



# Flow + Apex + LWC

A Perfect Combination!

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TRAILHEAD  
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# Agenda



- Record-Triggered Flows
- Use Apex In Flows
- Use LWC In Flows
- Q&A

# How To Participate In This Session?



## Answer (Verbal)

- New to code and flows

## Answer (Workbook)

- Familiar with code and flows

## Answer (Workbook) + Complete exercises

- Developer who codes Apex and LWC
- Have built complex flows

If you fall behind, just answer the questions ;-)

# Exercise 0

Setup your environment





# Record-Triggered Flows

Code completion enhanced!



# Types Of Flows



New Flow

**Core** All + Templates

**Screen Flow**  
 Guides users through a business process that's launched from Lightning pages, Experience Cloud sites, quick actions, and ...

**Record-Triggered Flow**  
 Launches when a record is created, updated, or deleted. This autolaunched flow runs in the background.

**Schedule-Triggered Flow**  
 Launches at a specified time and frequency for each record in a batch. This autolaunched flow runs in the background.

**Platform Event—Triggered Flow**  
 Launches when a platform event message is received. This autolaunched flow runs in the background.

**Autolaunched Flow (No Trigger)**  
 Launches when invoked by Apex, processes, REST API, and more. This autolaunched flow runs in the background.

**Record-Triggered Orchestration**  
 Launches when a record is created or updated. An orchestration lets you create a multi-step, multi-user process.

**Create**

# What Is A Record-Triggered Flow?

Automatically executed on DML events



## 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.



# Differences: Record-Trigger Flows vs. Apex Triggers



	<b>Flows</b>	<b>Apex</b>
Stops DML transaction (validations)		
Entry condition		
Asynchronous path		
Undelete Event		
How many (per object/event)?		
Queries		
Bulkification		
New record		
Old Record		

# Differences: Record-Trigger Flows vs. Apex Triggers



	Flows	Apex
Stops DML transaction (validations)	No	Yes
Entry condition	Automatic	Manual
Asynchronous path	Automatic	Manual
Undelete Event	No	Yes
How many (per object/event)?	Many	One (Best Practice)
Queries	Simple	Relationships, Aggregates
Bulkification	Automatic	Manual
New record	\$Record (1 record)	Trigger.new (list)
Old Record	\$Record__Prior (1 record)	Trigger.old (list)

# Creating A Record-Triggered Flow



which sObject?

Select DML event

Are there any entry conditions?

Flow type

Need an Async path?

## Configure Start

### Select Object

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

\* Object

Account

### 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

Formula Evaluates to True

None

All Conditions Are Met (AND)

Any Condition Is Met (OR)

