

APEX TRIGGERS

•GET STARTED WITH APEX TRIGGERS:

1.AccountAddressTrigger.apxt

```
trigger AccountAddressTrigger on Account (before insert, before update) {  
    for(Account a: Trigger.New){  
        if(a.Match_Billing_Address__c == true && a.BillingPostalCode!= null){  
            a.ShippingPostalCode=a.BillingPostalCode;  
        }  
    }  
}
```

•BULK APEX TRIGGERS:

1.ClosedOpportunityTrigger.apxt

```
trigger ClosedOpportunityTrigger on Opportunity (after insert, after update) {  
    List taskList = new List();  
    for(Opportunity opp : [SELECT Id, StageName FROM Opportunity WHERE  
        StageName='Closed Won' AND Id IN : Trigger.New]){  
        taskList.add(new Task(Subject='Follow Up Test Task', WhatId = opp.Id));  
    }  
    if(taskList.size()>0){  
        insert tasklist;  
    }  
}
```

APEX TESTING

•GET STARTED WITH APEX UNIT TEST:

1.VerifyDate.apxc

```
public class VerifyDate {
    public static Date CheckDates(Date date1, Date date2) {
        //if date2 is within the next 30 days of date1, use date2. Otherwise use the end
of the month
        if(DateWithin30Days(date1,date2)) {
            return date2;
        } else {
            return SetEndOfMonthDate(date1);
        }
    }
    private static Boolean DateWithin30Days(Date date1, Date date2) {
        Date date30Days = date1.addDays(30); //create a date 30 days away from date1
        if( date2 > date30Days ) {
            return false;
        } else {
            return true;
        }
    }
    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;
    }
}
```

2.TestVerifyDate.apxc

```
@isTest
private class TestVerifyDate {
```

```

@isTest static void testCheckDates() {
    Date now = Date.today();
    Date lastOfTheMonth = Date.newInstance(now.year(), now.month(),
    Date.daysInMonth(now.year(), now.month()));
    Date plus60 = Date.today().addDays(60);
    Date d1 = VerifyDate.CheckDates(now, now);
    System.assertEquals(now, d1);
    Date d2 = VerifyDate.CheckDates(now, plus60);
    System.assertEquals(lastOfTheMonth, d2);
}
}

```

•TEST APEX TRIGGERS:

1.RestrictContactByName.apxt

```

trigger RestrictContactByName on Contact (before insert) {
    For (Contact c : Trigger.New) {
        if(c.LastName == 'INVALIDNAME') { //invalidname is invalid
            c.AddError("The Last Name '"+c.LastName+"' is not allowed for DML");
        }
    }
}
}

```

•CREATE TEST DATA FOR APEX TESTS:

1.RandomContactFactory.apxc

```

public class RandomContactFactory {
    public static List<Contact> generateRandomContacts(Integer num, String lastName) {
        List<Contact> contacts = new List<Contact>();
        for (Integer i = 0; i < num; i++) {
            Contact c = new Contact(FirstName=i.format(), LastName=lastName);

```

```

        contacts.add(c);
    }
    return contacts;
}
}

```

ASYNCHRONOUS APEX

•USE FUTURE METHODS:

1.AccountProcessor.apxc

```

public without sharing class AccountProcessor {
    //Add annotation to declare a future method
    @future(callout=false)
    public static void countContacts(List<Id> accountIds){
        //Query all accounts in the list of Ids passed
        Map<Id, Account> accountMap = new Map<Id, Account>([SELECT Id, (SELECT Id
FROM Contacts) FROM Account WHERE Id IN:accountIds]);
        List<Account> listName = new List<Account>();
        //Loop through list of accounts
        for(Account a: accountMap.values()){
            //Assign field to number of contact
            a.Number_of_Contacts__c=accountMap.get(a.Id).Contacts.size();
        }
        //Update Accounts
        update accountMap.values();
    }
}

```

2.AccountProcessorTest.apxc

```

@isTest
public class AccountProcessorTest {
    @isTest

```

```

public static void testNoOfContacts(){
    Account a = new Account();
    a.Name = 'Test Account';
    Insert a;
    Contact c = new Contact();
    c.FirstName = 'Bob';
    c.LastName = 'Willie';
    c.AccountId = a.Id;
    Contact c2 = new Contact();
    c2.FirstName = 'Tom';
    c2.LastName = 'Cruise';
    c2.AccountId = a.Id;
    List<Id> acctIds = new List<Id>();
    acctIds.add(a.Id);
    Test.startTest();
    AccountProcessor.countContacts(acctIds);
    Test.stopTest();
}
}

