

APEX SPECIALIST SUPER BADGE CODES

APEX TRIGGERS

AccountAddressTrigger.apxt:

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

ClosedOpportunityTrigger.apxt:

```
trigger ClosedOpportunityTrigger on Opportunity (after insert, after update) {  
    List<Task> taskList = new List<Task>();  
    for(Opportunity opp : Trigger.new) {  
  
        //Only create Follow Up Task only once when Opp StageName is to 'Closed Won' on Create  
        if(Trigger.isInsert) {  
            if(Opp.StageName == 'Closed Won') {  
                taskList.add(new Task(Subject = 'Follow Up Test Task', WhatId = opp.Id));  
            }  
        }  
  
        //Only create Follow Up Task only once when Opp StageName changed to 'Closed Won' on Update  
        if(Trigger.isUpdate) {  
            if(Opp.StageName == 'Closed Won'  
                && Opp.StageName != Trigger.oldMap.get(opp.Id).StageName) {  
                taskList.add(new Task(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; }
```

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

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 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());
    }
}
```

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;
    }
}
```

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ASYNCHRONOUSAPEX

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 = 'Test
Account'); insert newAccount;
        Contact newContact1 = new Contact(FirstName = 'John',LastName = 'Doe',AccountId
=newAccount.id);

        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(acco
untIds); Test.stopTest();
    }
}
```

```
}  
}
```

LeadProcessor.apxc:

```
global class LeadProcessor implements  
    Database.Batchable<sObject>{ global Integercount = 0;  
  
    global Database.QueryLocator start(Database.BatchableContext bc) {  
        returnDatabase.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 {  
  
    @testSetup  
    static void setup() {  
        List<Lead> leads = new List<Lead>();
```

```
for(Integer counter=0 ;counter <200;counter++){  
    Lead lead = new Lead();  
    lead.FirstName ='FirstName';  
    lead.LastName ='LastName'+counter;  
    lead.Company  
='demo'+counter;  
    leads.add(lead);  
}  
insert leads;  
}
```

```
@isTest static void test() {  
    Test.startTest();  
    LeadProcessor leadProcessor = new LeadProcessor();  
    Id batchId = Database.executeBatch(leadProcessor);  
    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 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) { insert
primaryContacts;
}
}
```

AddPrimaryContactTest.apxc:

```
@isTest publicclass
AddPrimaryContactTest{

testmethod void
testQueueable() {
    List<Account> testAccounts = new
    List<Account>(); for(Integer i = 0; i < 50; i++) {
        testAccounts.add(new Account (Name = 'Account' + i,BillingState = 'CA'));
    }

    for(Integer j =0; j < 50; j++) {
        testAccounts.add(new Account(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:

```
public class DailyLeadProcessor implements Schedulable {  
    Public void execute(SchedulableContext SC){  
        List<Lead> LeadObj=[SELECT Id from Lead where LeadSource=null limit 200];  
        for(Lead l:LeadObj){  
            l.LeadSource='Dreamforce';  
            update l;  
        }  
    }  
}
```

DailyLeadProcessorTest.apxc:

```
@isTest  
private class DailyLeadProcessorTest {  
    static testMethod void testDailyLeadProcessor() {  
        String CRON_EXP = '0 0 1 * * ?';  
        List<Lead> lList = new List<Lead>();  
        for (Integer i = 0; i < 200; i++) {  
            lList.add(new Lead(LastName='Dreamforce'+i, Company='Test1 Inc.',  
Status='Open - Not Contacted'));  
        }  
        insert lList;  
    }  
}
```

```
Test.startTest();

String jobId = System.schedule('DailyLeadProcessor', CRON_EXP, new
DailyLeadProcessor());
}
}
```

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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) {

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(); / remove space
return parkSvc.byCountry(theCountry);
}
}
```

ParkLocatorTest.apxc:

```
@isTest
private class
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 National Park', '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');  
  