Custom Condition Logic Is Met

✓ Formula Evaluates to True

Check Syntax

\* 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

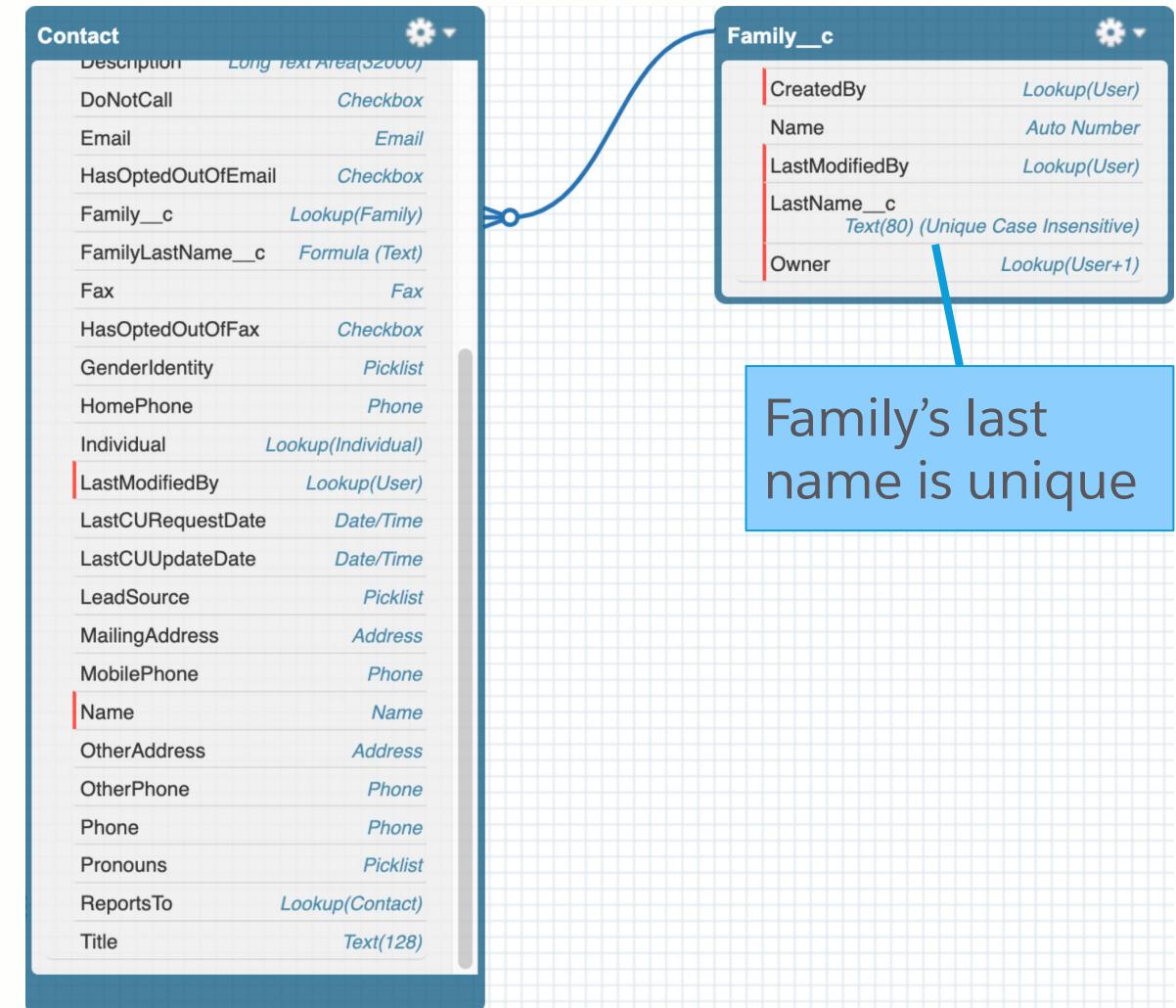
# Linking Family

## Business requirement for the session

Contacts should be related to their family records, based on their last name.

Whenever a contact is created or updated, find a related family record and link them together.

If a family record is not found, a new family record should be created and linked.



# Random Thought ;-)



~~Developers don't write code!~~

Developers read code (and write a little bit)!

