

APEX SPECIALIST SUPER BADGE CODES

APEX TRIGGERS

AccountAddressTrigger.axpt:

```
trigger AccountAddressTrigger on Account (before insert,beforeupdate) { for(Account
account:Trigger.New){
if(account.Match_Billing_Address c == True){ account.ShippingPostalCode =
account.BillingPostalCode;
}
}
}
```

ClosedOpportunityTrigger.axpt:

```
trigger ClosedOpportunityTrigger on Opportunity (afterinsert,afterupdate) { List<Task> tasklist=
new List<Task>();
for(Opportunity opp: Trigger.New){ if(opp.StageName == 'ClosedWon'){
tasklist.add(newTask(Subject = 'Follow Up Test Task',WhatId =opp.Id));
}
}
if(tasklist.size() > 0){
insert tasklist;
}
}
public class VerifyDate {
```

APEX TESTING

VerifyData.apxc:

```
public static Date CheckDates(Date date1, Date date2) {if(DateWithin30Days(date1,date2)) {  
return date2;
```

```
} else {
```

```
}
```

```
}
```

```
return SetEndOfMonthDate(date1);
```

```
@TestVisible private static Boolean DateWithin30Days(Date date1, Date date2){
```

```
    /check for date2 being in the past if( date2< date1) { return false; }
```

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```
    /check that date2 is within (>=)30 days of date1
```

```
Date date30Days = date1.addDays(30); //create a date 30 days away from date1 if( date2 >=
date30Days ) { return false; }
else { return true; }
}
```

/method to return the end of the month of a given date

```
@TestVisible private static Date SetEndOfMonthDate(Date date1){
Integer totalDays = Date.daysInMonth(date1.year(), date1.month());

Date lastDay = Date.newInstance(date1.year(), date1.month(), totalDays); return lastDay;
}

}
```

TestVerifyData.apxc:

```
@isTest
private class TestVerifyDate {
    @isTest static void Test_CheckDates_case1(){
        Date D = VerifyDate.CheckDates(date.parse('01/01/2022'), date.parse('01/05/2022'));
        System.assertEquals(date.parse('01/05/2022'), D);
    }

    @isTest static void Test_CheckDates_case2(){
        Date D = VerifyDate.CheckDates(date.parse('01/01/2022'), date.parse('05/05/2022'));
        System.assertEquals(date.parse('01/31/2022'), D);
    }

    @isTest static void Test_Within30Days_case1(){ Boolean flag =
        VerifyDate.DateWithin30Days(date.parse('01/01/2022'), date.parse('12/30/2021'));
        System.assertEquals(false, flag);
    }

    @isTest static void Test_Within30Days_case2(){ Boolean flag =
        VerifyDate.DateWithin30Days(date.parse('01/01/2022'), date.parse('02/02/2021'));
```

```
System.assertEquals(false, flag);
}

@isTest static void Test_Within30Days_case3(){

Boolean flag =
VerifyDate.DateWithin30Days(date.parse('01/01/2022'), date.parse('01/15/2022'));
System.assertEquals(true, flag);
}

@isTest static void Test_SetEndOfMonthDate(){
Datereturndate =VerifyDate.SetEndOfMonthDate(date.parse('01/01/2022'));
}
}
```

RestrictContactByName.apxt:

```
trigger RestrictContactByName on Contact (beforeinsert, before update){

/ check contacts prior to insert or update for invalid data For (Contact c : Trigger.New) {
if(c.LastName == 'INVALIDNAME') { /invalidname is invalid c.AddError('The Last Name
'+c.LastName+' is not allowed for DML');
}

}

}
```

TestRestrictContactByName.apxc:

```
@isTest

private class TestRestrictContactByName
{ @isTest static void Test_insertupdateContact(){
Contact cnt = new Contact(); cnt.LastName = 'INVALIDNAME';
Test.startTest(); Database.SaveResult result=
Database.insert(cnt, false); Test.stopTest(); System.assert(!result.isSuccess());
System.assert(result.getErrors().size() > 0);
}
```

```
System.assertEquals('The Last Name"INVALIDNAME" is not allowed for DML',  
result.getErrors()[0].getMessage());  
}  
}
```

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RandomContactFactory.apxc:

```
public class RandomContactFactory {  
    public static List<Contact> generateRandomContacts(Integer num_cnts, string lastname) {  
        List<Contact> contacts= new List<Contact>();  
        for(Integer i = 0; i < num_cnts; i++) {  
            Contact cnt = new Contact(FirstName = 'Test' +i,LastName =lastname); contacts.add(cnt);  
        }  
        return contacts;  
    }  
}
```

ASYNCHRONOUS APEX

AccountProcessor.apxc:

```
public class AccountProcessor {@future
public static void countContacts(List<Id> accountIds){List<Account> accountsToUpdate = new
List<Account>();
```

```
List<Account> accounts = [Select Id, Name, (Select Id from Contacts)from Account Where Id in
:accountIds];
```

```
For(Account acc: accounts) {
```

```
List<Contact> contactList = acc.contacts;acc.Number_Of_Contacts c = contactList.size();
accountsToUpdate.add(acc);
```

```
}
```

```
update accountsToUpdate;
```

```
}
```

```
}
```

AccountProcessorTest.apxc:

