

AccountAddressTrigger:

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

ClosedOpportunityTrigger:

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

VerifyDate:

```
public class VerifyDate {  
    //method to handle potential checks against two dates
```

```

        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);
            }
        }

//method to check if date2 is within the next 30 days of 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 (>=) 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;
}
}

```

TestVerifyDate :

```

@Test
private class TestVerifyDate {

    @isTest static void Test_CheckDates_case1(){
        Date D = VerifyDate.CheckDates(date.parse('01/01/2020'),
date.parse('01/05/2020'));
    }
}

```

```

        System.assertEquals(date.parse('01/05/2020'), D);
    }
    @isTest static void Test_CheckDates_case2(){
        Date D = VerifyDate.CheckDates(date.parse('01/01/2020'),
date.parse('05/05/2020'));
        System.assertEquals(date.parse('01/31/2020'), D);
    }
    @isTest static void Test_DateWithin30Days_case1(){
        Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('12/30/2019'));
        System.assertEquals(false, flag);
    }

    @isTest static void Test_DateWithin30Days_case2(){
        Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('02/02/2019'));
        System.assertEquals(false, flag);
    }

    @isTest static void Test_DateWithin30Days_case3(){
        Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('01/15/2019'));
        System.assertEquals(true, flag);
    }

    @isTest static void Test_SetEndOfMonthDate(){
        Date returndate = VerifyDate.SetEndOfMonthDate(date.parse('01/01/2020'));
    }
}

```

RestrictContactByName :

```

trigger RestrictContactByName on Contact (before insert, before update) {
//check contacts prior to insert or update for invalid data
    For (Contact c : Trigger.New) {
        if(c.LastName == 'INVALIDNAME') { //invalidname is invalid
            c.AddError('The Last Name "' + c.LastName + '" is not allowed for

```

```

DML');
    }

}

}

```

TestRestrictContactByName:

```

@isTest
public class TestRestrictContactByName {
    @isTest static void Test_insertupdateContact(){
        Contact cnt = new Contact();
        cnt.LastName = 'INVALIDNAME';

        Test.startTest();
        Database.SaveResult result = Database.insert(cnt, false);
        Test.stopTest();

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

}

```

RandomContactFactory:

```

public class RandomContactFactory {

    public static List<Contact> generateRandomContacts(Integer numcnt, string

```

```

lastname){
    List<Contact> contacts = new List<Contact>();
    for(Integer i=0;i<numcnt;i++){
        Contact cnt = new Contact(FirstName = 'Test '+i, LastName = lastname);
        contacts.add(cnt);
    }
    return contacts;
}
}

```

AccountProcessor:

```

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:

```

@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);
        insert newContact1;

        Contact newContact2 = new Contact(FirstName='Jane',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:

```

global class LeadProcessor implements Database.Batchable<sObject> {
    global Integer 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:

```

@isTest
public class LeadProcessorTest {

    @isTest
    public static void testit(){
        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:

```
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;
        }
    }

}
```

AddPrimaryContactTest:

@isTest

```
public class AddPrimaryContactTest {
```

```
    static 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(addit);
```

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

```
        System.assertEquals(50,[Select count() from Contact where accountId in (Select Id  
from Account where BillingState='CA')]);
```

```
    }
```

```
}
```

DailyLeadProcessor:

```
global class DailyLeadProcessor implements Schedulable{
```

```
    global void execute(SchedulableContext sc){
```

```
        List<Lead> lstofLead = [SELECT Id FROM Lead WHERE Leadsources = null LIMIT  
200];
```

```
        List<Lead> lstofupdatedLead=new List<Lead>();
```

```

    if(!IstofLead.isEmpty()){
        for (Lead Id:IstofLead){
            Id.Leadsource='Dreamforce';
            IstofupdatedLead.add(Id);
        }
        UPDATE IstofupdatedLead;
    }
}
}
}