- Code reviews
- Troubleshooting
- Debugging

## Exercise 1

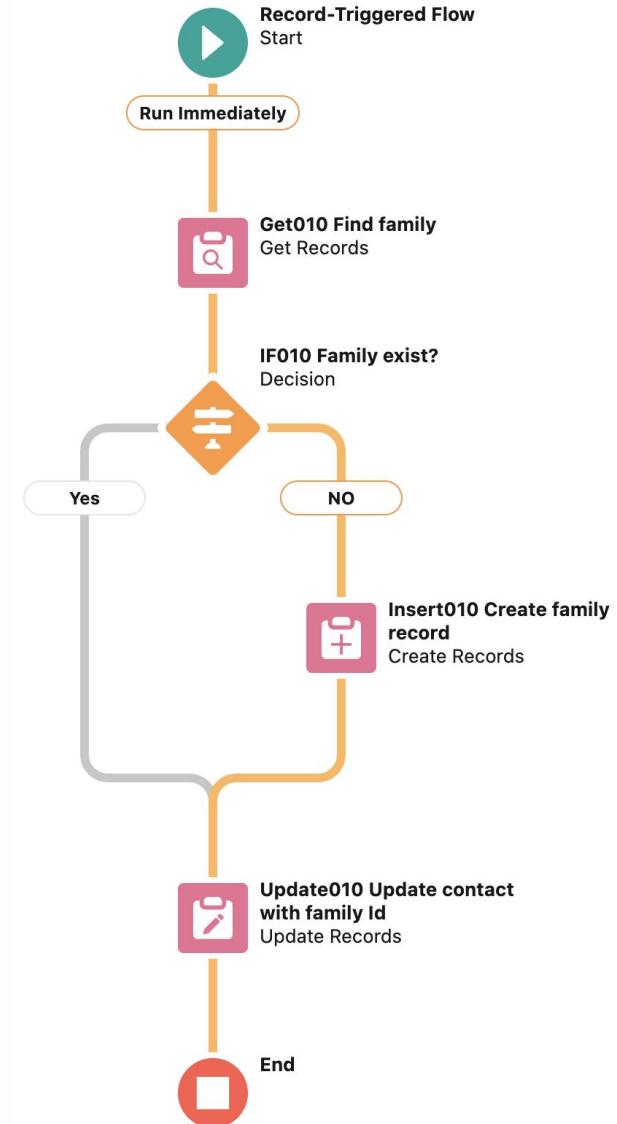
Populate family lookup field



# Why Did It Fail?

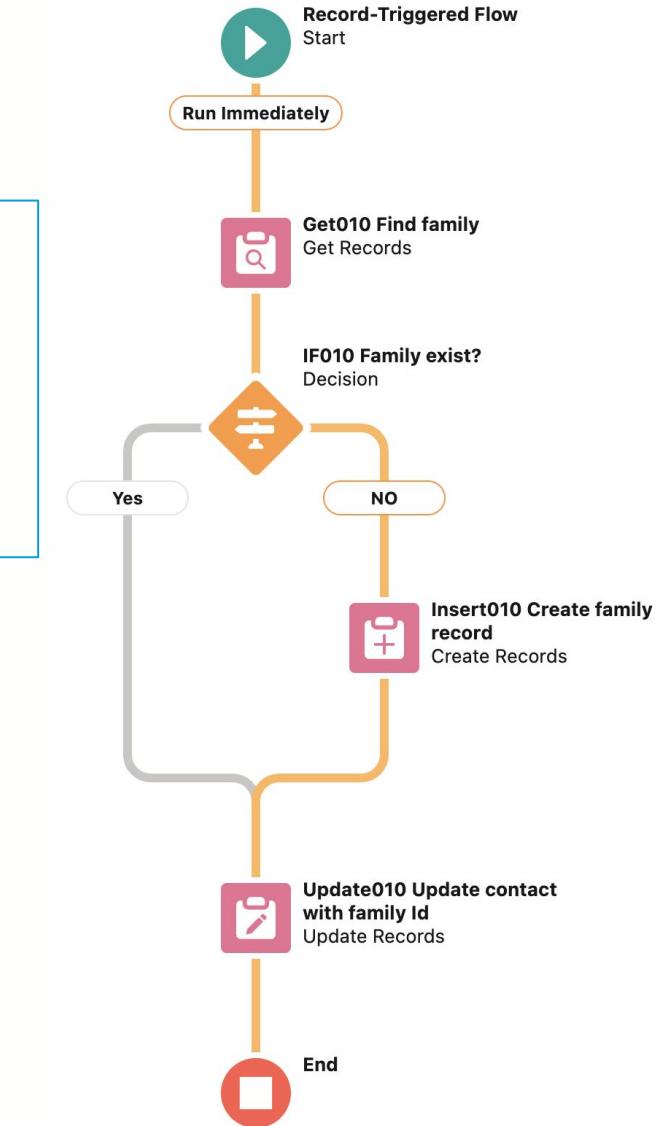
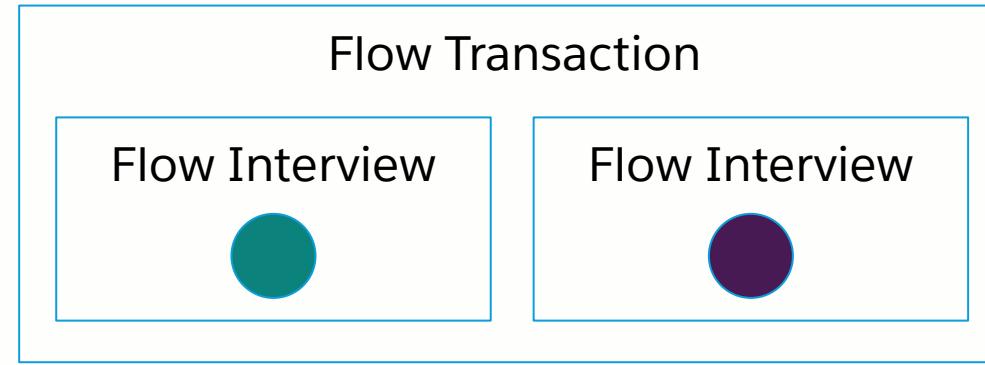
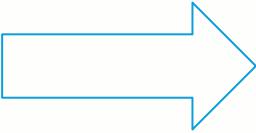
Failed to insert multiple contacts with the same new last name

