK**.

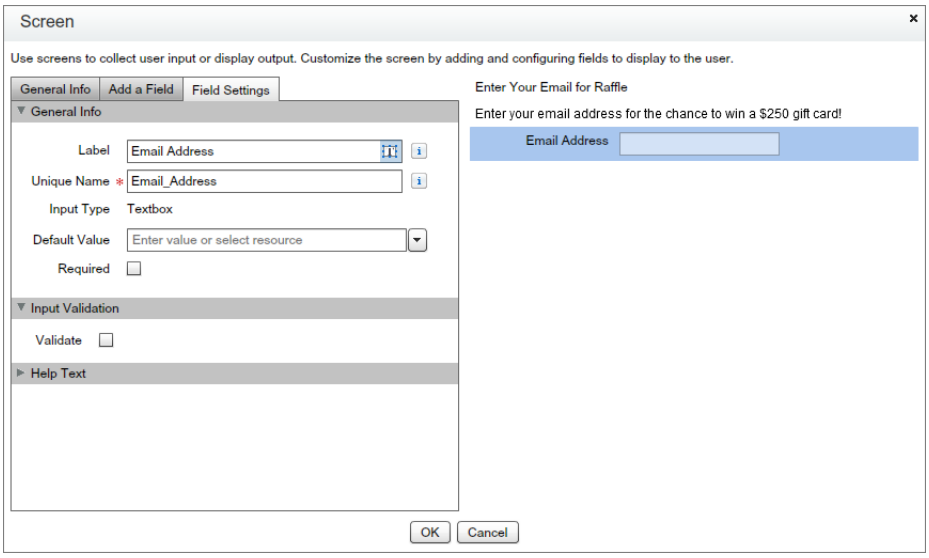


7. Click and drag a connector from the both the Americas and EMEA Screen elements onto this Screen element.

Step 6: Collect Email Address

The final bit of information we want to collect from our users is their email address, so we can enter them into a raffle for a gift card.

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Enter Your Email for Raffle` into the `Name` field.
3. Change the `Unique Name` field to `Get_Email_for_Raffle`.
4. Click the Add a Field tab.
5. Under the OUTPUTS section, double-click to add Display Text.
6. Click the Display Text field in the preview pane to configure it.
7. On the Field Settings tab, enter `EmailHeader` in the `Unique Name` field.
8. In the text box, type in `Enter your email address for the chance to win a $250 gift card!`
9. Click back over to the Add a Field tab.
10. Under the INPUTS section, double-click to add a Textbox.
11. Click the Textbox field in the preview pane to configure it.
12. On the Field Settings tab, enter `Email Address` in the `Label` field.
13. Press TAB to fill in the `Unique Name` field.
14. Verify that your Screen overlay looks like this, then click **OK**.

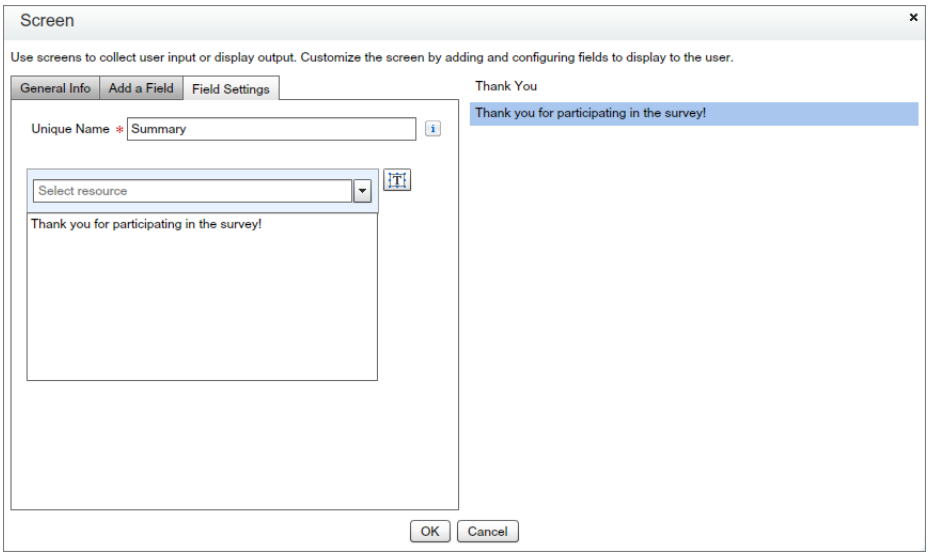


15. Click and drag a connector from the previous Screen element onto this one.

Step 7: Thank the Respondents

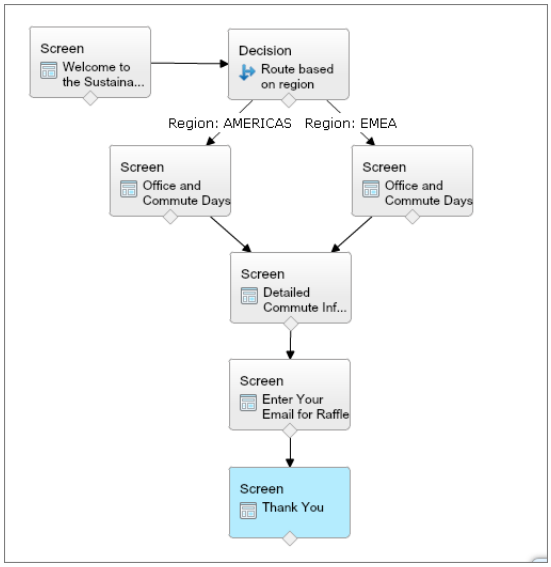
You've collected all the information you needed, but let's thank your employees for taking the time to take the survey.

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `Thank You` into the `Name` field.
3. Change the `Unique Name` field to `Summary_and_Finish`.
4. Click the Add a Field tab.
5. Under the OUTPUTS section, double-click to add Display Text.
6. Click the Display Text field in the preview pane to configure it.
7. On the Field Settings tab, enter `Summary` in the `Unique Name` field.
8. In the text box, type in `Thank you for participating in the survey!`
9. Verify that your Screen overlay looks like this, then click **OK**.