```

DailyLeadProcessorTest:

```

@isTest
private class DailyLeadProcessorTest{
    @testSetup
    static void setup(){
        List<Lead> IstofLead = new List<Lead>();
        for(Integer i = 1; i <= 200; i++){
            Lead Id = new Lead(Company = 'Comp' + i, LastName = 'LN' + i,
status='working - Contacted');
            IstofLead.add(Id);
        }
        Insert IstofLead;
    }

    static testmethod void testDailyLeadProcessorscheduledJob(){
        String sch = '0 5 12 * * ?';
        Test.startTest();
        String jobId = System.Schedule('ScheduledApexText', sch, new
DailyLeadProcessor());

        List<Lead> IstofLead=[SELECT Id FROM Lead WHERE Leadsource = null LIMIT
200];

        system.assertEquals(200, Istoflead.size());
        Test.stopTest();
    }
}

```

AnimalLocator:

```
public class AnimalLocator{
    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');
    }
}
```

AnimalLocatorTest:

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

AnimalLocatorMock:

```
@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:

```

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

```

ParkLocatorTest:

```

@Test
private class ParkLocatorTest {
    @Test 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', 'Mackinac National Park',
'Yosemite'};
        System.assertEquals(parks, result);
    }
}

```

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) {
        // 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:

```

@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:

```
@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;
    }
}
```

MaintenanceRequest:

```

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

```

MaintenanceRequestHelper:

```

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);
                }
            }
        }
    }
}

```

//When an existing maintenance request of type Repair or Routine Maintenance is closed,

//create a new maintenance request for a future routine checkup.

```

if (!validIds.isEmpty()){
    Map<Id,Case> closedCases = 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>();

```

//calculate the maintenance request due dates by using the maintenance cycle defined on the related equipment records.

```

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'));
        }

```

```

List<Case> newCases = new List<Case>();
for(Case cc : closedCases.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 multiple pieces of equipment are used in the maintenance request,
        //define the due date by applying the shortest maintenance cycle to today's
date.

```

```

        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> clonedList = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
            for (Equipment_Maintenance_Item__c clonedListItem :
closedCases.get(nc.ParentId).Equipment_Maintenance_Items__r){
                Equipment_Maintenance_Item__c item = clonedListItem.clone();
                item.Maintenance_Request__c = nc.Id;
                clonedList.add(item);
            }
        }
        insert clonedList;
    }
}
}

```

WarehouseCalloutService:

```

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

```

//Write a 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(){
    System.debug('go into runWarehouseEquipmentSync');
    Http http = new Http();
    HttpRequest request = new HttpRequest();

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

```

```

List<Product2> product2List = new List<Product2>();
System.debug(response.getStatusCode());
if (response.getStatusCode() == 200){
    List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
    System.debug(response.getBody());

    //class maps the following fields:
    //warehouse SKU will be external ID for identifying which equipment records to
update within Salesforce
    for (Object jR : jsonResponse){
        Map<String,Object> mapJson = (Map<String,Object>)jR;
        Product2 product2 = new Product2();
        //replacement part (always true),
        product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
        //cost
        product2.Cost__c = (Integer) mapJson.get('cost');
        //current inventory
        product2.Current_Inventory__c = (Double) mapJson.get('quantity');
        //lifespan
        product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
        //maintenance cycle
        product2.Maintenance_Cycle__c = (Integer)
mapJson.get('maintenanceperiod');
        //warehouse SKU
        product2.Warehouse_SKU__c = (String) mapJson.get('sku');

        product2.Name = (String) mapJson.get('name');
        product2.ProductCode = (String) mapJson.get('_id');
        product2List.add(product2);
    }

    if (product2List.size() > 0){
        upsert product2List;
        System.debug('Your equipment was synced with the warehouse one');
    }
}

```

```

    }

    public static void execute (QueueableContext context){
        System.debug('start runWarehouseEquipmentSync');
        runWarehouseEquipmentSync();
        System.debug('end runWarehouseEquipmentSync');
    }

}

```

WarehouseSyncSchedule:

```

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

```

MaintenanceRequest:

```

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

```

MaintenanceRequestHelper:

```

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);
                }
            }
        }
    }
}

```

```
}  
}
```

//When an existing maintenance request of type Repair or Routine Maintenance is closed,

//create a new maintenance request for a future routine checkup.

if (!validIds.isEmpty()){

```
    Map<Id,Case> closedCases = 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>();
```

//calculate the maintenance request due dates by using the maintenance cycle defined on the related equipment records.