Why?



# Flow Transactions vs. Flow Interviews

Working separate but together!

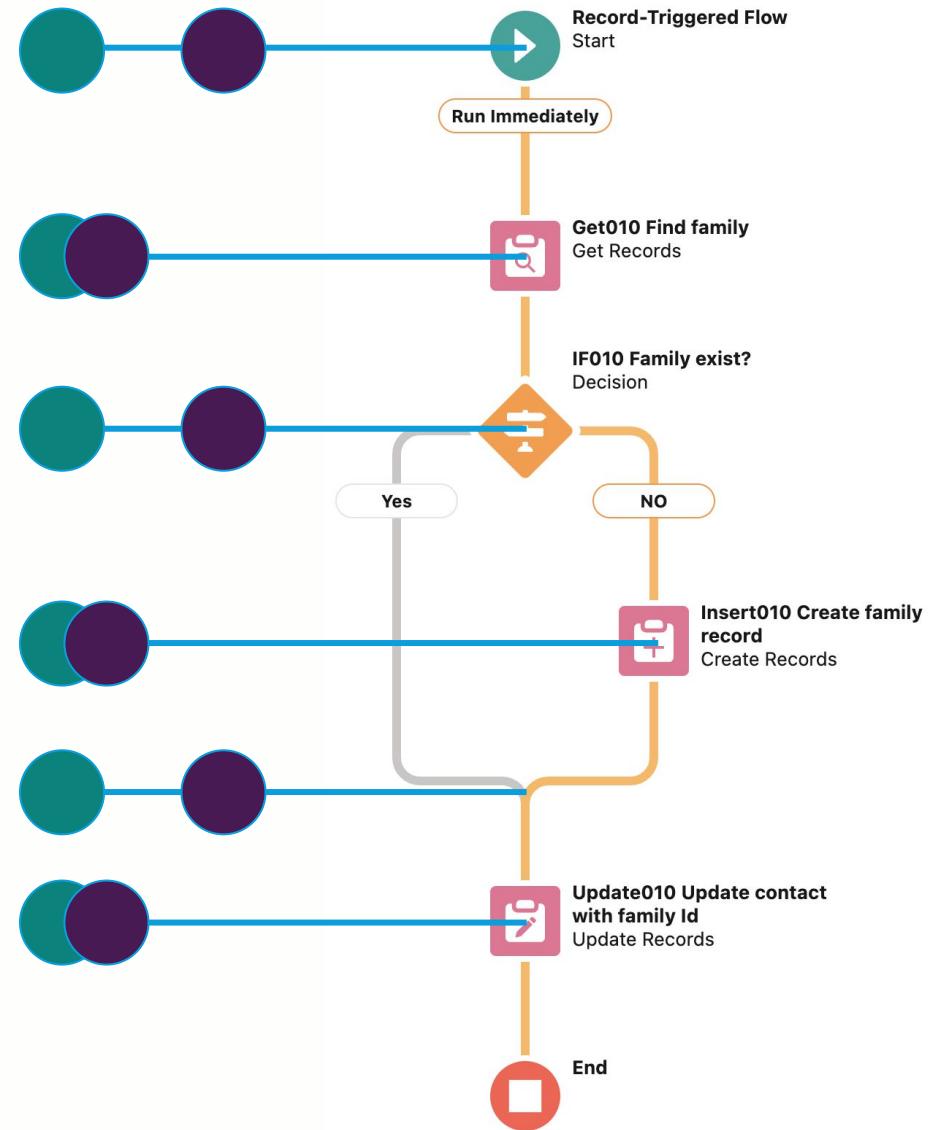
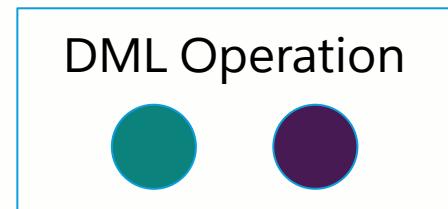