10. Click and drag a connector from the previous Screen element onto this one.

Your completed flow diagram should now look something like this:

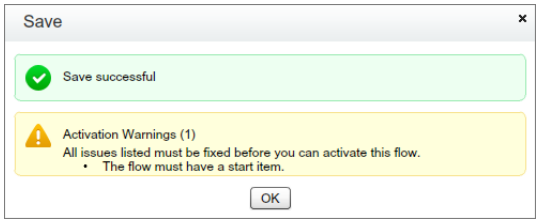


Step 8: Save the Flow

OK, we're done setting up our flow! Now we need to save it.

1. Click **Save** on the button bar.
2. Enter `Sustainability Survey` in the `Name` field.
3. Press TAB, and the `Unique Name` field should automatically fill in.
4. Enter a description if you like.
5. Click **OK**.

You may have noticed this message on the Save dialog:



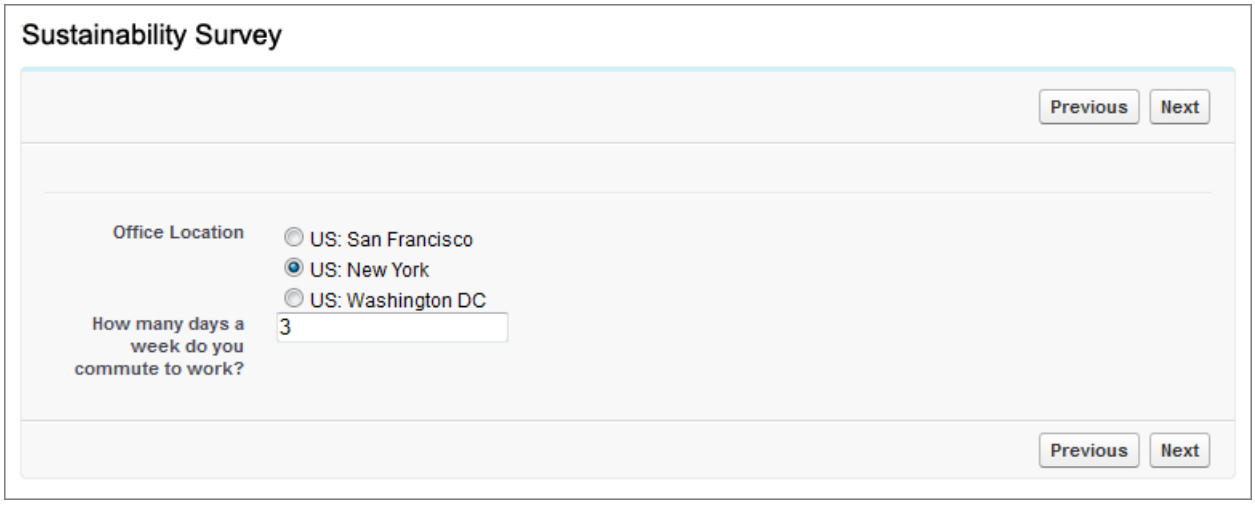
All flows must have an element designated as the start point. Let's do that now.

1. Hover your mouse over the first screen element and you'll see icons appear in the upper right corner.
2. Click to set the welcome screen as the starting point for the flow.
3. Click **Save** again to save this change.
4. Click **Close**. You are taken to the flow detail page.

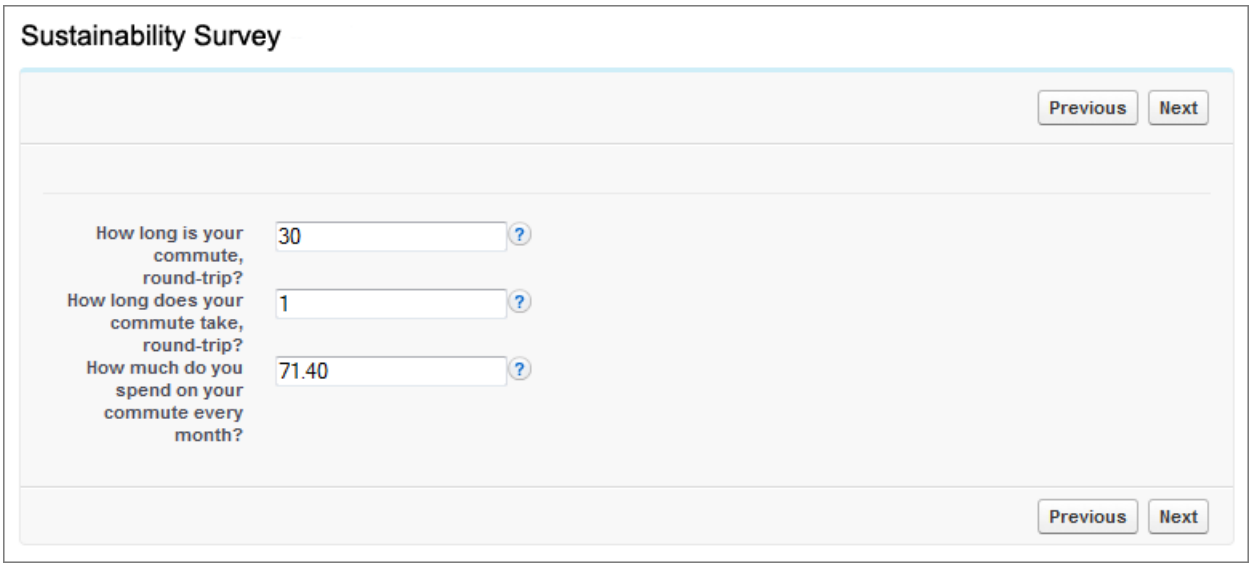
Step 9: Run the Flow

We've created and saved our flow, now let's run it to make sure everything works correctly. We'll fill it out as a user would, using some sample data.

1. From the flow detail page, click either the **Run** button at the top of the page, or the **Run** link in the Action column. The flow opens up in a new window.
2. Select `AMERICAS`.
3. Click **Next**.
4. Select `US: New York`.
5. Enter `3` for the number of days you commute to work.



6. Click **Next**.
7. For the next screen, indicate that your commute is 30 miles, takes 1 hour round-trip, and that you spend $71.40 on your commute every month.