```
@isTest
```

```
public class AccountProcessorTest {
```

```
@isTest
```

```
private static void testCountContacts() {
```

```
Account newAccount = new Account(Name = 'TestAccount'); insert newAccount;
```

```
ContactnewContact1 = new Contact(FirstName='John',LastName = 'Doe',AccountId =
```

```
newAccount.Id);
```

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```
insert newContact1;
```

```
Contact newContact2 =new Contact(FirstName ='John',LastName = 'Doe',AccountId =  
newAccount.Id);  
insert newContact2;
```

```
List<Id> accountIds = new List<Id>(); accountIds.add(newAccount.Id); Test.startTest();  
AccountProcessor.countContacts(accountIds); Test.stopTest();  
}  
}
```

LeadProcessor.apxc:

```
global class LeadProcessor implements Database.Batchable<sObject>{ globalInteger count =0;
```

```
global Database.QueryLocator start(Database.BatchableContext bc) { return  
Database.getQueryLocator('SELECT ID,LeadSource FROM Lead');  
}
```

```
global void execute(Database.BatchableContext bc, List<Lead>L_list){ List<lead> L_list_new =  
new List<lead>();  
for(lead L: L_list){ L.leadSource = 'Dreamforce'; L_list_new.add(L);count += 1;  
}  
update L_list_new;  
}
```

```
global void finish(Database.BatchableContext bc){
```

```
system.debug('count= ' + count);  
}  
}
```

LeadProcessorTest.apxc:

@isTest

```
public class LeadProcessorTest {@isTest
publicstatic voidtestit(){
```

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```
List<lead> L_list = new List<lead>();for(Integer i = 0; i <200; i++) {
Lead L = new Lead();L.LastName = 'name'
+ i; L.Company = 'Company'; L.Status
= 'Random Status'; L_list.add(L);
}
insert L_list;Test.startTest();
LeadProcessor lp = new LeadProcessor(); Id batchId =Database.executeBatch(lp);
Test.stopTest();
}
}
```

AddPrimaryContact.apxc:

```
public class AddPrimaryContact implementsQueueable{ private Contact con;
private String state;

public AddPrimaryContact(Contact con, Stringstate) { this.con = con;
this.state = state;

}
```



```
public void execute(QueueableContext context){  
    List<Account> accounts = [Select Id,Name,(Select FirstName,LastName, Id from contacts) from  
    Accountwhere BillingState = :state Limit 200];  
    List<Contact> primaryContacts = new List<Contact>();for(Account acc : accounts) {  
    Contact c = con.clone(); c.AccountId = acc.Id;primaryContacts.add(c);  
    }  
    if(primaryContacts.size() > 0) { insertprimaryContacts;  
    }  
    }  
    }
```

@isTest public class

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AddPrimaryContactTest.apxc:

AddPrimaryContactTest { static

```
testmethod void testQueueable() {  
    List<Account> testAccounts = newList<Account>(); for(Integer i = 0; i < 50; i++) {
```

```
testAccounts.add(newAccount (Name ='Account' + i,BillingState = 'CA'));
}
for(Integer j =0; j < 50; j++) {
testAccounts.add(newAccount(Name = 'Account'+ j, BillingState= 'NY'));
}
insert testAccounts;

Contact testContact =new Contact(FirstName='John', LastName = 'Doe'); insert testContact;
AddPrimaryContact addit = new AddPrimaryContact(testContact,'CA'); Test.startTest();
system.enqueueJob(ad
dit); Test.stopTest();
System.assertEquals(50, [Select count()from Contact where accountId in (Select Idfrom Account
where BillingState = 'CA')]);
}
}
```

DailyLeadProcessor.apxc:

```
global class DailyLeadProcessor implementsSchedulable{ global void
execute(SchedulableContext ctx) {
List<Lead> leadstoupdate = new List<Lead>();

List<Lead> leads = [Select id From LeadWhere LeadSource = NULL Limit200]; for(Lead l: leads) {
l.LeadSource = 'Dreamforce'; leadstoupdate.add(l);
}

update leadstoupdate;
}
}
```

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DailyLeadProcessorTest.apxc:

@isTest

```
private class DailyLeadProcessorTest {  
    public static String CRON_EXP= '0 0 0 15 3 ?  
    2024'; static testmethod void testScheduledJob() { List<Lead> leads= new  
    List<Lead>(); for(Integer i =0; i < 200; i++) {  
    Lead l = new Lead( FirstName = 'First'  
    + i, LastName ='LastName', Company = 'TheInc'  
    );  
    leads.add(l);  
    }  
    insert leads;Test.startTest();  
    String jobId =System.schedule('ScheduledApexTest',CRON_EXP,new DailyLeadProcessor());  
    Test.stopTest();  
    List<Lead> checkleads = new List<Lead>();  
    checkleads = [SelectIdFrom Lead Where LeadSource = 'Dreamforce' and Company = 'TheInc'];  
    System.assertEquals(200,checkleads.size(),'Leads were not created');  
  
    }  
}
```

```
public class AnimalLocator{
```

APEX INTEGRATION SERVICES

AnimalLocator.apxc:

```
public static String getAnimalNameById(Integer x){ Http http = new Http();  
HttpRequest req =new HttpRequest();  
req.setEndpoint('https: /th-apex-http-callout.herokuapp.com/animals/'  
+x); req.setMethod('GET');  
Map<String, Object> animal= new Map<String,Object>(); HttpResponse res = http.send(req);  
if (res.getStatusCode() == 200) {
```

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```
Map<String, Object> results = (Map<String, Object>)JSON.deserializeUntyped(res.getBody());  
animal= (Map<String, Object>) results.get('animal');  
}  
return (String)animal.get('name');
```

```
}
```

```
}
```

@isTest

```
private class AnimalLocatorTest{
```

AnimalLocatorTest.apxc:

```
@isTest static void AnimalLocatorMock1() { Test.setMock(HttpCalloutMock.class, new  
AnimalLocatorMock()); string result = AnimalLocator.getAnimalNameById(3); String  
expectedResult = 'chicken'; System.assertEquals(result,expectedResult );
```

```
}
```

```
}
```

AnimalLocatorMock.apxc:

@isTest

```
global class AnimalLocatorMock implements HttpCalloutMock {
```

```
 / Implement this interface method
```

```
global HTTPResponse respond(HTTPRequest request) {
```

```
 / Create a fake response
```

```
HttpServletResponse response = new HttpServletResponse(); response.setHeader('Content-Type',  
'application/json');
```

```
response.setBody("{\"animals\": [\"majestic badger\", \"fluffy bunny\", \"scary bear\", \"chicken\", \"mighty  
moose\"]}");
```

```
response.setStatusCode(200); return response;
```

```
}
```

```
}
```

-

ParkLocator.apxc:

```
public class ParkLocator {  
  
    public static string[] country(string theCountry) {  
        ParkService.ParksImplPort parkSvc = new ParkService.ParksImplPort(); / removespace return  
        parkSvc.byCountry(theCountry);  
    }  
}
```

@isTest private class

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ParkLocatorTest.apxc:

```
ParkLocatorTest { @isTest static void testCallout() {  
    Test.setMock(WebServiceMock.class, new ParkServiceMock()); String country= 'United States';  
    List<String> result = ParkLocator.country(country);  
  
    List<String> parks =new List<String>{'Yellowstone', 'MackinacNationalPark', 'Yosemite'};  
    System.assertEquals(parks, result);  
}  
}
```

ParkServiceMock.apxc:

@isTest

```
global class ParkServiceMock implements WebServiceMock { global void doInvoke(  
    Object stub, Object request,  
    Map<String, Object>
```

```
    response, String endpoint,  
    String soapAction, String requestName, String responseNS, String responseName,  
    String responseType) {  
        /start -specify the response you want to send  
  
        ParkService.byCountryResponse response_x = new ParkService.byCountryResponse();  
        response_x.return_x = new List<String>{'Yellowstone', 'Mackinac NationalPark', 'Yosemite'};  
        / end response.put('response_x',response_x);  
    }  
}
```

AccountManager.apxc:

```
@RestResource(urlMapping='/Accounts/*/contacts') global class AccountManager {  
    @HttpGet  
  
    global static Account getAccount() {RestRequest req = RestContext.request;  
    String accId = req.requestURI.substringBetween('Accounts/', '/contacts');
```

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```
Account acc = [SELECT Id, Name, (SELECT Id, Name FROM Contacts) FROM Account WHERE Id = :accId];
```

```
return acc;
```

```
}
```

```
}
```

AccountManagerTest.apxc:

```
@isTest
```

```
private class AccountManagerTest {
```

```
private static testMethod void getAccountTest1() { Id recordId = createTestRecord();
```

```
    / Set up a test request
```

```
    RestRequest request = new RestRequest();
```

```
    request.requestUri = 'https://na1.salesforce.com/services/apexrest/Accounts/' + recordId  
    + '/contacts';
```

```
    request.httpMethod = 'GET'; RestContext.request = request;
```

```
    / Call the method to test
```

```
    Account thisAccount = AccountManager.getAccount();
```

```
    / Verify results System.assert(thisAccount != null);
```

```
    System.assertEquals('Test record', thisAccount.Name);
```



```
}
```

```
 / Helper method
```

```
static Id createTestRecord() {
```

```
 / Create test record
```

```
Account TestAcc = new Account(Name='Test record');
```

```
insert TestAcc;
```

```
Contact TestCon= new Contact(LastName='Test',
```

```
AccountId = TestAcc.id); return TestAcc.Id;
```

```
}
```

```
}
```

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Challenge-1

MaintenanceRequestHelper.apxc:

```
public with sharing class MaintenanceRequestHelper {  
    public static void updateWorkOrders(List<Case> updWorkOrders, Map<Id,Case>  
    nonUpdCaseMap) { Set<Id> validIds= new Set<Id>();  
  
    For (Case c : updWorkOrders){  
        if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){ if (c.Type == 'Repair' | |  
        c.Type == 'Routine Maintenance'){  
            validIds.add(c.Id);  
  