        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=Test
            Acc.id);

        return
            TestAcc.Id;
    }
```

}

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APEX SPECIALIST SUPER BADGE

Challenge e-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(Equipment__r.Maintenance_Cycle__c)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',
            Subject = 'Routine Maintenance',
            Type = 'Routine Maintenance',
            Vehicle__c = cc.Vehicle__c,
            Equipment__c =cc.Equipment__c,
            Origin = 'Web',
            Date_Reported__c = Date.Today()

        );
        If (maintenanceCycles.containsKey(cc.Id)){
            nc.Date_Due__c = Date.today().addDays((Integer) maintenanceCycles.get(cc.Id));
        } else {
            nc.Date_Due__c = Date.today().addDays((Integer) cc.Equipment__r.maintenance_Cycle__c);
        }
        newCases.add(nc);
    }
    insert newCases;

    List<Equipment_Maintenance_Item__c> clonedWPs = new
    List<Equipment_Maintenance_Item__c>();
```

```
        for (Case nc : 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);
    }
}
```

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());
        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){
    upsert warehouseEq;
    System.debug('Your equipment was synced with the warehouse one');
}
}
}

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

Challenge-3

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(){ String
scheduleTime = '00 00 01 * * ?';
Test.startTest();
Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());

String jobID=System.schedule('Warehouse Time To Schedule to 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 = 'Routine Maintenance';
private static final string REQUEST_SUBJECT = 'Testing subject';
```

```
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(){
```

```
    Vehicle__c vehicle = createVehicle();
```

```
    insert vehicle;
```

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

```
    Product2 equipment = createEq();
```

```
    insert equipment;
```

```
    id equipmentId = equipment.Id;
```

```
    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;

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

    Equipment_Maintenance_Item__c workP = createWorkPart(equipmentId, emptyReq.Id);
    insert workP;
```



```
test.startTest();  
emptyReq.Status = WORKING;  
update emptyReq;  
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 = new list<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;
    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(Equipment__r.Maintenance_Cycle__c)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',
        Subject = 'Routine Maintenance',
        Type = 'Routine Maintenance',
        Vehicle__c = cc.Vehicle__c,
        Equipment__c =cc.Equipment__c,
        Origin = 'Web',
        Date_Reported__c = 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 = new
List<Equipment_Maintenance_Item__c>();

for (Case nc : 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;
}
}
```

MaintenanceRequestHelper.apxc:

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

Challenge-5

WarehouseCalloutService.apxc:

```
public with sharing class WarehouseCalloutService {

    private static final String WAREHOUSE_URL = 'https://th-superbadge-
```

```
apex.herokuapp.com/equipment';
```

```
//@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());
```

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

```
        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 = (Decimal) mapJson.get('lifespan');
```

```
            myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
```

```
            myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
```

```
            warehouseEq.add(myEq);
```

```
        }
```

```
        if (warehouseEq.size() > 0){
```

```
            upsert warehouseEq;
```

```
            System.debug('Your equipment was synced with the warehouse one');
```

```
            System.debug(warehouseEq);
```

```
        }
```

```
    }
```

```
}  
}
```

WarehouseCalloutServiceMock.apxc:

```
@isTest  
  
private class WarehouseCalloutServiceTest {  
    @isTest  
    static void testWareHouseCallout(){  
        Test.startTest();  
        // implement mock callout test here  
        Test.setMock(HTTPCalloutMock.class, new WarehouseCalloutServiceMock());  
        WarehouseCalloutService.runWarehouseEquipmentSync();  
        Test.stopTest();  
        System.assertEquals(1, [SELECT count() FROM Product2]);  
    }  
}
```

WarehouseCalloutServiceTest.apxc:

```
@isTest  
global class WarehouseCalloutServiceMock implements HttpCalloutMock {  
    // implement http mock callout  
    global static HttpResponse respond(HttpRequest request){  
  
        System.assertEquals('https://th-superbadge-apex.herokuapp.com/equipment', request.getEndpoint());  
        System.assertEquals('GET', request.getMethod());  
  
        // Create a fake response  
        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"}]]);  
        response.setStatusCode(200);  
        return response;  
    }  
}
```

Challenge-6

WarehouseSyncSchedule.apxc:

```
global class WarehouseSyncSchedule implements Schedulable {  
    global void execute(SchedulableContext ctx) {  
  
        WarehouseCalloutService.runWarehouseEquipmentSync();  
    }  
}
```

WarehouseSyncScheduleTest.apxc:

```
@isTest  
public class WarehouseSyncScheduleTest {  
  
    @isTest static void WarehousescheduleTest(){  
        String scheduleTime = '00 00 01 * * ?';  
        Test.startTest();  
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());  
        String jobID=System.schedule('Warehouse Time To Schedule to 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 ');  
  
    }  
}
```