8. Click **Next**.
9. Enter an email address.
10. Click **Next**.
11. Click **Finish**.
12. Close the flow window.

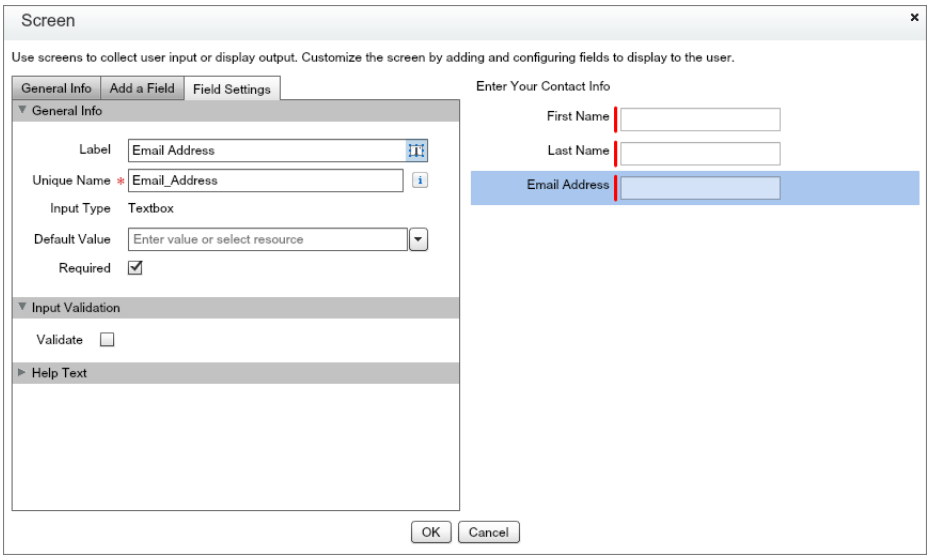
Tutorial #3: Creating a Mortgage Calculator

This tutorial is even more complex than the Tip Calculator or the Sustainability Survey. This time, we'll create a flow to capture personal and mortgage information from users and then calculate their monthly payment. We'll also try and match the personal information they enter with records in Salesforce, and create a lead if they don't exist. We'll use a Record Lookup element, a Record Create element, and an Apex Plug-in to get it all done behind the scenes.

Step 1: Add a Screen Element to Capture Users' Information

If you're a real estate agent, the main point of offering a mortgage calculator is lead generation. People going through the steps of a mortgage calculator are usually first-time home buyers or existing owners looking to refinance. Therefore, as an agent, the first thing we want to capture is information about the user so we can follow up with them later. We need to set up some text box inputs.

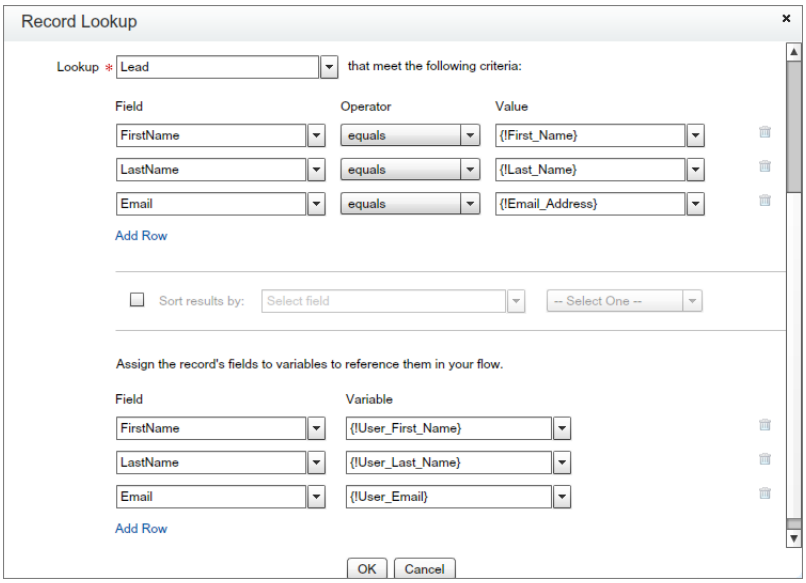
1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.
2. Click **New Flow**.
3. From the Palette in the left pane, click and drag a Screen element onto the canvas.
4. Enter `Enter Your Contact Info` into the `Name` field.
5. Change the `Unique Name` to `Get_Customer_Information`.
6. Click the Add a Field tab.
7. Double-click and add three Textbox fields. Three blank textbox fields should show up in the right preview pane.
8. Click each textbox field to configure it as follows. Each must have the `Required` checkbox selected.
    - First textbox label: `First Name`
    - Second textbox label: `Last Name`
    - Third textbox label: `Email Address`
9. Verify that your Screen overlay looks like this, then click **OK**.



Step 2: Add a Record Lookup Element

Once users enter their personal information into the first screen, we need to check Salesforce to see if they already exist. We use the Record Lookup element to do this.

1. From the Palette in the left pane, click and drag a Record Lookup element onto the canvas.
2. Enter `Does User Exist` into the `Name` field.
3. Click ▾ to the right of the `Lookup` field, expand the STANDARD section, and select **Lead**.
4. In the first line of your filter criteria:
   a. Under `Field`, click ▾, expand the STANDARD section, and select `FirstName`.
   b. Set the operator to `equals`.
   c. Under `Value`, click ▾, expand the SCREEN INPUT FIELDS section, and select `First_Name`.
5. Click **Add Row**.
6. In the second line of criteria:
   a. Under `Field`, click ▾, expand the STANDARD section, and select `LastName`.
   b. Set the operator to `equals`.
   c. Under `Value`, click ▾, expand the SCREEN INPUT FIELDS section, and select `Last_Name`.
7. Click **Add Row**.
8. In the third line of criteria:
   a. Under `Field`, click ▾, expand the STANDARD section, and select `Email`.
   b. Set the operator to `equals`.
   c. Under `Value`, click ▾, expand the SCREEN INPUT FIELDS section, and select `Email_Address`.
9. Scroll down to the second set of fields. Let's assign the returned record's fields to variables in case we need to use them later:
   a. Under `Field`, click ▾, expand the STANDARD section, and select `FirstName`.
   b. Under `Variable`, click ▾, expand the CREATE NEW section, and select `Variable`.
   c. In the Variable overlay's `Unique Name` field, enter `User_First_Name`.
   d. Click **OK**.
   e. Back on the Record Lookup overlay, click **Add Row** to add a second field variable assignment.
   f. Click ▾ on the new left-side field, expand the STANDARD section, and select `LastName`.
   g. Create a new variable with the unique name of `User_Last_Name`.
   h. Click **OK** on the Variable overlay.
   i. Back on the Record Lookup overlay, click **Add Row** to add a third field variable assignment.
   j. Click ▾ on the new left-side field, expand the STANDARD section, and select `Email`.
   k. Create a new variable with the unique name of `User_Email`.
   l. Click **OK** on the Variable overlay.
10. Verify that your Record Lookup overlay looks like this, then click **OK**.