# It Works!

Different new last names



- Bulkification points
  - SOQL / DML elements
  - Screen elements
  - Pause actions
  - Apex calls (optional)

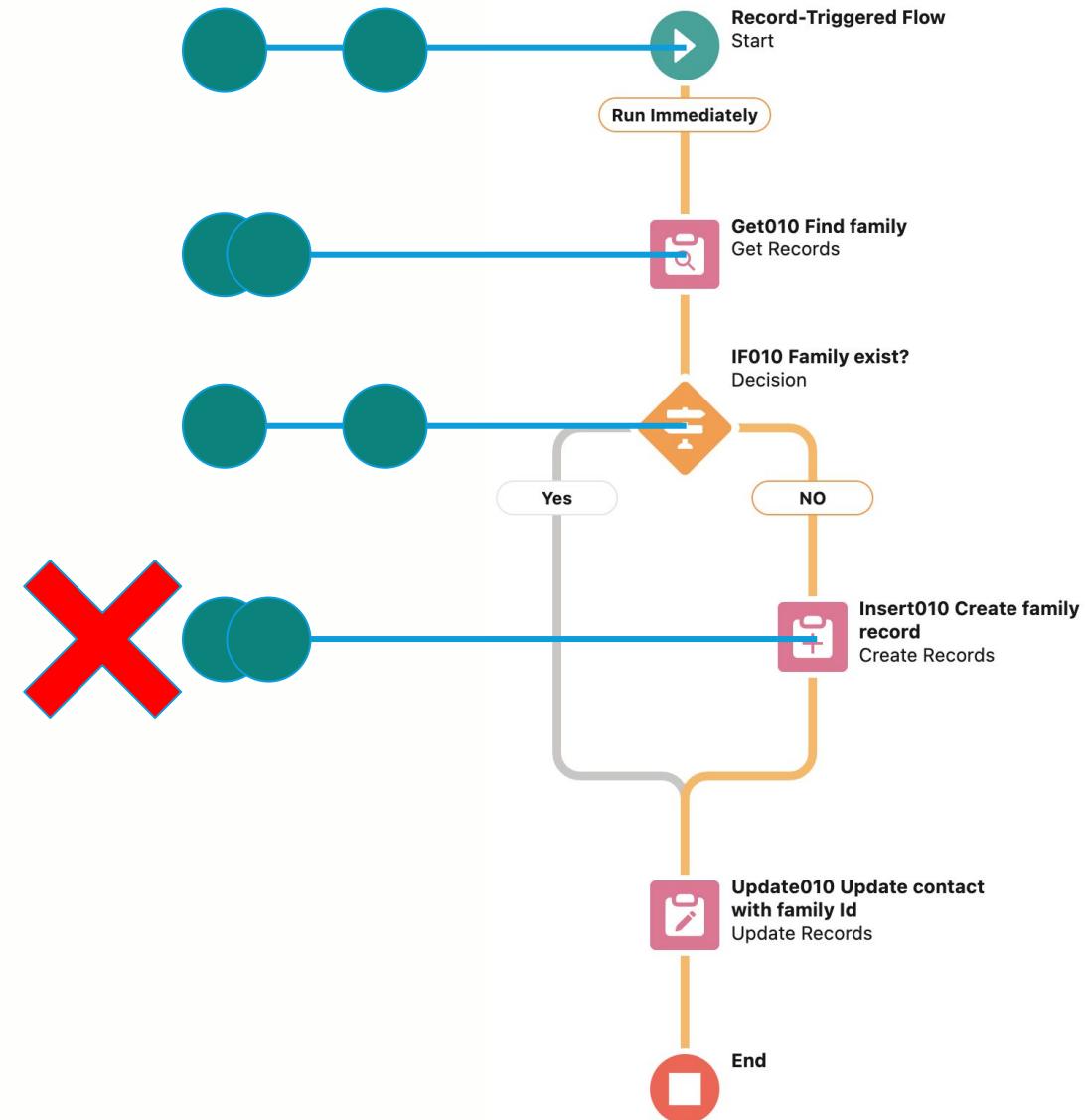
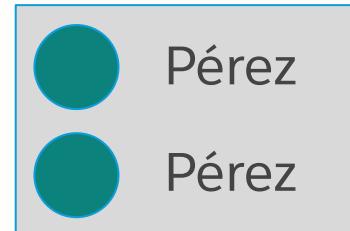