        }  
    }  
}  
  
if (!validIds.isEmpty()){
```

```
List<Case> newCases = new List<Case>();  
Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT Id, Vehicle c, Equipment c,Equipment  
r.Maintenance_Cycle c,(SELECT Id,Equipment c,Quantity c FROM Equipment_Maintenance_Items  
r)  
FROM Case WHERE Id IN :validIds]); Map<Id,Decimal> maintenanceCycles = new  
Map<ID,Decimal>();AggregateResult[] results = [SELECT Maintenance_Request c,  
MIN(Equipmentr.Maintenance_Cyclec)cycle FROM Equipment_Maintenance_Item c  
WHERE Maintenance_Request c IN :ValidIds GROUP BY Maintenance_Request c];  
  
for (AggregateResult ar : results){  
maintenanceCycles.put((Id)ar.get('Maintenance_Request__c'),(Decimal) ar.get('cycle'));  
}  
  
for(Case cc : closedCasesM.values()){Case nc = new Case (  
ParentId=cc.Id, Status  
='New',
```

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```
Subject = 'RoutineMaintenance', Type = 'Routine Maintenance', Vehicle c = cc.Vehicle c,  
Equipment c  
=cc.Equipment c, Origin ='Web',  
Date_Reportedc = Date.Today();  
  
If (maintenanceCycles.containsKey(cc.Id)){  
nc.Date_Due__c =Date.today().addDays((Integer)maintenanceCycles.get(cc.Id));  
}  
  
newCases.add(nc);  
}
```

```
insert newCases;
```

```
List<Equipment_Maintenance_Item c> clonedWPs = newList<Equipment_Maintenance_Item  
c>();  
for (Casenc : newCases){  
    for (Equipment_Maintenance_Item c wp :  
        closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items r){  
        Equipment_Maintenance_Item c wpClone = wp.clone(); wpClone.Maintenance_Request c =  
        nc.Id;ClonedWPs.add(wpClone);  
  
    }  
}  
insert ClonedWPs;  
}  
}  
}
```

MaintenanceRequest.apxt:

```
trigger MaintenanceRequest on Case (before update, after update) {if (Trigger.isUpdate &&  
Trigger.isAfter){  
    MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);  
}  
}
```

MaintenanceRequestHelperTest.apxc:

```
@istest  
public with sharing class MaintenanceRequestHelperTest {  
  
    private static final string STATUS_NEW = 'New'; private static final string WORKING= 'Working';  
    private static final string CLOSED = 'Closed'; private static final string REPAIR = 'Repair'; private  
    static final string REQUEST_ORIGIN = 'Web';
```

```
private static final string REQUEST_TYPE = 'RoutineMaintenance'; private static final string  
REQUEST_SUBJECT = 'Testing subject';
```

```
PRIVATE STATIC Vehicle__c createVehicle(){  
Vehicle__c Vehicle= new VehicleC(name ='SuperTruck'); return Vehicle;  
}
```

```
PRIVATE STATIC Product2 createEq(){  
product2equipment = new product2(name ='SuperEquipment',
```

```
lifespan_months__C = 10,maintenance_cycle__C  
= 10,  
replacement_part__c =true);  
return equipment;  
}
```

```
PRIVATE STATIC Case createMaintenanceRequest(id vehicleId, idequipmentId){ case cs = new  
case(Type=REPAIR,  
Status=STATUS_NEW, Origin=REQUEST_ORIGIN, Subject=REQUEST_SUBJECT,  
Equipment__c=equipmentId,
```

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```
Vehicle__c=vehicleId);
```

```
return cs;
```

```
}
```

```
PRIVATE STATIC Equipment_Maintenance_Item c createWorkPart(id equipmentId,id requestId){  
Equipment_Maintenance_Item c wp = new Equipment_Maintenance_Item c(Equipment _c =  
equipmentId,
```

```
Maintenance_Request _c = requestId);
```

```
return wp;
```

```
}
```

```
@istest
```

```
private static void
```

```
testMaintenanceRequestPositive(){ Vehiclecvehicle= createVehicle();
```

```
insert vehicle;
```

```
id vehicleId = vehicle.Id;
```

```
Product2 equipment = createEq(); insert equipment; id equipmentId =equipment.Id;
```

```
case somethingToUpdate = createMaintenanceRequest(vehicleId,equipmentId);
```

```
insertsomethingToUpdate;
```

```
Equipment_Maintenance_Item c workP =createWorkPart(equipmentId,somethingToUpdate.id);
```

```
insert workP;
```

```
test.startTest(); somethingToUpdate.status =CLOSED; update somethingToUpdate;
```

```
test.stopTest();
```

```
Case newReq = [Select id, subject, type, Equipment__c, Date_Reported__c, Vehicle__c,  
Date_Due__c  
from case  
where status =:STATUS_NEW];
```

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```
Equipment_Maintenance_Item__c workPart = [select id
```

```
from Equipment_Maintenance_Item__c  
where Maintenance_Request__c =:newReq.Id];
```

```
system.assert(workPart != null); system.assert(newReq.Subject != null);  
system.assertEquals(newReq.Type, REQUEST_TYPE); SYSTEM.assertEquals(newReq.Equipment__c,  
equipmentId); SYSTEM.assertEquals(newReq.Vehicle__c, vehicleId);  
SYSTEM.assertEquals(newReq.Date_Reported__c, system.today());  
}
```

```
@istest
```

```
private static void testMaintenanceRequestNegative(){ Vehicle C vehicle=createVehicle();  
insert vehicle;
```

```
id vehicleId = vehicle.Id;
```

```
product2 equipment = createEq(); insert equipment; id equipmentId =equipment.Id;
```

```
case emptyReq = createMaintenanceRequest(vehicleId,equipmentId); insertemptyReq;
```

```
Equipment_Maintenance_Item c workP =createWorkPart(equipmentId,emptyReq.Id);  
insertworkP;
```

```
test.startTest(); emptyReq.Status =WORKING; updateemptyReq; test.stopTest();
```

```
list<case> allRequest = [select id  
from case];
```

```
Equipment_Maintenance_Item _c workPart = [select id  
from Equipment_Maintenance_Item c
```

