Tracking Failed Records in Batch Apex

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When processing large data sets in Salesforce using Batch Apex, it's essential to track which records were processed successfully and which ones failed. The **Database.SaveResult** and **Database.BatchableContext** interfaces help you do this by providing feedback on record operations during the execute and finish methods of a batch job.

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By using the **Database.Stateful** interface, we can retain state between the different batch execution steps, making it possible to store information about failed records.

Why use Database.Stateful ?

Normally, Apex batch jobs are stateless, meaning they don't retain variable values between executions. By implementing the Database.Stateful interface, you can maintain state, such as tracking failed records across batch executions.

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Approach:

- **Use Partial Success in DML Operations:**
    - Using Database.insert, Database.update, or Database.delete with allOrNone=false ensures that the successful records are processed while allowing you to handle the failed ones separately.
- **Capture Failed Record IDs**:
    - You can loop through the results of the DML operation to capture and log any records that fail.

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Approach:

- **Log the Failed Records**:
    - The failed records' IDs and error messages can be logged for further investigation. You can store these in a custom object or simply log them using System.debug().

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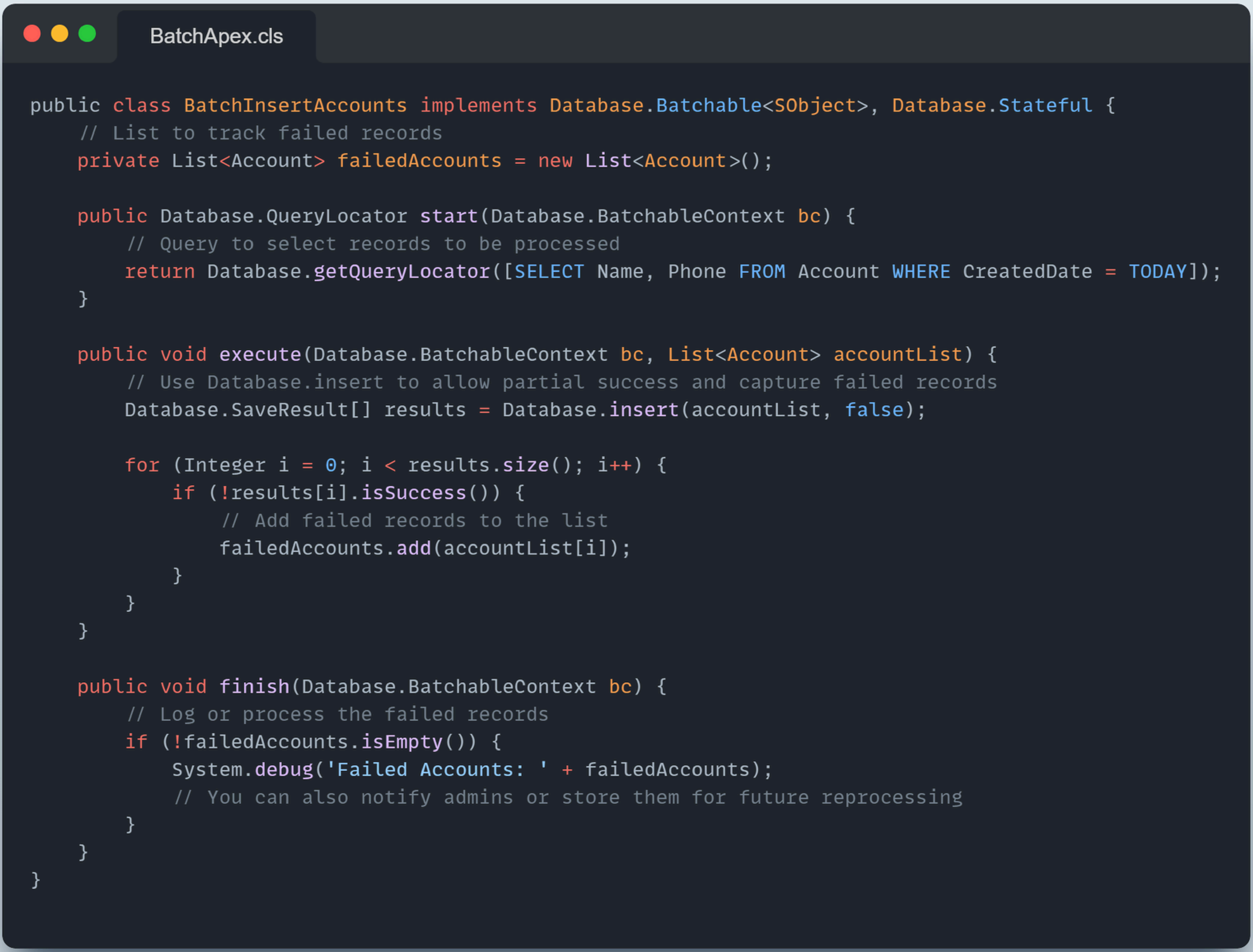
EXAMPLE



BatchApex.cls

```
public class BatchInsertAccounts implements Database.Batchable<SObject>, Database.Stateful {
    // List to track failed records
    private List<Account> failedAccounts = new List<Account>();

    public Database.QueryLocator start(Database.BatchableContext bc) {
        // Query to select records to be processed
        return Database.getQueryLocator([SELECT Name, Phone FROM Account WHERE CreatedDate = TODAY]);
    }

    public void execute(Database.BatchableContext bc, List<Account> accountList) {
        // Use Database.insert to allow partial success and capture failed records
        Database.SaveResult[] results = Database.insert(accountList, false);

        for (Integer i = 0; i < results.size(); i++) {
            if (!results[i].isSuccess()) {
                // Add failed records to the list
                failedAccounts.add(accountList[i]);
            }
        }
    }

    public void finish(Database.BatchableContext bc) {
        // Log or process the failed records
        if (!failedAccounts.isEmpty()) {
            System.debug('Failed Accounts: ' + failedAccounts);
            // You can also notify admins or store them for future reprocessing
        }
    }
}
```

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EXPLANATION

- **Database.Stateful**: Ensures that the failedAccounts list retains its values between each batch execution.
- **Database.insert**(records, false): Inserts records while allowing partial successes. Records that fail don’t stop the entire operation.

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EXPLANATION

- **SaveResult[]**: The result of the insert operation, where you can check each record’s success or failure.
- **finish method**: At the end of the batch, the failed records are logged and can be handled accordingly (e.g., reprocessed or reported).

KEY POINTS

- Use **Database.Stateful** to track the state of variables across batch executions.
- Use **Database** methods like insert or update with false to allow partial success.
- Handle failed records in the finish method for further action or notification.

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