# It Fails!

Same new last names



- Creates duplicate records!





# Use Apex In Flows

Why use Apex and how?



# Can We Use Flows or Do We Need Apex? (Both)



	Low-Code	Pro-Code	
	A red paper container filled with yellow French fries.	A cartoon character wearing a blue sailor's hat and coat, standing next to a green parrot on its shoulder.	Apex Trigger + Apex Class
Same-Record Field Updates			
Related Records (CRUD)			
Asynchronous Processing			
<b>Complex List Processing (Map, Set)</b>			
High-Performance Batch Processing			
Custom Validation Errors			

<https://architect.salesforce.com/decision-guides/trigger-automation>

# Can We Use Flows or Do We Need Apex? (Both)



	Low-Code	→		Pro-Code
			+ Apex Class	Apex Trigger
Same-Record Field Updates	Available	Not Ideal	Not Ideal	Available
Related Records (CRUD)	Not Available	Available	Available	Available
Asynchronous Processing	Not Available	Available	Available	Available
<b>Complex List Processing (Map, Set)</b>	Not Available	Not Ideal	Available	Available
High-Performance Batch Processing	Not Ideal	Not Ideal	Not Ideal	Available
Custom Validation Errors	Not Available	Not Available	Not Available	Available

<https://architect.salesforce.com/decision-guides/trigger-automation>

# @InvocableMethod



Only one per class

Class Access

```
1 public without sharing class RT_LinkFamily {  
2     @InvocableMethod(label='Link Families' description='...'  
3         category='Contact' [Other modifiers])  
4     public static List<Contact> linkFamily(List<Contact> contacts) {  
5         ...  
6     }  
7 }
```

You must Bulkify this!

Must be a list with  
same size (or null)

Only one parameter  
And it must be a list

## Exercise 2

Populate family lookup field (Fixed)



# @InvocableVariable And @AuraEnabled



```
1 public with sharing class RT_Demo {  
2     @InvocableMethod(label='Sample' description='...' category='Contact')  
3     public static List<Result> execute(List<Request> requests) {  
4         List<Results> responseWrapper = new List<Results>();  
5         Results response = new Results();  
6         response.outputContact = new RT_DemoAE();  
7         response.outputContact.myContact = requests[0].inputContacts[0];  
8         responseWrapper.add(response);  
9         return responseWrapper;  
10    }  
11    public class Result {  
12        @InvocableVariable(label='Output Contact')  
13        public RT_DemoAE outputContact;  
14    }  
15    public class Request {  
16        @InvocableVariable(label='Input Contact' required='true')  
17        public List<Contact> inputContacts;  
18    }  
19 }
```