```
    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'));  
    }
```

```
List<Case> newCases = new List<Case>();
```

```
for(Case cc : closedCases.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 multiple pieces of equipment are used in the maintenance request,
    //define the due date by applying the shortest maintenance cycle to today's
date.
    //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> clonedList = new
List<Equipment_Maintenance_Item__c>();
for (Case nc : newCases){
    for (Equipment_Maintenance_Item__c clonedListItem :
closedCases.get(nc.ParentId).Equipment_Maintenance_Items__r){
        Equipment_Maintenance_Item__c item = clonedListItem.clone();
        item.Maintenance_Request__c = nc.Id;
        clonedList.add(item);
    }
}
insert clonedList;
}
}
}

```

MaintenanceRequestHelperTest:

@isTest

public with sharing class MaintenanceRequestHelperTest {

 // createVehicle

 private static Vehicle__c createVehicle(){

 Vehicle__c vehicle = new Vehicle__C(name = 'Testing Vehicle');

 return vehicle;

 }

 // createEquipment

 private static Product2 createEquipment(){

 product2 equipment = new product2(name = 'Testing equipment',

 lifespan_months__c = 10,

 maintenance_cycle__c = 10,

 replacement_part__c = true);

 return equipment;

 }

 // createMaintenanceRequest

 private static Case createMaintenanceRequest(id vehicleId, id equipmentId){

 case cse = new case(Type='Repair',

 Status='New',

 Origin='Web',

 Subject='Testing subject',

 Equipment__c=equipmentId,

 Vehicle__c=vehicleId);

 return cse;

 }

 // createEquipmentMaintenanceItem

 private static Equipment_Maintenance_Item__c createEquipmentMaintenanceItem(id equipmentId, id requestId){

 Equipment_Maintenance_Item__c equipmentMaintenanceItem = new

Equipment_Maintenance_Item__c(

 Equipment__c = equipmentId,


```

        where Maintenance_Request__c =:newCase.Id];
list<case> allCase = [select id from case];
system.assert(allCase.size() == 2);

system.assert(newCase != null);
system.assert(newCase.Subject != null);
system.assertEquals(newCase.Type, 'Routine Maintenance');
SYSTEM.assertEquals(newCase.Equipment__c, equipmentId);
SYSTEM.assertEquals(newCase.Vehicle__c, vehicleId);
SYSTEM.assertEquals(newCase.Date_Reported__c, system.today());
}

```

@isTest

```

private static void testNegative(){
    Vehicle__C vehicle = createVehicle();
    insert vehicle;
    id vehicleId = vehicle.Id;

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

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

    Equipment_Maintenance_Item__c workP =
createEquipmentMaintenanceItem(equipmentId, createdCase.Id);
    insert workP;

    test.startTest();
    createdCase.Status = 'Working';
    update createdCase;
    test.stopTest();

    list<case> allCase = [select id from case];

    Equipment_Maintenance_Item__c equipmentMaintenanceItem = [select id
        from Equipment_Maintenance_Item__c

```



```
where Maintenance_Request__c = :createdCase.Id];
```

```
system.assert(equipmentMaintenanceltem != null);  
system.assert(allCase.size() == 1);  
}
```

```
@isTest
```

```
private static void testBulk(){
```

```
    list<Vehicle__C> vehicleList = new list<Vehicle__C>();
```

```
    list<Product2> equipmentList = new list<Product2>();
```

```
    list<Equipment_Maintenance_Item__c> equipmentMaintenanceltemList = new  
list<Equipment_Maintenance_Item__c>();
```

```
    list<case> caseList = new list<case>();
```

```
    list<id> oldCaseIds = new list<id>();
```

```
    for(integer i = 0; i < 300; i++){
```

```
        vehicleList.add(createVehicle());
```

```
        equipmentList.add(createEquipment());
```

```
    }
```

```
    insert vehicleList;
```

```
    insert equipmentList;
```

```
    for(integer i = 0; i < 300; i++){
```

```
        caseList.add(createMaintenanceRequest(vehicleList.get(i).id,  
equipmentList.get(i).id));
```

