

Apex Triggers

AccountAddressTrigger.apxt

```
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.apxt

```
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;
    }
}
```

Apex Testing

VerifyDate.apxc

```
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.apxc

@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 DateWithin30Days_case1(){

 Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('12/30/2019'));

 System.assertEquals(false, flag);

 }

 @isTest static void DateWithin30Days_case2(){

 Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2020'),
date.parse('02/02/2020'));

 System.assertEquals(false, flag);

 }

 @isTest static void 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.apxt

```

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.apxc

```

@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.apxc

```

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;
    }
}

```

Asynchronous Apex

AccountProcessor.apxc

```

public class AccountProcessor{

    @future
    public static void countContacts(List<Id> accountIds){

```

```

        List<Account> accountsToUpdate = new List<Account>();

        List<Account> accounts =[Select Id, Name, (Select Id
from Contacts) from Account Where Id in :accountIds];

        For(Account acc:accounts){
            List<Contact> contactList = acc.Contacts;
            acc.Number_Of_Contacts__c = contactList.size();
            accountsToUpdate.add(acc);
        }
        update accountsToUpdate;
    }
}

```

AccountProcessorTest.apxc

```

@IsTest
private 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.apxc

```

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.apxc

```

@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.apxc

```

public class AddPrimaryContact implements Queueable{
    private Contact con;
    private String state;

    public AddPrimaryContact(Contact con, String state){
        this.con = con;
        this.state = state;
    }

    public void execute(QueueableContext context){

```



```

        List<Account> accounts = [Select Id, Name, (Select
FirstName, LastName, Id from contacts)
                                from 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.apxc

```

@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.apxc

```

global class DailyLeadProcessor implements Schedulable {

    global void execute(SchedulableContext ctx) {

        //Retrieving the 200 first leads where lead source is in
blank.
        List<Lead> leads = [SELECT ID, LeadSource FROM Lead
where LeadSource = '' LIMIT 200];

        //Setting the LeadSource field the 'Dreamforce' value.
        for (Lead lead : leads) {
            lead.LeadSource = 'Dreamforce';
        }
    }
}

```

```

        //Updating all elements in the list.
        update leads;
    }

}

```

DailyLeadProcessorTest.apxc

```

@isTest
private class DailyLeadProcessorTest {

    @isTest
    public static void testDailyLeadProcessor(){

        //Creating new 200 Leads and inserting them.
        List<Lead> leads = new List<Lead>();
        for (Integer x = 0; x < 200; x++) {
            leads.add(new Lead(lastname='lead number ' + x,
company='company number ' + x));
        }
        insert leads;

        //Starting test. Putting in the schedule and running the
DailyLeadProcessor execute method.
        Test.startTest();
        String jobId = System.schedule('DailyLeadProcessor', '0
0 12 * * ?', new DailyLeadProcessor());
        Test.stopTest();

        //Once the job has finished, retrieve all modified leads.
        List<Lead> listResult = [SELECT ID, LeadSource FROM Lead
where LeadSource = 'Dreamforce' LIMIT 200];
    }
}

```

```

        //Checking if the modified leads are the same size number
        that we created in the start of this method.
        System.assertEquals(200, listResult.size());

    }
}

```

Apex Integration Services

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-http-
callout.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;
    }
}

```

AnimalLocatorTest.apxc

```
@isTest
private class AnimalLocatorTest {
@isTest static void getAnimalNameByIdTest() {
    // 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);
}
}
```

ParkService.apxc

```
public class ParkService {
    public class byCountryResponse {
        public String[] return_x;
        private String[] return_x_type_info = new
String[]{'return','http://parks.services/',null,'0','-
1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://parks.services/','false','false'};
        private String[] field_order_type_info = new
String[]{'return_x'};
    }
    public class byCountry {
```

```

        public String arg0;
        private String[] arg0_type_info = new
String[]{'arg0', 'http://parks.services/', null, '0', '1', 'false'};
        private String[] apex_schema_type_info = new
String[]{'http://parks.services/', 'false', 'false'};
        private String[] field_order_type_info = new
String[]{'arg0'};
    }
    public class ParksImplPort {
        public String endpoint_x = 'https://th-apex-soap-
service.herokuapp.com/service/parks';
        public Map<String, String> inputHttpHeaders_x;
        public Map<String, String> outputHttpHeaders_x;
        public String clientCertName_x;
        public String clientCert_x;
        public String clientCertPasswd_x;
        public Integer timeout_x;
        private String[] ns_map_type_info = new
String[]{'http://parks.services/', 'ParkService'};
        public String[] byCountry(String arg0) {
            ParkService.byCountry request_x = new
ParkService.byCountry();
            request_x.arg0 = arg0;
            ParkService.byCountryResponse response_x;
            Map<String, ParkService.byCountryResponse>
response_map_x = new Map<String,
ParkService.byCountryResponse>();
            response_map_x.put('response_x', response_x);
            WebServiceCallout.invoke(
                this,
                request_x,
                response_map_x,
                new String[]{endpoint_x,
'',
'http://parks.services/'},