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```
whereMaintenance_Request _c = :emptyReq.Id];
```



```
system.assert(workPart != null); system.assert(allRequest.size() == 1);  
}
```

@istest

```
private static void testMaintenanceRequestBulk(){ list<Vehicle C> vehicleList = new  
list<Vehicle C>();list<Product2> equipmentList = new list<Product2>();  
list<Equipment_Maintenance_Item c>workPartList  
= new list<Equipment_Maintenance_Item c>();  
list<case> requestList = newlist<case>(); list<id> oldRequestIds =new list<id>();
```

```
for(integer i = 0; i < 300; i++){ vehicleList.add(createVehicle());equipmentList.add(createEq());  
}
```

insert

vehicleList; insert equipmentList;

```
for(integer i = 0; i < 300; i++){ requestList.add(createMaintenanceRequest(vehicleList.get(i).id,  
equipmentList.get(i).id));  
}
```

insert requestList;

```
for(integer i = 0; i < 300; i++){ workPartList.add(createWorkPart(equipmentList.get(i).id,  
requestList.get(i).id));  
}
```

insert workPartList;

```
test.startTest();for(case req :  
requestList){
```

```
req.Status =CLOSED;  
oldRequestIds.add(req.Id);  
}  
update requestList;
```

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```
test.stopTest();
```

```
list<case> allRequests = [select id
```

```
from case
```

```
where status=:STATUS_NEW];
```

```
list<Equipment_Maintenance_Item c> workParts = [select id
```

```
from Equipment_Maintenance_Item c
```

```
where Maintenance_Request c in: oldRequestIds];
```

```
system.assert(allRequests.size() == 300);
```

```
}
```

```
}
```

Challenge-2

WarehouseCalloutService.apxc:

```
public with sharing class WarehouseCalloutService implements Queueable { private static final  
String WAREHOUSE_URL = 'https:  
/th-superbadge- apex.herokuapp.com/equipment';
```

/class that makes a REST callout to an external warehouse system to get a list of equipment that
needs to be updated.

/The callout's JSON response returns the equipment records that you upsert in Salesforce.

```
@future(callout=true) public static void
```

```
runWarehouseEquipmentSync() { Http http = new Http();
```

```
HttpRequest request = new HttpRequest();
```

```
request.setEndpoint(WAREHOUSE_URL); request.setMethod('GET'); HttpResponse response =
```

```
http.send(request); List<Product2> warehouseEq = new List<Product2>(); if
```

```
(response.getStatusCode() == 200) {
```

```
List<Object> jsonResponse = (List<Object>) JSON.deserializeUntyped(response.getBody());
```

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```
System.debug(response.getBody());
```

/class maps the following fields: replacement part (always true), cost, current inventory, lifespan, maintenance cycle, and warehouse SKU

/warehouse SKU will be external ID for identifying which equipment records to update within Salesforce

```
for (Object eq : jsonResponse){
```

```
    Map<String, Object> mapJson = (Map<String, Object>)eq; Product2 myEq = new Product2();  
    myEq.Replacement_Part c = (Boolean)mapJson.get('replacement'); myEq.Name = (String)  
    mapJson.get('name');  
    myEq.Maintenance_Cycle c = (Integer) mapJson.get('maintenanceperiod'); myEq.Lifespan_Months  
    c = (Integer) mapJson.get('lifespan');  
    myEq.Cost c = (Integer) mapJson.get('cost'); myEq.Warehouse_SKU c = (String)  
    mapJson.get('sku'); myEq.Current_Inventory c = (Double) mapJson.get('quantity');  
    myEq.ProductCode = (String) mapJson.get('_id'); warehouseEq.add(myEq);  
}
```

```
if
```

```
(warehouseEq.size() > 0){ upsertWarehouseEq;  
    System.debug('Your equipment was synced with the warehouse one');  
}  
}  
}
```

```
public static void execute (QueueableContext context){runWarehouseEquipmentSync();  
}
```

```
}
```

@isTest

WarehouseCalloutServiceMock.apxc:

```
global class WarehouseCalloutServiceMock implements HttpCalloutMock {  
    / implement http mock callout  
    global static HttpResponse respond(HttpRequest request){
```

APEX SPECIALIST SUPER BADGE CODES

```
HttpResponse response = new HttpResponse(); response.setHeader('Content-Type',  
'application/json');
```

```
response.setBody('{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name"  
:"Gene rator 1000  
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b61
```