User types

First interview

First Record

Inner Classes

Data types for flows

Must be a different file (outer class)

```
1 public class RT_DemoAE {  
2     @AuraEnabled  
3     public Contact myContact { get; set; }  
4 }
```

## Exercise 3

@invocableMethods with Complex data





# Use LWC In Flows

Three use cases

- LWC (Flow)
- Flow (LWC)
- Custom Property Editors



# Why: LWC with Flows



LWC

Flow

- Control where the flow is available
- Handle flow events (finish behavior, status change)

# How: LWCs with Flows



```
1 handleStatusChange(event) {  
2   if (event.detail.status === 'FINISHED') {  
3     let outputVariables = event.detail.outputVariables;  
4     // set behavior after a finished flow interview  
5   }  
6 }
```

Handle events

Receive output variables

Select flow to execute at runtime

Customize the finish behavior  
(NONE, RESTART)

```
1 <template>  
2   <lightning-flow flow-api-name={flowName} flow-finish-behavior="NONE"  
3     flow-interview-id={pausedFlowInterviewId} onstatuschange={handleStatusChange}  
4     flow-input-variables={inputVariables}></lightning-flow>  
5 </template>
```

Start or resume a flow

Custom handling events

Input variables

LWC

Flow

# Why: Flows with LWC



Flow

LWC

- Advanced UI (pixel perfect, 4+ columns, tabs, colors, buttons, sliders, ...)
- Interactive screens (onblur, onfocus, onchange)
  - Control requiredness, formatting, visibility, read-only

# How: Flows with LWC



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <LightningComponentBundle xmlns="http://soap.sforce.com/2006/04/metadata">
3   <apiVersion>57.0</apiVersion>
4   <isExposed>true</isExposed>
5   <masterLabel>Best Component Ever</masterLabel>
6   <targets>
7     <target>lightning__FlowScreen</target>
8   </targets>
9   <targetConfigs>
10    <targetConfig targets="lightning__FlowScreen">
11      <property name="startDate" label="Start Date" type="Date" role="inputOnly"/>
12      <property name="name" label="Account Name" type="String" role="outputOnly"/>
13      <property name="account" label="Account" type="@salesforce/schema/Account"/>
14      <property name="data" label="Custom Data" type="apex://CustomClass"/>
15    </targetConfig>
16  </targetConfigs>
17 </LightningComponentBundle>
```

Available for flow

Input/output only

Flow

LWC

Complex data types

# Events from LWC to Flow

Control the flow from your LWC

```
1 import { LightningElement, api, track} from 'lwc';
2 import { FlowAttributeChangeEvent, FlowNavigationNextEvent } from 'lightning/flowSupport';
3
4 export default class LwcInFlow extends LightningElement {
5   @track _someData;
6   @api availableActions = [];
7   @api get someData() { return this._someData; }
8   set someData(value) { this._someData = value; }
9 ...
10 demo() {
11   this.dispatchEvent(new FlowAttributeChangeEvent('someData', this._someData));
12 ...
13   if (this.availableActions.find((action) => action === 'NEXT'))
14     this.dispatchEvent(new FlowNavigationNextEvent());
15 }
16 }
```

Available actions

Control flow navigation  
Back, Next, Pause, Finish

Notify values changed  
("Reactive Screens" Beta Spring '23)

Flow

LWC

## Exercise 4

Display contacts grouped by families



# LWC As Custom Property Editors



## Without Custom Property

Edit Apex Action

Use values from earlier in the flow to set the inputs for the "Get Families" Apex action. To use its outputs later in the flow, store them in variables.

**Apex010 Get families with contacts (Apex010)**

Calls Apex to get related records, and returns the maximum number of records desired

**Set Input Values**

\* Families input:

# Count families:  

# Max contacts per family:  

> Advanced

**Cancel** **Done**

## With Custom Property

Edit Apex Action

**Apex010 Get families with contacts (Apex010)**

Calls Apex to get related records, and returns the maximum number of records desired

**Data**

families

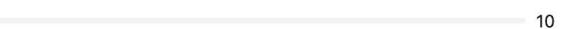
Get010 Find families

Get010 Find families  
Queries all the family records



**Max Record Counts**

Families: 1-200 

Contacts: 1-20 

> Advanced

**Cancel** **Done**

# LWC As Custom Property Editors