```
    }
```

```
    insert caseList;
```

```
    for(integer i = 0; i < 300; i++){
```

```
equipmentMaintenanceltemList.add(createEquipmentMaintenanceltem(equipmentList.  
get(i).id, caseList.get(i).id));
```

```
    }
```

```
    insert equipmentMaintenanceltemList;
```

```
test.startTest();
```

```
for(case cs : caseList){
```

```
    cs.Status = 'Closed';
```

```

        oldCaseIds.add(cs.Id);
    }
    update caseList;
    test.stopTest();

    list<case> newCase = [select id
                        from case
                        where status ='New'];

    list<Equipment_Maintenance_Item__c> workParts = [select id
                                                    from Equipment_Maintenance_Item__c
                                                    where Maintenance_Request__c in: oldCaseIds];

    system.assert(newCase.size() == 300);

    list<case> allCase = [select id from case];
    system.assert(allCase.size() == 600);
}
}

```

WarehouseCalloutService:

```

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

```

//Write a 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(){
    System.debug('go into runWarehouseEquipmentSync');
    Http http = new Http();

```

```

HttpRequest request = new HttpRequest();

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

List<Product2> product2List = new List<Product2>();
System.debug(response.getStatusCode());
if (response.getStatusCode() == 200){
    List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
    System.debug(response.getBody());

    //class maps the following fields:
    //warehouse SKU will be external ID for identifying which equipment records to
update within Salesforce
    for (Object jR : jsonResponse){
        Map<String,Object> mapJson = (Map<String,Object>)jR;
        Product2 product2 = new Product2();
        //replacement part (always true),
        product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
        //cost
        product2.Cost__c = (Integer) mapJson.get('cost');
        //current inventory
        product2.Current_Inventory__c = (Double) mapJson.get('quantity');
        //lifespan
        product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
        //maintenance cycle
        product2.Maintenance_Cycle__c = (Integer)
mapJson.get('maintenanceperiod');
        //warehouse SKU
        product2.Warehouse_SKU__c = (String) mapJson.get('sku');

        product2.Name = (String) mapJson.get('name');
        product2.ProductCode = (String) mapJson.get('_id');
        product2List.add(product2);
    }
}

```

```

        if (product2List.size() > 0){
            upsert product2List;
            System.debug('Your equipment was synced with the warehouse one');
        }
    }
}

public static void execute (QueueableContext context){
    System.debug('start runWarehouseEquipmentSync');
    runWarehouseEquipmentSync();
    System.debug('end runWarehouseEquipmentSync');
}

}

```

WarehouseCalloutServiceMock:

```

@Test
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:

```
@IsTest
private class WarehouseCalloutServiceTest {
    // implement your mock callout test here
    @IsTest
    static void testWarehouseCallout() {
        test.startTest();
        test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        WarehouseCalloutService.execute(null);
        test.stopTest();

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

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

WarehouseCalloutServiceMock:

```
@IsTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
    // implement http mock callout
```

```

global static HttpResponse respond(HttpRequest request) {

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

    response.setBody(['{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5
,name":"Generator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226
726b611100aaf742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b6
11100aaf743","replacement":true,"quantity":143,"name":"Fuse
20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]);
    response.setStatusCode(200);

    return response;
}
}

```

WarehouseSyncSchedule:

```

global with sharing class WarehouseSyncSchedule implements Schedulable {
    // implement scheduled code here
    global void execute (SchedulableContext ctx){
        System.enqueueJob(new WarehouseCalloutService());
    }
}

```

WarehouseSyncScheduleTest:

```

@isTest
public with sharing class WarehouseSyncScheduleTest {
    // implement scheduled code here
    //
    @isTest static void test() {
        String scheduleTime = '00 00 00 * * ? *';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
    }
}

```

```
String jobId = System.schedule('Warehouse Time to Schedule to test',
scheduleTime, new WarehouseSyncSchedule());
CronTrigger c = [SELECT State FROM CronTrigger WHERE Id =: jobId];
System.assertEquals('WAITING', String.valueOf(c.State), 'JobId does not match');

Test.stopTest();
}
}
```