```
1100a af742", "replacement": true, "quantity": 183, "name": "Cooling  
Fan", "maintenanceperiod": 0, "lifespan": 0, "cost": 300, "sku": "100004"}, {"_id": "55d66226726b611100  
aaf743 ", "replacement": true, "quantity": 143, "name": "Fuse  
20A", "maintenanceperiod": 0, "lifespan": 0, "cost": 22, "sku": "100005"}]]);  
response.setStatusCode(200);
```

```
return response;
```

```
}
```

```
}
```

WarehouseCalloutServiceTest.apxc:

@IsTest

```
private class WarehouseCalloutServiceTest {
```

```
    / implement your mock callout testthere @isTest
```

```
    static void testWarehouseCallout() {test.startTest();
```

```
    test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
```

```
    WarehouseCalloutService.execute(null);
```

```
    test.stopTest();
```

```
List<Product2> product2List = new List<Product2>(); product2List = [SELECT ProductCode FROM  
Product2];
```

```
System.assertEquals(3, product2List.size()); System.assertEquals('55d66226726b611100aaf741',  
product2List.get(0).ProductCode); System.assertEquals('55d66226726b611100aaf742',  
product2List.get(1).ProductCode); System.assertEquals('55d66226726b611100aaf743',  
product2List.get(2).ProductCode);
```

```
}
```

```
}
```

Challenge-3

WarehouseSyncSchedule.apxc:

global with sharing class WarehouseSyncSchedule implements Schedulable{

APEX SPECIALIST SUPER BADGE CODES

```
global void execute(SchedulableContext ctx){  
    System.enqueueJob(newWarehouseCalloutService());  
}  
}
```

WarehouseSyncScheduleTest.apxc:

@isTest

public class WarehouseSyncScheduleTest {

```
@isTest static void WarehousescheduleTest(){ StringscheduleTime = '00 00 01 * * ?';  
    Test.startTest();
```

```
    Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
```

```
    String jobId=System.schedule('Warehouse Time To Scheduleto Test', scheduleTime, new  
    WarehouseSyncSchedule());
```

```
Test.stopTest();
```

/Contains schedule information for a scheduled job. CronTrigger is similar to a cron job on UNIX systems.

/ This object is available in API version 17.0 and later.

```
CronTrigger a=[SELECT Id FROM CronTrigger where NextFireTime >today];  
System.assertEquals(jobID, a.Id,'Schedule');
```

```
}
```

```
}
```

-

-

Challenge-4

MaintenanceRequestHelperTest.apxc:

```
@istest
```

```
public with sharing class MaintenanceRequestHelperTest {
```

```
private static final string STATUS_NEW = 'New'; private static final string WORKING = 'Working';  
private static final string CLOSED = 'Closed'; private static final string REPAIR = 'Repair'; private  
static final string REQUEST_ORIGIN = 'Web';
```

```
private static final string REQUEST_TYPE = 'RoutineMaintenance'; private static final string  
REQUEST_SUBJECT = 'Testing subject';
```

```
PRIVATE STATIC Vehicle _c createVehicle(){
```

APEX SPECIALIST SUPER BADGE CODES

```
Vehicle c Vehicle= new VehicleC(name ='SuperTruck'); return Vehicle;  
}
```



```
PRIVATE STATIC Product2 createEq(){  
    product2 equipment= new product2(name= 'SuperEquipment', lifespan_months C = 10,  
    maintenance_cycle C  
    = 10,  
    replacement_part c =true);  
    return equipment;  
}
```

```
PRIVATE STATIC Case createMaintenanceRequest(id vehicleId, idequipmentId){ case cs = new  
case(Type=REPAIR,  
Status=STATUS_NEW, Origin=REQUEST_ORIGIN, Subject=REQUEST_SUBJECT,  
Equipment c=equipmentId, Vehicle c=vehicleId);  
return cs;  
}
```

```
PRIVATE STATIC Equipment_Maintenance_Item c createWorkPart(id equipmentId,id requestId){  
Equipment_Maintenance_Item c wp = new Equipment_Maintenance_Item c(Equipment c =  
equipmentId, Maintenance_Request c =requestId); return wp;  
}
```

@istest

```
private static void testMaintenanceRequestPositive(){ Vehiclecvehicle= createVehicle();  
insert vehicle;  
  
id vehicleId = vehicle.Id;
```

```
Product2 equipment = createEq(); insert equipment; id equipmentId =equipment.Id;
```

APEX SPECIALIST SUPER BADGE CODES

```
case somethingToUpdate = createMaintenanceRequest(vehicleId,equipmentId);  
insertsomethingToUpdate;
```

```
Equipment_Maintenance_Item c workP =createWorkPart(equipmentId,somethingToUpdate.id);  
insert workP;
```

```
test.startTest(); somethingToUpdate.status =CLOSED; update somethingToUpdate;  
test.stopTest();
```

```
Case newReq = [Select id, subject, type, Equipment__c, Date_Reported__c, Vehicle__c,  
Date_Due_c  
from case  
where status =:STATUS_NEW];
```

```
Equipment_Maintenance_Item_c workPart = [select id  
from Equipment_Maintenance_Item c  
where Maintenance_Request__c =:newReq.Id];
```