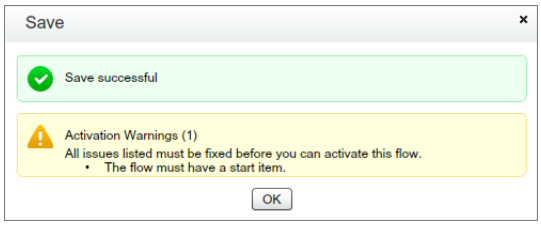
11. Click and drag an arrow connector from the Enter Your Contact Info screen element onto the Record Lookup element.

Step 3: Save the Flow

Just for safety's sake, let's save what we've done so far.

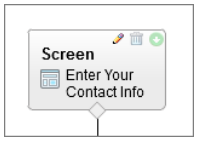
1. Click **Save** on the button bar.
2. Enter `Mortgage Calculator` in the `Name` field.
3. Press TAB, and the `Unique Name` field should automatically fill in.
4. If you like, enter a description.
5. Click **OK**.

You may notice the following message in the Save dialog:



All flows must have an element designated as the start point. Let's do that now.

1. If you didn't already, click **OK** to close the Save dialog box.
2. Hover your mouse over the Enter Your Contact Info screen element, and you'll see three icons in the upper right corner.

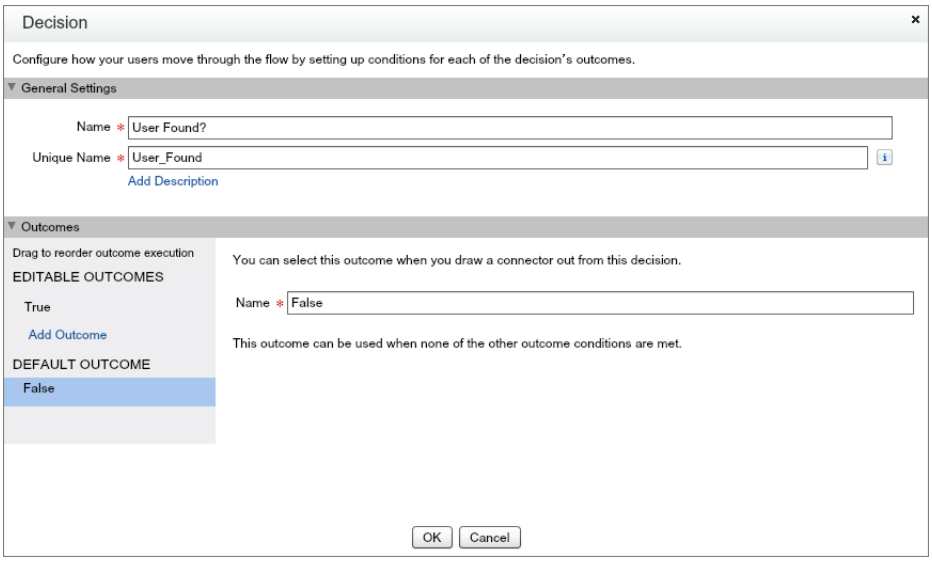


3. Click to set the Enter Your Contact Info screen as the starting point for the flow.
4. Click **Save** again to save this change.

Step 4: Add a Decision Element

We've configured the Record Lookup to see if the user's information matches any records in Salesforce. Now we need to tell the flow what to do based on whether or not a match was found. We'll set up a Decision element to branch the flow based on a true or false result of the record lookup. If a user record is found, that is the True path. If we don't get a user record match, that is the False path.

1. From the Palette in the left pane, click and drag a Decision element onto the canvas.
2. Enter `User Found?` into the `Name` field.
3. In the Outcomes section, we'll set the criteria for the two outcomes of the decision: found or not found. The fields for creating the first outcome already appear on the page. For `Name`, enter `True`.
4. For `Unique Name`, enter `User_Found_True`.
5. In the `Resource` field, click , expand the RECORD LOOKUPS section, and select `Does_User_Exist`.
6. Set the operator to `equals`.
7. In the `Value` field, click , expand the GLOBAL CONSTANT section, and select `$GlobalConstant.True`. For more information about global constants, see "Global Constants in Flows" in the online help.
8. Next we need to set up the default outcome. This is the outcome that occurs when none of the other outcome conditions are met. Since this is a Boolean decision—either the user is found or not—the default outcome can represent the False path.
   a. Click **[Default Outcome]**.
   b. For `Name`, enter `False`.
9. Verify that your Decision overlay looks like this, then click **OK**.



10. Click and drag an arrow connector from the Record Lookup element onto the Decision element.

Step 5: Add a Screen Element to Collect Mortgage Information

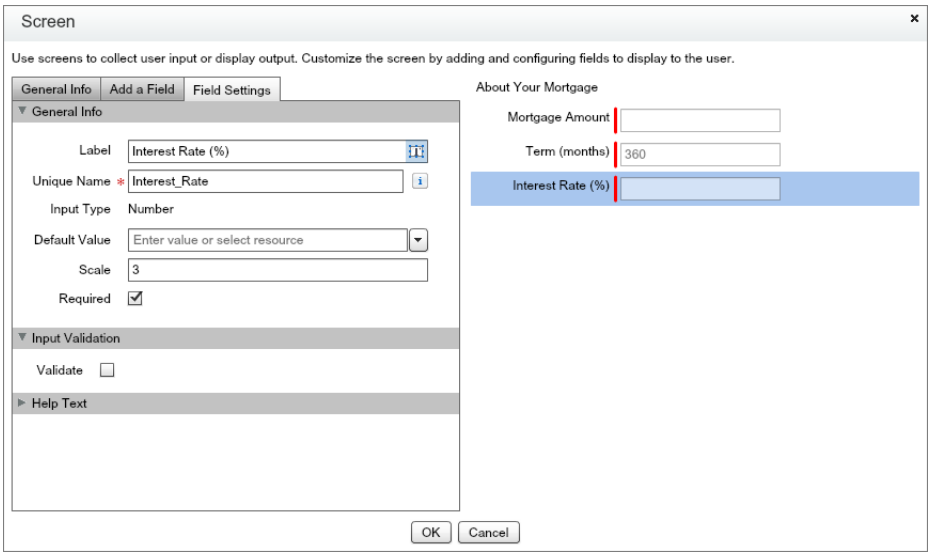
We configured our Decision so that if the user's information matches a record in Salesforce, the decision results in a True outcome. Since we'll have either a true or false result from our decision, this creates a branching of the flow, and we need to create destination elements for either outcome. If the user is found ("True" path), we'll present them with a screen to enter their mortgage information. If the user isn't found ("False" path), we want to capture their information as a lead first, which we'll do in Step 6. First, let's set up the "True" branch.

