

## Common Errors in Apex

1. List index out of bound
2. Attempts to de-reference a NULL object
3. List has no rows for assignment to sObject
4. Invalid index at id[n]:null
5. sObject row was retrieved via SOQL without querying the requested field: [field]
6. Method does not exists or incorrect signature
  - Did I include the correct number of parameters?
  - Are the parameters the right type?
  - Does the object/type method I am calling exist?
  - Does the method I am calling exist in the class in a static context?
7. Recursive Trigger Error
8. Mixed DML Operations > in test classes when we update one object and 2nd methods use that value before inserting into its child object for reference.
9. Too Many SOQL queries 101. When we query in loop.

<https://alistechtips.com/2020/03/05/9-apex-errors-and-solutions/>

### Synchronous and Asynchronous Jobs

Synchronous term means existing or occurring at the same time. Synchronous Apex means entire Apex code is executed in one single go

Asynchronous term means not existing or occurring at the same time. Asynchronous apex is executed when resources are available.

### Invoking a Future method from a Trigger

<https://www.linkedin.com/pulse/considerations-invoking-future-method-from-trigger-andi-giri>

Use the **with sharing** keywords when declaring a class **to enforce the sharing rules** that apply to the current user.

Use the **without sharing** keywords when declaring a class to ensure that the **sharing rules** for the current user are **not enforced**

<https://alistechtips.com/2020/03/05/9-apex-errors-and-solutions/>

Mixed DML error

[https://automationchampion.com/tag/how-to-solve-mixed\\_dml\\_operation-error-salesforce/#:~:text=The%20Mixed%20DML%20error%20is,to%20records%20in%20the%20org.&text=The%20time%2Ddependent%2Fscheduled%20action.Setup%20and%20non%2DSetup%20objects](https://automationchampion.com/tag/how-to-solve-mixed_dml_operation-error-salesforce/#:~:text=The%20Mixed%20DML%20error%20is,to%20records%20in%20the%20org.&text=The%20time%2Ddependent%2Fscheduled%20action.Setup%20and%20non%2DSetup%20objects).

Can we pass sObject in Future Method - NO

<https://www.mstsolutions.com/technical/passing-subject-to-future-methods-in-salesforce/#:~:text=Normally%2C%20we%20cannot%20pass%20the,overcome%20this%20limitation%20with%20Salesforce.>

Can we call Batch from a Batch?

Yes we can call a batch from the finish method

Why we cannot call another batch from the Execute method ?

As the Execute method can be called more than once based on the size of the data and into chunks.

**System.AsyncException: Database.executeBatch cannot be called from a batch start, batch execute, or future method.**

## BATCH APEX

### ► What is batch apex?

- Batch apex is a **piece of apex code** that runs when it gets the salesforce resource free. In short it runs in future.

### ► When to use batch Apex?

- Whenever we wanted to process a large no of records then we go for batch apex as we can handle upto **50 million(5 Crore)** records from the batch class.

### ► Types of batch apex?

- Query locator
- Iterator

### ► What are the different interface that we can use with batch apex?

- Database.AllowsCallouts
- Database.Statefull
- System.Schedulable
- System.Iterator
- Database.Batchable<sObject>

<https://www.biswajeetsamal.com/blog/invoke-batch-apex-from-another-batch-apex/#:~:text=Only%20in%20batch%20class%20finish,will%20throw%20below%20runtime%20error.&text=executeBatch%20cannot%20be%20called%20from,batch%20execute%2C%20or%20future%20method.>

## Testing a LWC component

<https://developer.salesforce.com/docs/component-library/documentation/en/lwc/testing>

### Simple example of wrapper class ?

A wrapper or container class is a class, a data structure which contains different objects or collection of objects as its members.

<https://medium.com/salesforce-champion/wrapper-class-9dcabbf09d96#:~:text=Wrapper%20Class%20in%20Apex%20Salesforce%3A%20A%20wrapper%20or%20container%20class,defines%20the%20wrapper%20class%20properties.>

### Test.start and test.stop > Best practices for Test classes

<http://amitsalesforce.blogspot.com/2015/06/best-practice-for-test-classes-sample.html>

As apex runs in system mode so the permission and record sharing are not taken into account . So we need to use **system.runAs** to enforce record sharing

Use the TestVisible annotation to allow test methods to access private or protected members of another class outside the test class. These members include methods, member variables, and inner classes. This annotation enables a more permissive access level for running tests only. This annotation doesn't change the visibility of members if accessed by non-test classes.