```
system.assert(workPart != null); system.assert(newReq.Subject != null);  
system.assertEquals(newReq.Type, REQUEST_TYPE); SYSTEM.assertEquals(newReq.Equipment c,  
equipmentId); SYSTEM.assertEquals(newReq.Vehicle c, vehicleId);  
SYSTEM.assertEquals(newReq.Date_Reported__c, system.today());  
}
```

@istest

private static void

testMaintenanceRequestNegative(){ Vehicle C vehicle=createVehicle();

insert vehicle;

id vehicleId = vehicle.Id;

product2 equipment = createEq(); insert equipment; id equipmentId =equipment.Id;

APEXSPECIALIST SUPER BADGE CODES

case emptyReq = createMaintenanceRequest(vehicleId,equipmentId); insertemptyReq;

Equipment_Maintenance_Item c workP =createWorkPart(equipmentId,emptyReq.Id);

insertworkP;

test.startTest(); emptyReq.Status =WORKING; updateemptyReq; test.stopTest();

list<case> allRequest = [select id

from case];

Equipment_Maintenance_Item _c workPart = [select id

from Equipment_Maintenance_Item c

where Maintenance_Request _c = :emptyReq.Id];

system.assert(workPart != null); system.assert(allRequest.size() == 1);

}

@istest

private static void testMaintenanceRequestBulk(){ list<Vehicle C> vehicleList = new

list<Vehicle C>();list<Product2> equipmentList = new list<Product2>();

```
list<Equipment_Maintenance_Item c>workPartList
= new list<Equipment_Maintenance_Item c>();
list<case> requestList = newList<case>(); list<id> oldRequestIds =new list<id>();

for(integer i = 0; i < 300; i++){ vehicleList.add(createVehicle());equipmentList.add(createEq());
}
insert vehicleList; insert equipmentList;
```

APEX SPECIALIST SUPER BADGE CODES

```
for(integer i = 0; i < 300; i++){ requestList.add(createMaintenanceRequest(vehicleList.get(i).id,
equipmentList.get(i).id));
}
insert requestList;
```

```
for(integer i = 0; i < 300; i++){ workPartList.add(createWorkPart(equipmentList.get(i).id,
requestList.get(i).id));
}
insert workPartList;
```

```
test.startTest();for(case req :
requestList){req.Status =CLOSED;
oldRequestIds.add(req.Id);
}
updaterequestList; test.stopTest();
```

```
list<case> allRequests = [select id
from case
where status=:STATUS_NEW];
```

```
list<Equipment_Maintenance_Item c> workParts = [select id
```

```
from Equipment_Maintenance_Item c
where Maintenance_Request c in: oldRequestIds];
```

```
system.assert(allRequests.size() == 300);
}
}
```

MaintenanceRequestHelper.apxc:

```
public with sharing class MaintenanceRequestHelper {

    public static void updateWorkOrders(List<Case> updWorkOrders, Map<Id,Case>
    nonUpdCaseMap) { Set<Id> validIds= new Set<Id>();

    For (Case c : updWorkOrders){
        if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){
            if (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){validIds.add(c.Id);

        }
    }
}

    if (!validIds.isEmpty()){
        List<Case> newCases = new List<Case>();
        Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT Id, Vehicle c, Equipment c,Equipment
        r.Maintenance_Cycle c,(SELECT Id,Equipment c,Quantity c FROM Equipment_Maintenance_Items
        r)
        FROM Case WHERE Id IN :validIds]); Map<Id,Decimal> maintenanceCycles = new
        Map<ID,Decimal>();AggregateResult[] results= [SELECT Maintenance_Request c,
        MIN(Equipmenttr.Maintenance_Cyclec)cycle FROM Equipment_Maintenance_Item cWHERE
        Maintenance_Request c IN :ValidIds GROUP BY Maintenance_Request c];

        for (AggregateResult ar : results){
```

```
maintenanceCycles.put((Id)ar.get('Maintenance_Request__c'),(Decimal) ar.get('cycle'));  
}  
for(Case cc : closedCasesM.values()){Case nc = new Case (  
ParentId=cc.Id, Status  
='New',  
Subject = 'RoutineMaintenance', Type = 'Routine Maintenance', Vehicle c = cc.Vehicle c,  
Equipment c  
=cc.Equipment c, Origin ='Web',  
Date_Reportedc = Date.Today()  
  
);  
  
If (maintenanceCycles.containsKey(cc.Id)){  
nc.Date_Due__c =Date.today().addDays((Integer)maintenanceCycles.get(cc.Id));
```

APEX SPECIALIST SUPER BADGE CODES

```
}  
newCases.add(nc);  
}  
insert newCases;  
List<Equipment_Maintenance_Item c> clonedWPs = new  
List<Equipment_Maintenance_Item c>();for (Casenc : newCases){  
for (Equipment_Maintenance_Item c wp :  
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items r){  
Equipment_Maintenance_Item c wpClone = wp.clone(); wpClone.Maintenance_Request c =  
nc.Id;ClonedWPs.add(wpClone);
```

```
}  
}  
  
insert ClonedWPs;  
}  
}  
}
```

Challenge-5

WarehouseCalloutService.apxc:

```
public with sharing class WarehouseCalloutService implements Queueable { private static final  
String WAREHOUSE_URL = 'https:  
/th-superbadge- apex.herokuapp.com/equipment';
```

/class that makes a REST callout to an external warehouse system to get a list of equipment that
needs to be updated.

/The callout's JSON response returns the equipment records that you upsert in Salesforce.