We'll configure a Screen element to capture the mortgage amount, interest rate, and mortgage term (in months).

1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. Enter `About Your Mortgage` into the `Name` field.
3. Change the `Unique Name` to `Get_Mortgage_Information`.
4. Click the Add a Field tab.
5. Double-click and add a Currency field. It should show up in the right hand preview pane.
6. Click the Currency field in the preview pane to configure it.
   a. On the Field Settings tab, enter `Mortgage Amount` in the `Label` field.
   b. Make the field required.
7. Click back to the Add a Field tab.
8. Double-click and add two Number fields.
9. Click the first Number field to configure it.
   a. On the Field Settings tab, enter `Term (months)` in the `Label` field.
   b. Many mortgages have a 30-year term, so in the `Default Value` field, enter `360`. This will display to the user as ghost text in the field.
   c. In the `Scale` field, enter `0`.

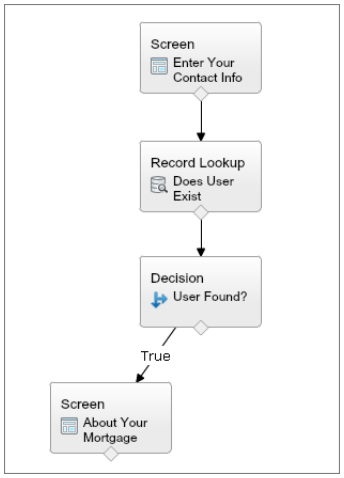
      The scale is the maximum number of digits allowed to the right of a number's decimal point. To keep things simple, we'll restrict this field to whole numbers.

   d. Make the field required.
10. Click the second Number field to configure it.
    a. On the Field Settings tab, enter `Interest Rate (%)` in the `Label` field.
    b. In the `Scale` field, enter `3`. For this number, we'll allow up to three digits to the right of the decimal point.
    c. Make the field required.
11. Verify that your Screen overlay looks like this, then click **OK**.



12. Click and drag an arrow connector from the Decision element onto the About Your Mortgage Screen element.
13. In the Decision Routing dialog box, make sure that **True** is selected, then click **OK**.

Your flow should now look similar to this:



Step 6: Add a Record Create Element

Now that we've set up our "True" path out of the Decision, we need a destination for the "False" path. If the user isn't found in Salesforce, we'll use the information they gave us to create a new Lead record by using a Record Create element.

But wait! The `Company` field is required for leads. Since our target users for this flow are private individuals, we can't collect company information from them. Therefore, to make it easier to track the leads we get from the flow, we can dynamically assign the same company to each newly created lead behind the scenes. This way, searching for that company name will give us a list of all leads generated from our flow. So how do we do it? By creating a constant with the value of the company name and configuring the Record Create element to assign it to each new lead.

Create the Constant

1. Click the Resources tab.
2. Double-click the Constant resource.
3. Enter `coCompany` for `Unique Name`.
4. In the `Value` field, type `FlowCo Inc.`
5. Click **OK**.

You can find the new constant on the Explorer tab.

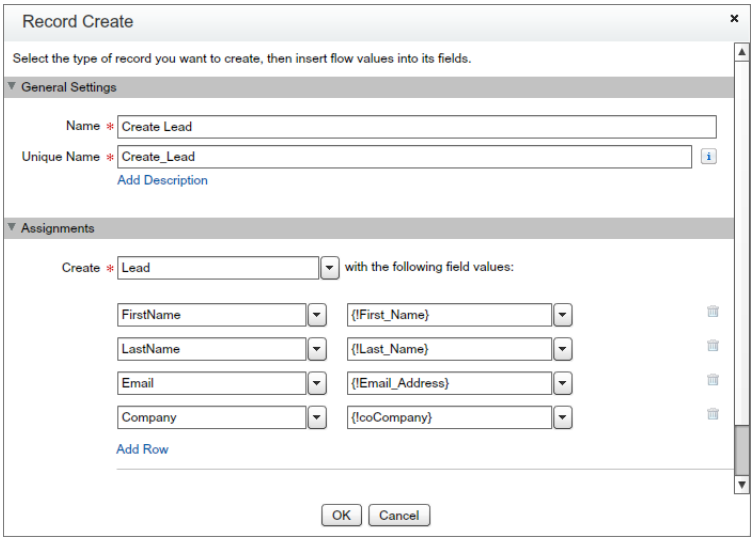
Configure the Record Create Element

1. Click the Palette tab.
2. Click and drag a Record Create element onto the canvas.
3. Enter `Create Lead` into the `Name` field.
4. Click ▼ next to the `Create` field, expand the STANDARD section, and select `Lead`.
5. We're going to assign four field values. Click **Add Row** until you have four rows of values to assign.
6. Configure the first three rows as follows:

Under `Field`, expand STANDARD and select:	Under `Value`, expand SCREEN INPUT FIELDS and select:
`FirstName`	`First_Name`
`LastName`	`Last_Name`
`Email`	`Email_Address`

7. For the fourth row:
   a. For `Field`, expand the STANDARD section and select `Company`.
   b. For `Value`, expand the CONSTANTS section and select `coCompany`.
8. Verify that your Record Create overlay looks like this, then click **OK**.

Tip: You can capture the newly generated lead ID and assign it to a variable if you want to reference it elsewhere in your flow. Just click ▼ next to the `Variable` field, expand the CREATE NEW section, and select `Variable`.