**System. Assert** enables you to **test** your assumptions about your code. This is useful to verify the business logic in the **Apex** Classes you have created.

### Query Optimization

<https://help.salesforce.com/articleView?id=000330734&type=1&mode=1>

SOSL queries start with the FIND keyword, and then the word or characters that needs to be searched is written in the form of a String. Wildcards can also be used with SOSL query which are not supported by SOQL queries. A wildcard is a keyboard character such as an asterisk (\*) or a question mark (?) that is used to represent one or more characters when you are searching for records.

SOSL supports two wildcards:

```
List<List<sObject>> results = [FIND 'Univ*'. . . .];
List<List<sObject>> results = [FIND 'Jo?n'. . . .];
List<List<sObject>> results = [FIND 'Univ*' IN NAME FIELDS . . . .];
```

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### Difference between events in Aura

- Component
- Application

Passing values from 1st component to 3rd component in a hierarchy

Have you used any Quick Action in salesforce

### force:lightningQuickAction

<https://sfdcmonkey.com/2017/04/16/add-lightning-component-lightning-action/#:~:text=Go%20to%20Contacts%20%3E%3E%20Select%20a,which%20have%20use%20Lightning%20Component.&text=Hooray%20!!..component%20is%20popped%20up%20now.>

Security of Components in Salesforce

[https://developer.salesforce.com/docs/atlas.en-us.secure\\_coding\\_guide.meta/secure\\_coding\\_guide/secure\\_coding\\_lightning\\_security.htm](https://developer.salesforce.com/docs/atlas.en-us.secure_coding_guide.meta/secure_coding_guide/secure_coding_lightning_security.htm)

**Enable CORS for OAuth endpoints**

## CORS

**For exposing a component to any 3rd party website**

Handling large amounts of data in JS is not a good practice.

We will call Apex every time to fetch the list of states and then on selecting a city we will call Apex again for other places.

Passing data from Salesforce to other system

Passing data from other system to Salesforce > we will create a connected callback

Connecting 2 system or handshaking of 2 system using API > authorization

Connected Callback, Disconnected callback, Wire ?

Unbound & bound values?

Bound - `<c:childExpr childAttr="{!v.parentAttr}" />`

**In bound it will update the values for both child and parent components.**

Unbound - `<c:childExpr childAttr="{#v.parentAttr}" />`

[https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr\\_data\\_binding.htm#:~:text=When%20you%20use%20a%20bound,that%20contains%20the%20changed%20attribute.](https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr_data_binding.htm#:~:text=When%20you%20use%20a%20bound,that%20contains%20the%20changed%20attribute.)

There are 2 types of indexes in Salesforce:

- Standard Index
- Custom Index

### **Standard Index**

Salesforce maintains indexes on the following fields for most objects:

- RecordTypeId

- Division
- CreatedDate
- Systemmodstamp (LastModifiedDate)
- Name
- Email (for contacts and leads)
- Lookups and master-detail relationship
- Salesforce record ID

## **Custom Index**

Salesforce administrator can define a custom index field by making the field as “External ID” or unique field for the following field types:

- Number
- Auto-number
- Text
- Email

## **Difference between Authorization and Authentication**

### **Authentication**

Authentication is about validating your credentials like User Name/User ID and password to verify your identity. We use the OpenID Connect protocol for that. You can manage your authentication by clicking on My Account link in the upper right corner.

### **Authorization**

Authorization, on the other hand, occurs after your identity is successfully authenticated by cloudHQ. Then you can give permission to cloudHQ to access the resources such as files, emails. This is handled with the OAuth2 protocol. In simple terms, authorization gives our system the ability to access your data in the cloud. So you need to authorize access of Box and Google Drive as admin@. The authorizations are done under the Cloud Accounts tab.

<https://support.cloudhq.net/difference-between-authentication-and-authorization/#:~:text=In%20simple%20terms%2C%20authentication%20is,on%20your%20behalf.>

<https://www.okta.com/identity-101/authentication-vs-authorization/#:~:text=Authentication%20and%20authorization%20might%20sound,permission%20to%20access%20a%20resource.>

## Difference between PUT and Patch in Rest

### All the methods we have in Rest API

<https://www.restapitutorial.com/lessons/httpmethods.html#:~:text=The%20primary%20or%20most%2Dcommonly,but%20are%20utilized%20less%20frequently.>

With Sharing, without sharing and inherited sharing

[https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex\\_classes\\_keywords\\_sharing.htm](https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_classes_keywords_sharing.htm)

StandardController and Standard Set Controller

<https://salesforce.stackexchange.com/questions/48199/what-is-the-difference-between-list-controllers-and-set-controllers>

### StandardController

Basically a StandardController is for ONE record, i.e. if you'd like to create a new Visualforce page for a single record, you'd use a Standard Controller in your Apex.