```
@future(callout=true) public static void
```

```
runWarehouseEquipmentSync(){ Http http= new Http();  
HttpRequest request = new HttpRequest();request.setEndpoint(WAREHOUSE_URL);
```

APEX SPECIALIST SUPER BADGE CODES

```
request.setMethod('GET'); HttpResponse response=
```

```
http.send(request); List<Product2>warehouseEq = new List<Product2>();
```

```
if (response.getStatusCode() == 200){
```

```
List<Object> jsonResponse =(List<Object>)JSON.deserializeUntyped(response.getBody());  
System.debug(response.getBody());
```

/class maps the following fields: replacement part (always true), cost, current inventory, lifespan, maintenance cycle, and warehouse SKU

/warehouse SKU will be external ID for identifying which equipment records to update within Salesforce

```
for (Object eq : jsonResponse){
```

```
Map<String, Object> mapJson =(Map<String, Object>)eq; Product2 myEq = new Product2();  
myEq.Replacement_Part c = (Boolean)mapJson.get('replacement'); myEq.Name = (String)  
mapJson.get('name');  
myEq.Maintenance_Cycle c = (Integer) mapJson.get('maintenanceperiod'); myEq.Lifespan_Months  
c = (Integer) mapJson.get('lifespan');  
myEq.Cost c = (Integer) mapJson.get('cost'); myEq.Warehouse_SKU c = (String)  
mapJson.get('sku'); myEq.Current_Inventory c = (Double) mapJson.get('quantity');  
myEq.ProductCode = (String) mapJson.get('_id'); warehouseEq.add(myEq);  
}
```

```
if
```

```
(warehouseEq.size() > 0){ upsertWarehouseEq;
```



```
System.debug('Your equipment was synced with the warehouse one');  
}  
}  
}  
public static void execute (QueueableContext context){runWarehouseEquipmentSync();  
}  
}@isTest
```

APEXSPECIALIST SUPER BADGE CODES

WarehouseCalloutServiceMock.apxc:

```
global class WarehouseCalloutServiceMock implements HttpCalloutMock {  
    / implement http mock callout  
    global static HttpResponse respond(HttpRequest request){  
  
        HttpResponse response = new HttpResponse(); response.setHeader('Content-Type',  
        'application/json');  
  
        response.setBody('[{ "_id": "55d66226726b611100aaf741", "replacement": false, "quantity": 5, "name": "Generator 1000 kW", "maintenanceperiod": 365, "lifespan": 120, "cost": 5000, "sku": "100003"}, { "_id": "55d66226726b611100aaf742", "replacement": true, "quantity": 183, "name": "Cooling Fan", "maintenanceperiod": 0, "lifespan": 0, "cost": 300, "sku": "100004"}, { "_id": "55d66226726b611100aaf743", "replacement": true, "quantity": 143, "name": "Fuse 20A", "maintenanceperiod": 0, "lifespan": 0, "cost": 22, "sku": "100005"} ]');  
        response.setStatusCode(200);  
  
        return response;  
    }  
}
```

WarehouseCalloutServiceTest.apxc:

```
@isTest
```

```
global class WarehouseCalloutServiceMock implements HttpCalloutMock {  
    / implement http mock callout  
    global static HttpResponse respond(HttpRequest request){  
  
        HttpResponse response = new HttpResponse(); response.setHeader('Content-Type',  
        'application/json');  
  
        response.setBody("[{"_id": "55d66226726b611100aaf741", "replacement": false, "quantity": 5, "name": "Generator 1000  
kW", "maintenanceperiod": 365, "lifespan": 120, "cost": 5000, "sku": "100003"}, {"_id": "55d66226726b611100aaf742", "replacement": true, "quantity": 183, "name": "Cooling  
Fan", "maintenanceperiod": 0, "lifespan": 0, "cost": 300, "sku": "100004"}, {"_id": "55d66226726b611100aaf743", "replacement": true, "quantity": 143, "name": "Fuse  
20A", "maintenanceperiod": 0, "lifespan": 0, "cost": 22, "sku": "100005"}]");  
  
        response.setStatusCode(200);  
        return response;  
    }  
}
```

Challenge-6

WarehouseSyncSchedule.apxc:

```
global with sharing class WarehouseSyncSchedule implements Schedulable { global void  
execute(SchedulableContext ctx){  
    System.enqueueJob(new WarehouseCalloutService());  
}  
}
```

WarehouseSyncScheduleTest.apxc:

```
@isTest
```

```
public class WarehouseSyncScheduleTest {

    @isTest static void WarehousescheduleTest(){ StringscheduleTime = '00 00 01 * * ?';
    Test.startTest();
    Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
    String jobID=System.schedule('Warehouse Time To Scheduleto Test', scheduleTime, new
    WarehouseSyncSchedule());
    Test.stopTest();

    / Contains schedule information for a scheduled job. CronTrigger is similarto a cron job on UNIX
    systems.
    / This object is available in API version 17.0 and later.

    CronTrigger a=[SELECT Id FROM CronTrigger where NextFireTime >today];
    System.assertEquals(jobID, a.Id,'Schedule ');}}
```