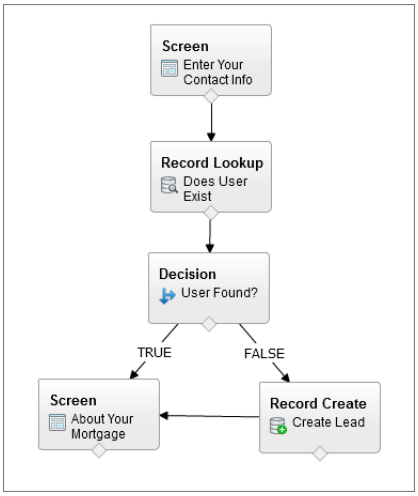


9. Click and drag an arrow connector from the Decision element onto the Record Create element. The connector should automatically be labeled “False”.
10. Click and drag an arrow connector from the Record Create element onto the About Your Mortgage Screen element.

    Once we've created the lead record, we can capture the user’s mortgage information.

11. Save your flow.

Your flow should now look similar to this:



Step 7: Add Apex to Power the Calculation

It's time to calculate the monthly payment based on the amount and term the user enters. Yes, you could use a simple formula to do that, but to showcase how Apex plug-ins can enhance your flows, let’s use an Apex class to do the calculation.

To get the code into your organization:

1. Click **Save**, and then click **Close**. The flow detail page appears.
2. From Setup, click **Develop** > **Apex Classes**.
3. Click **New**.
4. In another browser tab or window, navigate to `https://gist.github.com/155eb3d6f1415b845749`. We’ve set up a public gist on GitHub to store the code for this plug-in.
5. Copy and paste the code sample from GitHub into the Apex Class tab.
6. Click **Save**.
7. Click **Apex Classes** again from the sidebar to verify that the new `MortgageCalculator` class appears in the list.

Before moving on, you need to make sure that the Apex class won’t fail. To do so, add a test class.

1. From the Apex Classes list page, click **New**.
2. In another browser tab or window, navigate to `https://gist.github.com/33c41d50114f59c213d5`. We’ve set up another public gist to store the code for this test class.
3. Copy and paste the code sample from GitHub into the Apex Class tab.
4. Click **Save**.
5. Click **Apex Classes** again from the sidebar to verify that the new `MortgageCalculatorTest` class appears in the list.

Step 8: Add an Apex Plug-in Element

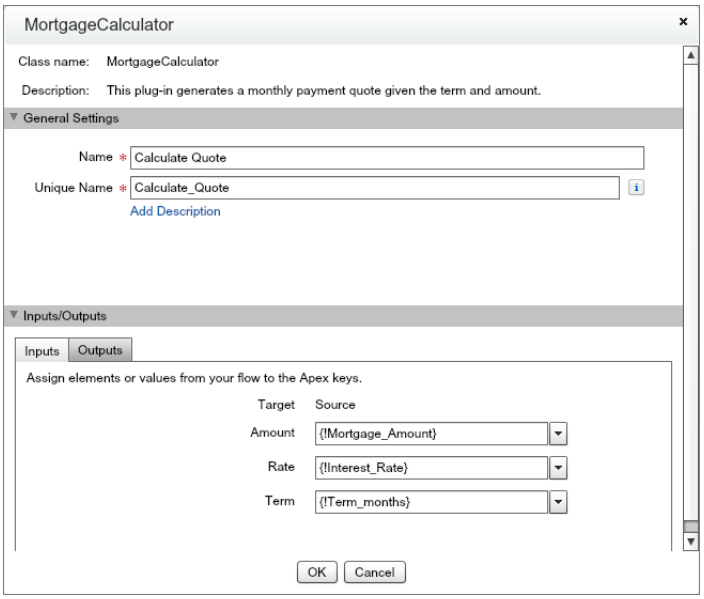
We added the Apex plug-in code to our organization, and now we need to get it into our flow. We'll do that using an Apex Plug-in element. It'll take the inputs from our flow, do the calculation, then output the result to a variable that we can use later.

1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.
2. Re-open the mortgage calculator flow.
3. Check the Palette. It should have a new section called MORTGAGE QUOTE that contains the Apex plug-in you just created.
4. Click and drag the MortgageCalculator plug-in onto the canvas.

   The class name and description have been pre-populated with the class name and description from within the Apex code.

5. In the `Name` field, type `Calculate Quote`.
6. Press TAB, and the `Unique Name` field should automatically fill in.
7. Configure the inputs for the plug-in:

   a. For the `Amount` input, click ▾, expand the SCREEN INPUT FIELDS section, and select `Mortgage_Amount`.
   b. For the `Rate` input, click ▾, expand the SCREEN INPUT FIELDS section, and select `Interest_Rate`.
   c. For the `Term` input, click ▾, expand the SCREEN INPUT FIELDS section, and select `Term_months`.



8. Configure the output and variable to store it:

   a. Click the Outputs tab.
   b. In the `Source` field, select `MonthlyPayment`.
   c. In the `Target` field, click ▾, expand the CREATE NEW section, and select `Variable`.

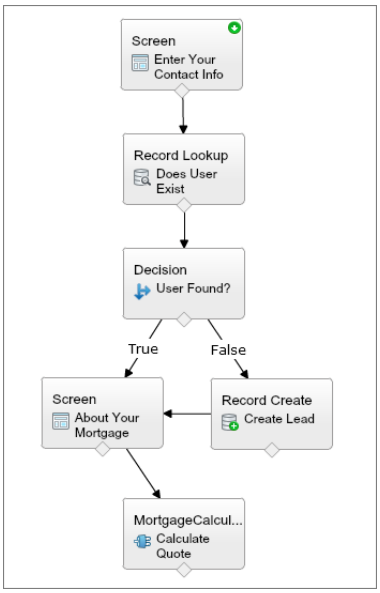
      We want to present the flow user with their calculated monthly payment amount at the end of the flow, so we need to store the output in a variable to use later.

   d. For `Unique Name`, enter `vaMonthlyAmount`.
   e. Change the `Data Type` to Currency.

f. In the `Scale` field, enter `2`.
g. Click **OK**.

9. Click **OK**.
10. Click and drag an arrow connector from the About Your Mortgage element to the Calculate Quote element.

Your flow should now look something like this:



Step 9: Add the Final Screen

Now it's time to set up a Screen element to display the results of the calculation to the user.