```

•USE BATCH APEX:

1.LeadProcessor.apxc

```

global class LeadProcessor implements
Database.Batchable<sObject>, Database.Stateful {
    // instance member to retain state across transactions
    global Integer recordsProcessed = 0;
    global Database.QueryLocator start(Database.BatchableContext bc) {
        return Database.getQueryLocator('SELECT Id, LeadSource FROM Lead');
    }
    global void execute(Database.BatchableContext bc, List<Lead> scope){
        // process each batch of records
        List<Lead> leads = new List<Lead>();
        for (Lead lead : scope) {
            lead.LeadSource = 'Dreamforce';
            // increment the instance member counter

```

```

        recordsProcessed = recordsProcessed + 1;
    }
    update leads;
}
global void finish(Database.BatchableContext bc){
    System.debug(recordsProcessed + ' records processed. Shazam!');
}
}

```

2.LeadProcessorTest.apxc

```

@isTest
public class LeadProcessorTest {
    @testSetup
    static void setup() {
        List<Lead> leads = new List<Lead>();
        // insert 200 leads
        for (Integer i=0;i<200;i++) {
            leads.add(new Lead(LastName='Lead '+i,
                Company='Lead', Status='Open - Not Contacted'));
        }
        insert leads;
    }
    static testmethod void test() {
        Test.startTest();
        LeadProcessor lp = new LeadProcessor();
        Id batchId = Database.executeBatch(lp, 200);
        Test.stopTest();
        // after the testing stops, assert records were updated properly
        System.assertEquals(200, [select count() from lead where LeadSource =
'Dreamforce']);
    }
}

```

•CONTROL PROCESSES WITH QUEUEABLE APEX:

1.AddPrimaryContact.apxc

```

public class AddPrimaryContact implements Queueable {
    private Contact contactObj;
    private String state_code;
    public AddPrimaryContact(Contact c, String s) {
        this.contactObj = c;
        this.state_code = s;
    }
    public void execute(QueueableContext context) {
        List<Account> accounts = [SELECT Id
                                FROM Account
                                WHERE BillingState = :this.state_code
                                LIMIT 200];
        List<Contact> contacts = new List<Contact>();
        for (Account a : accounts) {
            Contact c = this.contactObj.clone(false, false, false, false);
            c.AccountId = a.Id;
            contacts.add(c);
        }
        if (contacts.size() > 0) {
            insert contacts;
        }
    }
}

```

2.AddPrimaryContactTest.apxc

```

@isTest
public class AddPrimaryContactTest{
    @testSetup
    static void setup(){
        List<Account> lstOfAcc = new List<Account>();
        for(Integer i = 1; i <= 100; i++){
            if(i <= 50)
                lstOfAcc.add(new Account(name='AC'+i, BillingState = 'NY'));
            else
                lstOfAcc.add(new Account(name='AC'+i, BillingState = 'CA'));
        }
    }
}

```

```

    }
    INSERT IstOfAcc;
}
static testmethod void testAddPrimaryContact(){
    Contact con = new Contact(LastName = 'TestCont');
    AddPrimaryContact addPCIns = new AddPrimaryContact(CON,'CA');
    Test.startTest();
    System.enqueueJob(addPCIns);
    Test.stopTest();
    System.assertEquals(50, [select count() from Contact]);
}
}

```

•SCHEDULE JOBS USING APEX SCHEDULER:

1.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;
        }
    }
}

```

2.DailyLeadProcessorTest.apxc

```

@isTest
private class DailyLeadProcessorTest {
    static testMethod void testDailyLeadProcessor() {
        String CRON_EXP = '0 0 1 * * ?';
        List<Lead> IList = new List<Lead>();
        for (Integer i = 0; i < 200; i++) {
            IList.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());
}
}

```

APEX INTEGRATION SERVICES

•APEX REST CALLOUTS:

1. AnimalLocator.apxc

```

public class AnimalLocator {
    public static String getAnimalNameById(Integer animalId) {
        String animalName;
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-
httpcallout.herokuapp.com/animals/'+animalId);
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        // If the request is successful, parse the JSON response.
        if(response.getStatusCode() == 200) {
            Map<String, Object> r = (Map<String, Object>)
                JSON.deserializeUntyped(response.getBody());
            Map<String, Object> animal = (Map<String, Object>)r.get('animal');
            animalName = string.valueOf(animal.get('name'));
        }
        return animalName;
    }
}

```

2. AnimalLocatorMock.apxc

@isTest