### Standard Set Controller

Standard list controllers allow you to create Visualforce pages that can display or act on a **set of records**.

Queueable Interface methods and Future methods are Asynchronous Apex Processes that add jobs to the job queue and each job runs when system resources become available, so it doesn't delay the execution of the main Apex logic.

They also share a benefit of having some **higher governor limits than synchronous Apex**, such as **heap size limits (12 MB)**, **number of SOQL queries issued (200)** and **Maximum CPU time on the Salesforce servers (60k ms)**. But the Queueable interface methods are a step up from the future methods because they also come with these additional benefits (according to Salesforce release notes)

### Batchable Apex:

- If it is a long-running complex process then you should go for Batchable Apex and you can have an option to schedule the batch to run at a customized time.
- It can process up to 50 million records in asynchronous mode.
- 5 concurrent jobs are allowed to run at a time and future methods are not allowed in Batch class.
- Batch Class should implement Database.Batchable interface and it should have three methods start(), execute() and finish() methods.

### Queueable Apex:

- It comes in handy, when you need to have both the operations of Batch and future method and it should implement Queueable Interface.
- If one job is dependent on other job means here we can chain the dependent job in execute method by **system.enqueueJob(new secondJob());**
- You can also able to chain upto 50 jobs and in developer edition you can able to chain up to 5 jobs only.

- It will accept non-primitive types like sObjects and it also runs in asynchronous mode.

- In this Queueable apex you can get Job Id to monitor the job progress.

- database.AllCallouts();

```
public class AsyncExecutionExample implements Queueable {
    public void execute(QueueableContext context) {
        Account a = new Account(Name='Acme', Phone='(415) 555-1212');
        insert a;
    }
}
```

- **@future method**

- When should I use it?

- When it's not a batch (group = 2 or more) - Asynchronous processing (simple and often)

- Long-running operations (callouts to external web services) - Separating mixed DML operations

- How can I define @future method?

- @future annotation - Must be static and return void - Specify (callout=true) to allow callouts

- @future method

- Advantages - Asynchronous processing without a concurrent limit (queue)

- Easier and quicker to implement as opposed to Batch

- Can use getContent/getContentAsPDF methods

- Disadvantages - Parameters passed in can be only of Primitive type
- Can't chain @future methods - Difficult access to job ID

Batch and Future methods-

<https://developer.salesforce.com/forums/?id=906F0000000kK6VIAU>

What is named credentials in Salesforce?

A named credential specifies the URL of a callout endpoint and its required **authentication** parameters in one definition. Salesforce manages all **authentication** for Apex callouts that specify a named credential as the callout endpoint so that your code doesn't have to.

Access Modifiers - Public, Global, Private and Protected.

<https://www.swdcworld.com/2016/10/basic-apex-interview-questions-and.html>

VF Email template

[https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages\\_email\\_templates\\_creating.htm](https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages_email_templates_creating.htm)

Wire and imperative method

decorators

**@wire -> wire a property**

`@wire(getAccounts) wiredAccounts;`

On List of Accounts only

**wire a method/function.**

Data depends on the return value on a variable data. Wire a function if you want to operate on the returned data.

```
@wire(getAccounts) wiredAccounts ({ error, data }) {
    if (data) {
```

<https://jayakrishnasfdc.wordpress.com/2020/12/06/wire-service-in-lightning-web-component-lwc/>

**@track ->**

**@api ->**



## lightning data service

**Use Lightning Data Service** to load, create, edit, or delete a record in your component without requiring Apex code.

record edit form -> we have to provide a property > view or edit > also used for creating a record as well.

record view form

<https://www.emizentech.com/blog/lightning-data-service-in-lwc.html>

1. `lightning:recordForm` (Create)
2. `lightning:recordEditForm` (Edit)
3. `lightning:recordViewForm` (View)

You can use it in LWC by importing UI API.

```
'lightning/uiRecordApi'
```

## LDS Lightning Data Service

- No need to write Apex Code or SOQL query
- Support most standard and all custom object
- Reduce server load, database load, and network transfer by fetching data once.
- Share cache data across components
- Support field level security and sharing rules so no need to worry about data security and visibility
- Support CRUD operations
- Supports offline in Salesforce
- Can use in aura as well as LWC

## Limitations of LDS

- Not all object supports LDS Check for supported standard object  
[https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/data\\_service\\_considerations.htm](https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/data_service_considerations.htm)

- Can not use for Vf pages
- No bulk support.