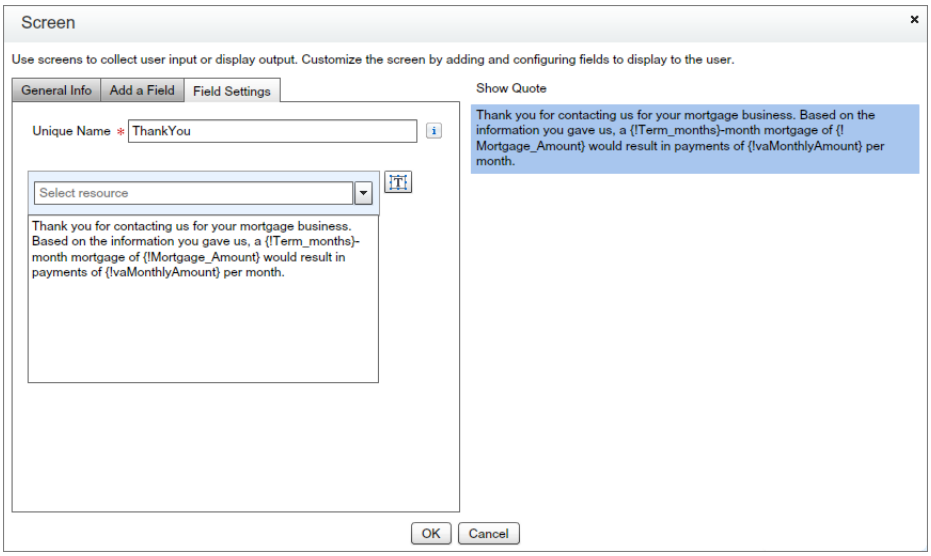
1. From the Palette in the left pane, click and drag a Screen element onto the canvas.
2. In the `Name` field, type `Show Quote`.
3. Press TAB, and the `Unique Name` field should automatically fill in.
4. Click the Add a Field tab.
5. Double-click and add a Display Text field.
6. Click the Display Text field in the preview pane.
7. For `Unique Name`, enter `ThankYou`.
8. In the text box, type: `Thank you for contacting us for your mortgage business. Based on the information you gave us, a X-month mortgage of Y would result in payments of Z per month.` We'll replace `X`, `Y`, and `Z` with values from the flow.

   a. Click ▾ next to the Select resource field.
   b. Expand the SCREEN INPUT FIELDS section and select `Term_months`.
   c. Replace the `X` in the sentence with `{!Term_months}`.
   d. Click ▾ again, and under SCREEN INPUT FIELDS, select `Mortgage_Amount`.
   e. Replace the `Y` in the sentence with `{!Mortgage_Amount}`.
   f. Click ▾ again, and under VARIABLES, select `vaMonthlyAmount`.
   g. Replace the `Z` in the sentence with `{!vaMonthlyAmount}`.

The final text in the preview pane of the overlay should look like this:

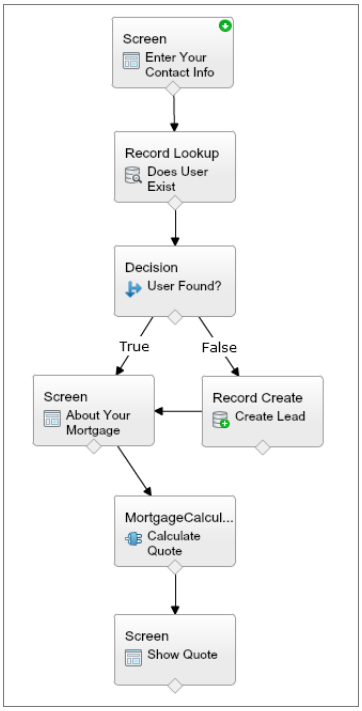
```
Thank you for contacting us for your mortgage business. Based on the information you
gave us, a {!Term_months}-month mortgage of {!Mortgage_Amount} would result in payments
 of {!vaMonthlyAmount} per month.
```

9. Verify your Screen overlay looks like this, then click **OK**.



10. Click and drag an arrow connector from the Calculate Quote element to the Show Quote element.
11. Click **Save**.

Your final flow diagram should look something like this:



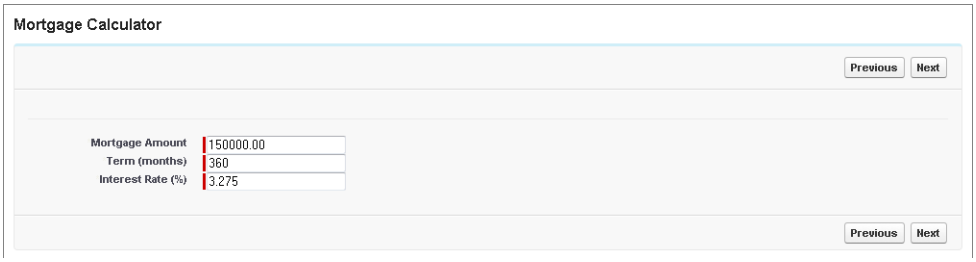
You're done! Now we can put the flow through a test run.

Step 10: Run the Flow

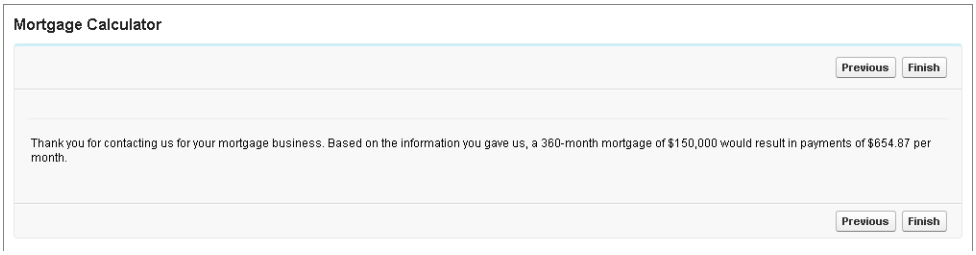
We've created and saved our flow, now let's run it to make sure everything works correctly. We'll fill it out as a user would, using some sample numbers.

Tip: When you test run a flow from within the Flow Designer, any data modifications you have as part of the flow will execute. There is no "test mode" for flows. Test any flows that involve data modification in a sandbox organization first. Then, when you're satisfied with how they work, you can move the flows to your production organization using change sets.