```
1 import { api, LightningElement } from "lwc";
2 export default class CustomConfiguration extends LightningElement {
3   @api inputVariables;           Current values to be edited
4   @api builderContext;          Flow definition
5   @api
6   validate() {
7     let errorString = Admin click “Done” button
8     this.refs.families.setCustomValidity(errorString);
9     this.refs.families.reportValidity();
10    return [{ key: "families", errorString }];
11  }
12  ▼Array(3)
13  ▶ 0: {name: 'countFamilies', value: '150', value DataType: 'Number'}
14  ▶ 1: {name: 'families', value: 'Get010', value DataType: 'reference'}
15  ▶ 2: {name: 'countContacts', value: '10', value DataType: 'Number'}
16  length: 3
17  ▶ [[Prototype]]: Array(0)
18 }
```

Flow only shows count  
- Display errors on screen

Return array of errors  
(flow displays count)

Report values changed

Use **@api** properties to capture data from flow builder  
Use **events** to report changes to flow builder

# What is builderContext?



Actions

Describes flow allowing reflection  
(introspection)

```
▼ Object
  ▶ actionCalls: Array(1)
    ▶ 0: {name: 'Apex010', description: 'Calls Apex to get related records, and re...'}
    ▶ length: 1
    ▶ [[Prototype]]: Array(0)
  ▶ apexPluginCalls: []
  ▶ assignments: []
  ▶ choices: []
  ▶ collectionProcessors: []
  ▶ constants: []
  ▶ decisions: []
  ▶ dynamicChoiceSets: []
  ▶ formulas: []
  ▶ loops: []
  ▶ recordCreates: []
  ▶ recordDeletes: []
  ▶ recordLookups: Array(1)
    ▶ 0: {name: 'Get010', description: 'Queries all the family records', label: 'Ge...', length: 1}
    ▶ [[Prototype]]: Array(0)
  ▶ recordRollbacks: []
  ▶ recordUpdates: []
  ▶ screens: Array(1)
    ▶ 0: {name: 'Screen010', description: '', label: 'Screen010', locationX: 176, length: 1}
    ▶ [[Prototype]]: Array(0)
  ▶ stages: []
  ▶ start: {name: undefined, description: undefined, label: undefined, locationX: 176, ...}
  ▶ textTemplates: []
  ▶ variables: Array(1)
    ▶ 0: {name: 'familyTypes', description: '', apexClass: 'UI_FamilyTypeAE', data..., length: 1}
    ▶ [[Prototype]]: Array(0)
  ▶ waits: []
  ▶ Symbol(@@lockerLiveValue): undefined
  ▶ [[Prototype]]: Object
```

Get Records

Screens

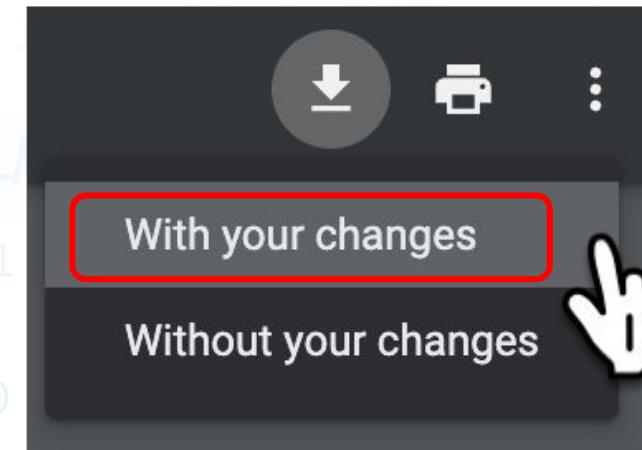
Variables

# Remember...

Save your answers

- Download a copy of the workbook with your answers
- Upload the workbook to your org
- Access the slides and other resources here

<https://sfdc.co/devFlow>



# Q&A



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# Thank you