UI tag- record form > standard controller.

LWC passing data from one component to another

- platform event

- PUBSUB > if they don't have relation > when they are not in the same DOM >

**events in aura**

- **component event** > for communication b/w two components if they are in relations. tightly coupled > bubble and capture

- **application event** > by creating an lightning > creating an event and > bubble and capture and default

phases of event > bubble and capture and default

Lightning message service > we need to register in JS for interaction b/w LWC, aura and VFP

we have add phase

both these are component event propagation -

**Bubble > bottom to top**

Source to top

**Capture > root to source**

Wire and imperative method for apex calling from LWC

Aura LWC

if condition

LWC mi nhe likh skte

## Value Providers in Lightning

[https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr\\_source.htm#:~:text=Value%20providers%20are%20a%20way,\)%20and%20c%20\(controller\).&text=A%20component's%20attribute%20set.](https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr_source.htm#:~:text=Value%20providers%20are%20a%20way,)%20and%20c%20(controller).&text=A%20component's%20attribute%20set.)

**v (View)    c (Controller)**

## Value Providers

Value providers are a way to access data. Value providers encapsulate related values together, similar to how an object encapsulates properties and methods.

The value providers for a component are `v` (view) and `c` (controller).

Value Provider	Description	See Also
<code>v</code>	A component's attribute set. This value provider enables you to access the value of a component's attribute in the component's markup.	<a href="#">Component Attributes</a>
<code>c</code>	A component's controller, which enables you to wire up event handlers and actions for the component	<a href="#">Handling Events with Client-Side Controllers</a>

All components have a `v` value provider, but aren't required to have a controller. Both value providers are created automatically when defined for a component.

### Global value providers in Lightning

[https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr\\_source.htm](https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/expr_source.htm)

#### Global Value Providers

Global value providers are global values and methods that a component can use in expressions.

Global Value Provider	Description	See Also
<code>globalId</code>	The <code>globalId</code> global value provider returns the global ID for a component. Every component has a unique <code>globalId</code> , which is the generated runtime-unique ID of the component instance.	<a href="#">Component IDs</a>
<code>\$Browser</code>	The <code>\$Browser</code> global value provider returns information about the hardware and operating system of the browser accessing the application.	<a href="#">\$Browser</a>
<code>\$ContentAsset</code>	The <code>\$ContentAsset</code> global value provider lets you reference images, style sheets, and JavaScript used as asset files in your lightning components.	<a href="#">\$ContentAsset</a>
<code>\$Label</code>	The <code>\$Label</code> global value provider enables you to access labels stored outside your code.	<a href="#">Using Custom Labels</a>
<code>\$Locale</code>	The <code>\$Locale</code> global value provider returns information about the current user's preferred locale.	<a href="#">\$Locale</a>
<code>\$Resource</code>	The <code>\$Resource</code> global value provider lets you reference images, style sheets, and JavaScript code you've uploaded in static resources.	<a href="#">\$Resource</a>

<https://www.biswajeetsamal.com/blog/salesforce-lightning-value-providers/>

### Difference between Controller and Helper file

difference between render, rerender

**Rendered**- This attribute is used to display a particular field or section based on boolean value.

**ReRender**- This is to reload some fields, or sections after some operation. Advantage of it is that the whole page is not refreshed and only a portion (the one which is ReRendered) is refreshed.

**RenderAs**- This is to render a VF page as PDF or some other format.

Lightning Data Services > what is the purpose of using LDS and how do we use that

## Communication patterns in Aura framework

How to use Labels in Lightning components

<https://www.sfdcpoint.com/salesforce/custom-label-in-lightning-aura-component/#:~:text=Custom%20Label%20in%20Lightning%20Aura%20Component%20Example&text=Create%20%E2%80%94%20Custom%20Labels.-,Click%20on%20New%20Custom%20Labels.,for%20name%2C%20value%20and%20description.&text=We%20will%20add%20two%20custom,controller%20on%20click%20of%20button.>

Locker service in Lightning ?

