

# 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<Task> taskList = new List<Task>();  
    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 lstOfAcc;
    }
    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 IList;
        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.getStatusCode(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://thsUPERBADGEApex.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://thsuperbadgeapex.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 ');
}
}

```