```

global class AnimalLocatorMock implements HttpCalloutMock {
    global HTTPResponse respond(HTTPRequest request) {
        HTTPResponse response = new HTTPResponse();
        response.setHeader('Content-Type', 'application/json');
        response.setBody('{ "animal": { "id": 1, "name": "chicken", "eats": "chicken food", "says": "cluck cluck" } }');
        response.setStatusCode(200);
        return response;
    }
}

```

3. AnimalLocatorTest.apxc

```

@isTest
private class AnimalLocatorTest {
    @isTest static void getAnimalNameById() {
        // Set mock callout class
        Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock());
        // This causes a fake response to be sent
        // from the class that implements HttpCalloutMock.
        String response = AnimalLocator.getAnimalNameById(1);
        // Verify that the response received contains fake values
        System.assertEquals('chicken', response);
    }
}

```

•APEX SOAP CALLOUTS:

1. ParkLocator.apxc

```

public class ParkLocator {
    public static String [] country (String x) {
        String parks = x; // {'Yellowstone','Kanha','Mount Fuji'};
        ParkService.ParksImplPort findCountries = new ParkService.ParksImplPort ();
        return findCountries.byCountry (parks);
    }
}

```

2.ParkLocatorTest.apxc

```
@isTest
public class ParkLocatorTest {
    @isTest static void testCallout () {
        // This causes a fake response to be generated
        Test.setMock (WebServiceMock.class, new ParkServiceMock ());
        String x ='Yellowstone';
        List <String> result = ParkLocator.country(x);
        string resultstring = string.join (result,',');
        System.assertEquals ('USA', resultstring);
    }
}
```

3.ParkServiceMock

```
@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) {
        ParkService.byCountryResponse response_x =new ParkService.byCountryResponse
    };
        response_x.return_x = new List <String> {'USA'};
        response.put ('response_x', response_x);
    }
}
```

•APEX WEB SERVICES:

1.AccountManager.apxc

```
@RestResource(urlMapping='/Accounts/*/contacts')
global with sharing 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;
    }
}
```

2.AccountManagerTest.apxc

```
@IsTest
private class AccountManagerTest{
    @isTest static void testAccountManager(){
        Id recordId = getTestAccountId();
        // Set up a test request
        RestRequest request = new RestRequest();
        request.requestUri =
            'https://ap5.salesforce.com/services/apexrest/Accounts/'+ recordId +'/contacts';
        request.httpMethod = 'GET';
        RestContext.request = request;
        // Call the method to test
        Account acc = AccountManager.getAccount();
        // Verify results
        System.assert(acc != null);
    }
    private static Id getTestAccountId(){
        Account acc = new Account(Name = 'TestAcc2');
        Insert acc;
        Contact con = new Contact(LastName = 'TestCont2', AccountId = acc.Id);
        Insert con;
    }
}
```

```

        return acc.Id;
    }
}

```

APEX SPECIALIST SUPERBADGE

•AUTOMATE RECORD CREATION:

1.MaintenanceRequest.apxt

```

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

```

2.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;
}
}
}

```

•SYNCHRONIZATION SALESFORCE DATA WITH AN EXTERNAL SYSTEM:

1.WarehouseCalloutService.apxc

```

public with sharing class WarehouseCalloutService implements Queueable {
    private static final String WAREHOUSE_URL = 'https://th-
superbadgeapex.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();
}
}

```

•SCHEDULE SYNCHRONIZATION USING APEX CODE:

1.WarehouseSyncSchedule.apxc

```

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

```

•TEST AUTOMATION LOGIC:

1.MaintenanceRequestHelperTest.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;
}
}
}
}

```

2.MaintenanceRequestHelper.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 Vehicle__c createVehicle(){
        Vehicle__c Vehicle = new Vehicle__C(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, id equipmentId){
    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(){
    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);
}
}

```

3.MaintenanceRequest.apxt

```

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

```

•TEST CALLOUT LOGIC:

1.WarehouseCalloutService.apxc

```

public with sharing class WarehouseCalloutService implements Queueable {
    private static final String WAREHOUSE_URL = 'https://th-
superbadgeapex.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();
}
}

```

2.WarehouseCalloutServiceTest.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]);
}
}

```

3.WarehouseCalloutServiceMock.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":"Generator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"}']);
        response.setStatusCode(200);
        return response;
    }
}

```

•TEST SCHEDULING LOGIC:

1.WarehouseSyncSchedule.apxc

```

global class WarehouseSyncSchedule implements Schedulable {

```



```

global void execute(SchedulableContext ctx) {
    System.enqueueJob(new WarehouseCalloutService());
}
}

```

2.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 ');
    }
}

```