[https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/security\\_code.htm](https://developer.salesforce.com/docs/atlas.en-us.lightning.meta/lightning/security_code.htm)

How to use a static resource in Aura and LWC ?

How to create a component Available for custom tab

What is the use of Sharing rules?

What are the different types of sharing rules we can create ?

Account sharing Rule.

Contact Sharing Rule.

Case Sharing Rule.

Opportunity sharing Rule.

Lead Sharing Rule.

Custom Object sharing Rule.

Difference between Roles and Profiles?

<https://techilaservices.com/blog/difference-between-role-profile-in-salesforce/#:~:text=A%20role%20is%20controls%20of,objects%20a%20user%20can%20observe.&text=On%20the%20other%20hand%2C%20a.and%20functions%20inside%20an%20application.>

Role	Profile
The role helps in defining data visibility	A profile sets the limit of what a user can do in the organization
A role defines what a user data a user can see based on hierarchy	Profile defines permissions
Defining role to a user is not mandatory always	Defining Profile to a user is mandatory always
Hence, Roles offer a feature to control access to records by impacting reports. For example, filtering “My Teams”. Roles function if an organization’s security model (OWDs) is set to private.	Profiles assist to decide record privileges i.e. assuming the User can observe the record, it concludes what the User can function, delete, edit, view on that record. Most of the time it controls other system privileges like export data, mass email and many more.

What is the use of Record type?

What is the difference between Insert and Database.insert?

Context of a Batch class?

Database.batchableContext is a context variable which stores the runtime information (jobId etc.)

Id of a RecordType without running a SOQL query in apex?

```
Id RecordTypeId =  
Schema.SObjectType.YOUROBJECT.getRecordTypeInfoByName().get('RECORDTYPENAME').getRecordTypeId();
```

<https://www.salesforcebolt.com/2019/06/how-to-get-record-type-id-without-soql.html#:~:text=To%20get%20record%20type%20id%20without%20SOQL%20you%20could%20use,SOBJECTType.>

Global Describes ?

[https://developer.salesforce.com/docs/atlas.en-us.api\\_rest.meta/api\\_rest/resources\\_describeGlobal.htm](https://developer.salesforce.com/docs/atlas.en-us.api_rest.meta/api_rest/resources_describeGlobal.htm)

## describeGlobal ()

Retrieves a list of available objects for your organization's data.

### Syntax

```
DescribeGlobalResult = connection.describeGlobal();
```

Annotations in Apex ?

- `@AuraEnabled`
- `@Deprecated`
- `@Future`
- `@InvocableMethod`
- `@InvocableVariable`
- `@IsTest`
- `@JsonAccess`
- `@NamespaceAccessible`
- `@ReadOnly`
- `@RemoteAction`
- `@SuppressWarnings`
- `@TestSetup`
- `@TestVisible`

[https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex\\_classes\\_annotation.htm](https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_classes_annotation.htm)

## Caching Method Results

To improve runtime performance, set **@AuraEnabled(cacheable=true)** to **cache** the method results on the client. ... Marking a method as storable (**cacheable**) improves your component's performance by quickly showing cached data from client-side storage without waiting for a server trip.

Passing HTML tags from one component to another using SLOT tag

[https://developer.salesforce.com/docs/component-library/documentation/en/lwc/lwc.create\\_components\\_slots](https://developer.salesforce.com/docs/component-library/documentation/en/lwc/lwc.create_components_slots)

Parent Component

```
1 <template>
2   <c-child>
3     <p>i am from parent component</p>
4   </c-child>
5 </template>
```

Child Component

```
1 <template>
2   <p>hello developer</p>
3   <slot></slot>
4 </template>
```

Then we have 2 types of slots in LWC

- Named slot
- Unnamed slot

### Named Slot

```
<template>
  <c-child>
    <p>i am from parent component</p>
    <p slot="secondSlot">i am from parent component second slot</p>
    <p>i am from parent component</p>
    <p>i am from parent component</p>
    <p>i am from parent component</p>
    <p>i am from parent component</p>
  </c-child>
</template>
```

```
1  <template>
2  <p>hello developer</p>
3  <slot name="firstSlot"> </slot>
4  <slot name=""> </slot>
5  <slot> </slot>
6  </template>
```