

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:

```
@isTest
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('02/02/2020'));
        System.assertEquals(false, flag);
    }
    @isTest static void Test_DateWithin30Days_case3(){
        Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('01/15/2020'));
        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:

```
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');  
        }  
    }  
}
```

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:

```
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;
    }
}
```

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:

```
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;
        }
    }
}
```

DailyLeadProcessor:

```
global class DailyLeadProcessor implements Schedulable{
    global void execute(SchedulableContext sc){
        List<Lead> lstofLead = [SELECT Id FROM Lead WHERE Leadsource = null LIMIT
200];
        List<Lead> lstofupdatedLead=new List<Lead>();
        if(!lstofLead.isEmpty()){
            for (Lead Id:lstofLead){
                Id.Leadsource='Dreamforce';
            }
        }
    }
}
```

```

        lstofupdatedLead.add(lId);
    }
    UPDATE lstofupdatedLead;
}
}
}

```

DailyLeadProcessorTest:

```

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

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

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

        system.assertEquals(200, lstoflead.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:

```
@isTest
private class ParkLocatorTest {
    @isTest static void testCallout() {
```

```

    Test.setMock(WebServiceMock.class, new ParkServiceMock ());
    String country = 'United States';
    List<String> result = ParkLocator.country(country);
    List<String> parks = new List<String>{'Yellowstone', 'Mackinac National Park',
'Yosemite'};
    System.assertEquals(parks, result);
  }
}

```

ParkServiceMock :

```

@Test
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 with sharing class AccountManager {

    @HttpGet
    global static Account getAccount(){
        RestRequest request = RestContext.request;
        string accountId = request.requestURI.substringBetween('Accounts/','/contacts');
        Account result = [SELECT Id, Name, (Select Id, Name from Contacts) from Account
where Id=:accountId Limit 1];
        return result;
    }
}
```

AccountManagerTest:

```
@IsTest
private class AccountManagerTest {
    @isTest static void testGetContactsByAccountId(){
        Id recordId = createTestRecord();
        RestRequest request = new RestRequest();
        request.requestUri =
'https://yourInstance.my.salesforce.com/services/apexrest/Accounts/'

        + recordId+'/contacts';
        request.httpMethod = 'GET';
        RestContext.request = request;
        Account thisAccount = AccountManager.getAccount();
        System.assert(thisAccount != null);
        System.assertEquals('Test record', thisAccount.Name);
    }

    static Id createTestRecord(){
        Account accountTest = new Account(
```

```

        Name ='Test record');
insert accountTest;

Contact contactTest = new Contact(
    FirstName='John',
    LastName = 'Doe',
    AccountId = accountTest.Id

);
insert contactTest;

return accountTest.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,
    Maintenance_Request__c = requestId);
    return equipmentMaintenanceItem;
}

```

@isTest

```

private static void testPositive(){
    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 equipmentMaintenanceItem =
createEquipmentMaintenanceItem(equipmentId,createdCase.id);
    insert equipmentMaintenanceItem;

```

```

test.startTest();
createdCase.status = 'Closed';
update createdCase;
test.stopTest();

```

```

Case newCase = [Select id,
                subject,
                type,
                Equipment__c,
                Date_Reported__c,

```

```
Vehicle__c,  
Date_Due__c  
from case  
where status ='New'];
```

```
Equipment_Maintenance_Item__c workPart = [select id  
                                             from Equipment_Maintenance_Item__c  
                                             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 equipmentMaintenanceltem = [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 equipmentMaintenanceItemList;

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');
    }
}
```

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":"55d66226726b611
100aaf742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100a
af743","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{
    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();
    }
}

```
