

APEX SPECIALIST SUPER BADGE CODES

APEX TRIGGERS

AccountAddressTrigger.axpt:

```
trigger AccountAddressTriggeron 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; }
```

APEX SPECIALIST SUPER BADGE CODES

```
/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 insertor update forinvalid data For (Contactc : Trigger.New){  
if(c.LastName == 'INVALIDNAME') { /invalidname is invalid c.AddError('The Last Name  
"+c.LastName+" is not allowedfor DML');  
}  
  
}  
}
```

TestRestrictContactByName.apxc:

```
@isTest  
private class TestRestrictContactByName  
{ @isTeststatic 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());
}
}
```

APEX SPECIALIST SUPER BADGE CODES

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);
```

APEXSPECIALIST SUPER BADGE CODES

```
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  
    public static void testit(){
```

APEX SPECIALIST SUPER BADGE CODES

```
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 implements Queueable { private Contact con;
private String state;

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

public void execute(QueueableContext context){
List<Account> accounts = [Select Id,Name,(Select FirstName,LastName, Id from contacts) from
Account where 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) { insert primaryContacts;
}

}

}
```

@isTest public class

APEX SPECIALIST SUPER BADGE CODES

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 Id from Account  
        where BillingState = 'CA')]);  
    }  
}
```

DailyLeadProcessor.apxc:

```
global class DailyLeadProcessor implements Schedulable { global void  
    execute(SchedulableContext ctx) {  
        List<Lead> leadstoupdate = new List<Lead>();  
        List<Lead> leads = [Select id From Lead Where LeadSource = NULL Limit 200]; for(Lead l: leads) {  
            l.LeadSource = 'Dreamforce'; leadstoupdate.add(l);  
        }  
    }  
}
```

```
}  
update leadstoupdate;  
}  
}
```

APEX SPECIALIST SUPER BADGE CODES

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) {
```

APEX SPECIALIST SUPER BADGE CODES

```
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

 HttpResponse response = new HttpResponse(); 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

APEX SPECIALIST SUPER BADGE CODES

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');
```

APEX SPECIALIST SUPER BADGE CODES

```
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;  
}  
}
```

APEX SPECIALIST SUPER BADGE CODES

APEX SPECIALIST SUPER BADGE

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(Equipmenttr.Maintenance_Cyclec)cycle FROM Equipment_Maintenance_Item c  
    WHEREMaintenance_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',
```

APEX SPECIALIST SUPER BADGE CODES

```
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,
```

APEX SPECIALIST SUPER BADGE CODES

```
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];

APEX SPECIALIST SUPER BADGE CODES

```
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
```

APEX SPECIALIST SUPER BADGE CODES

```
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;  
  
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;
```

APEX SPECIALIST SUPER BADGE CODES

```
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());
```

APEX SPECIALIST SUPER BADGE CODES

```
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":  
"Generator", "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  
private class WarehouseCalloutServiceTest {  
    / implement your mock callout testhere @isTest  
    static void testWarehouseCallout(){test.startTest();  
    test.setMock(HttpCalloutMock.class,new WarehouseCalloutServiceMock());  
    WarehouseCalloutService.execute(null);  
    test.stopTest();  
  
    List<Product2> product2List = new List<Product2>();product2List = [SELECTProductCode 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);
insert somethingToUpdate;
```

```
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(Equipmentr.Maintenance_Cycle)c 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 staticHttpResponse 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 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 ');}}
```