1. Click **Run** from the button bar. The flow should open up in a new browser window or tab.
2. Enter a first name, last name, and email address.
3. Click **Next**.
4. In the `Mortgage Amount` field, enter `150000.00`.
5. Leave the term as 360.
6. Enter an interest rate of `3.275`.



7. Click **Next**.
8. The next screen should read: "Thank you for contacting us for your mortgage business. Based on the information you gave us, a 360-month mortgage of $150,000 would result in payments of $654.87 per month."



9. Click **Finish**.
10. Close the flow window.

Step 11: Confirm that Record Create Worked

Let's check to see if the Record Create function worked. You should have a new lead with the first name, last name and email address you entered in the flow.

1. Click `Close` in the button bar to close the Flow Designer.
2. Click the Leads tab.
3. In the Recent Leads section, you should see a lead with the name you entered assigned to the company "FlowCo Inc."
4. Click the lead's name.
5. On the Lead Detail page, you should see the `Email` field populated with the email address you entered into the flow.

Tutorial #4: Implementing a Flow

So, you've created a flow. Now what? You've got to get it to your users so they can start running it. Depending on who your flow users are—internal, sites, or portal users—you can make it available in different ways. However, for the purposes of this tutorial, we'll assume your users are all internal to your organization.

We'll start out by activating the Mortgage Calculator flow from Tutorial #3, then embed it as a component in a Visualforce page, and finally make it available to users.

Tell Me More...

To discover other ways you can deliver your flows, such as via a custom link, button, or to your site or portal users, see "Put Your Flow to Work" in the *Visual Workflow Guide*.

Step #1: Activate a Flow

Before you can add a flow to a Visualforce page, it must have an active version. We created the Mortgage Calculator flow, but haven't activated it. Let's do that now.

1. From Setup, click **Create** > **Workflow & Approvals** > **Flows**.
2. Click **Mortgage Calculator** in the Flow Name column. Now you're on the flow's detail page.
3. Click **Activate** next to the name in the Flow Versions section.

Step #2: Create a Visualforce Page

To add a flow to a Visualforce page, we embed it using the `<flow:interview>` component.

1. From Setup, click **Develop** > **Pages**.
2. Click **New**.
3. In the `Label` field, enter `Mortgage Calculator Flow`.
4. In the `Name` field, enter `MortgageCalculatorFlow`.
5. On the Visualforce Markup tab, remove the default content between the `<apex:page>` tags.
6. Add the `<flow:interview>` component between the `<apex:page>` tags, like this:

```
<apex:page>
<flow:interview/>
</apex:page>
```

7. Set the `name` attribute to the unique name of the flow, like this:

```
<apex:page>
<flow:interview name="Mortgage_Calculator"/>
</apex:page>
```

8. Click **Save**.

Tell Me More...

In addition to the other flow customizations available with Visualforce, you can also shape what happens when a user clicks **Finish** on the final screen. The default behavior is that a new flow interview begins, which brings the user back to the first

screen. For a simple example of how you can send users elsewhere after they click **Finish**, see "Configure the Flow's Finish Behavior" in the *Visual Workflow Guide*.

Step #3: Set Security for Your Visualforce Page

System administrators automatically have access to Visualforce pages, but your standard users don't. We'll add the Standard User profile to the list of profiles that can access our newly-created page.

1. From Setup, click **Develop** > **Pages**.
2. Click **Security** next to the Mortgage Calculator Flow page.
3. Under Available Profiles, select Standard User, and click **Add**.
4. Click **Save**.

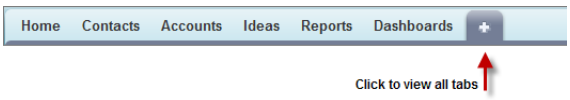
Step #4: Create a Visualforce Tab

Now that we've set up the Visualforce page, our internal users need a way to access it. Let's set up a Visualforce tab and point it to our new Visualforce page.

1. From Setup, click **Create** > **Tabs**.
2. Click **New** in the Visualforce Tabs related list.
3. In the `Visualforce Page` field, select `Mortgage Calculator Flow [MortgageCalculatorFlow]`.
4. For `Tab Label`, enter `Mortgage Calculator`.
5. Choose a tab style.
6. Click **Next**.
7. Click **Next**.
8. Click **Save**.

You now see a new Mortgage Calculator tab to the right of your other tabs. If you don't see it, then you'll need to add it to your tab view. Here's how:

1. Click the plus icon (+) next to the main tabs.



2. Click **Customize My Tabs**.
3. Under Available Tabs, select Mortgage Calculator, then click the Add arrow.
4. Click **Save**.

Click the Mortgage Calculator tab to see the new page in action. Any user with a profile assigned to the Visualforce page, and with `Force.com Flow User` enabled on their user detail page, can run the flow from the tab.

Next Steps

To learn more about Cloud Flow Designer and keep up with the latest news and features, check out the Business Process Management page on Developer Force.

Addendum

Congratulations on completing the workbook! You are now familiar with some of the major elements of the Cloud Flow Designer.

There are more things you can do with Visual Workflow that we haven't touched on, though. For example, you can also delete or update records.

After embedding a flow in a Visualforce page like we did in Tutorial #4, you can use Visualforce tools and techniques to style the flow page so that it mimics a standard Salesforce page or, using your own style sheets and content types, completely customize its look and feel. You can also use Visualforce to change what happens when flow users click the Finish button. A flow embedded in a Visualforce page can also be made available externally to your sites and portal users.

For more examples of using Visualforce with flows, including how to make a flow interact with other components on the page, see the *Visualforce Developer's Guide*.

Best Practices

Things you should know when working with flows:

- Be careful when testing flows that contain Record Delete elements. Even if the flow is inactive, running it will trigger the delete operation.
- You can create a flow in either a sandbox or a production organization. If you build a flow in a sandbox organization, you can use change sets to move it to production.
- When you run a flow, its active version is served up. If the flow doesn't have a version activated, and the user trying to run it is a flow administrator, then they'll see the most recent inactive flow version. Non-administrators, however, can't run inactive flows or flow versions.
- You can delete a flow by going to its detail page and clicking the **Delete** button. This deletes the entire flow, including all versions. Click the **Del** link in the Flow Versions list to delete individual versions of the flow.

Note: You can't delete an active flow. Once deactivated, you must wait 12 hours to delete the flow or flow version. This ensures that flows in progress have time to complete. Flows that have never been activated can be deleted immediately.