```

```

        'byCountry',
        'http://parks.services/',
        'byCountryResponse',
        'ParkService.byCountryResponse'}
    );
    response_x = response_map_x.get('response_x');
    return response_x.return_x;
}
}
}

```

ParkLocator.apxc

```

public class ParkLocator {
    public static String[] country(String country){
        ParkService.ParksImplPort parks = new
ParkService.ParksImplPort();
        String[] parksname = parks.byCountry(country);
        return parksname;
    }
}

```

ParkLocatorTest.apxc

```

@Test
private class ParkLocatorTest{
    @Test
    static void testParkLocator() {
        Test.setMock(WebServiceMock.class, new
ParkServiceMock());
        String[] arrayOfParks = ParkLocator.country('India');

        System.assertEquals('Park1', arrayOfParks[0]);
    }
}

```

```
}
```

ParkServiceMock.apxc

```
@isTest
global class ParkServiceMock implements WebServiceMock {
    global void doInvoke(
        Object stub,
        Object request,
        Map<String, Object> response,
        String endpoint,
        String soapAction,
        String requestName,
        String responseNS,
        String responseName,
        String responseType) {
        ParkService.byCountryResponse response_x = new
ParkService.byCountryResponse();
        List<String> lstOfDummyParks = new List<String>
{'Park1', 'Park2', 'Park3'};
        response_x.return_x = lstOfDummyParks;

        response.put('response_x', response_x);
    }
}
```

AccountManager.apxc

```
@RestResource(urlMapping='/Accounts/*/contacts')
global class AccountManager {
    @HttpGet
    global static Account getAccount() {
        RestRequest req = RestContext.request;
        String accId =
```



```

req.requestURI.substringBetween('Accounts/', '/contacts');
    Account acc = [SELECT Id, Name, (SELECT Id, Name FROM
Contacts)
                    FROM Account WHERE Id = :accId];
    return acc;
}
}

```

AccountManagerTest.apxc

```

@isTest
private class AccountManagerTest {

    private static testMethod void getAccountTest1() {
        Id recordId = createTestRecord();
        // Set up a test request
        RestRequest request = new RestRequest();
        request.requestUri =
'https://na1.salesforce.com/services/apexrest/Accounts/' +
recordId + '/contacts' ;
        request.httpMethod = 'GET';
        RestContext.request = request;
        // Call the method to test
        Account thisAccount = AccountManager.getAccount();
        // Verify results
        System.assert(thisAccount != null);
        System.assertEquals('Test record', thisAccount.Name);

    }

    // Helper method
    static Id createTestRecord() {
        // Create test record
        Account TestAcc = new Account(

```

```

        Name='Test record');
    insert TestAcc;
    Contact TestCon= new Contact (
    LastName='Test ',
    AccountId = TestAcc.id);
    return TestAcc.Id;
}
}

```

Apex Specialist

CreateDefaultDataTest.apxc

```

@isTest
private class CreateDefaultDataTest {
    @isTest
    static void createData_test(){
        Test.startTest();
        CreateDefaultData.createDefaultData();
        List<Vehicle__c> vehicles = [SELECT Id FROM Vehicle__c];
        List<Product2> equipment = [SELECT Id FROM Product2];
        List<Case> maintenanceRequest = [SELECT Id FROM Case];
        List<Equipment_Maintenance_Item__c> joinRecords = [SELECT Id FROM
Equipment_Maintenance_Item__c];

        System.assertEquals(4, vehicles.size(), 'There should have been 4 vehicles
created');
        System.assertEquals(4, equipment.size(), 'There should have been 4 equipment
created');
        System.assertEquals(2, maintenanceRequest.size(), 'There should have been 2
maintenance request created');
        System.assertEquals(6, joinRecords.size(), 'There should have been 6 equipment
maintenance items created');
    }
}

```

```

@isTest
static void updateCustomSetting_test(){
    How_We_Roll_Settings__c    customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
    customSetting.Is_Data_Created__c = false;
    upsert customSetting;

    System.assertEquals(false, CreateDefaultData.isDataCreated(), 'The custom setting
How_We_Roll_Settings__c.Is_Data_Created__c should be false');

    customSetting.Is_Data_Created__c = true;
    upsert customSetting;

    System.assertEquals(true, CreateDefaultData.isDataCreated(), 'The custom setting
How_We_Roll_Settings__c.Is_Data_Created__c should be true');

}
}

```

CreateDefaultData.apxc

```

public with sharing class CreateDefaultData{
    Static Final String TYPE_ROUTINE_MAINTENANCE = 'Routine Maintenance';
    //gets value from custom metadata How_We_Roll_Settings__mdt to know if Default
data was created
    @AuraEnabled
    public static Boolean isDataCreated() {
        How_We_Roll_Settings__c    customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
        return customSetting.Is_Data_Created__c;
    }

    //creates Default Data for How We Roll application
    @AuraEnabled
    public static void createDefaultData(){
        List<Vehicle__c> vehicles = createVehicles();
        List<Product2> equipment = createEquipment();
    }
}

```

```

        List<Case> maintenanceRequest = createMaintenanceRequest(vehicles);
        List<Equipment_Maintenance_Item__c> joinRecords =
createJoinRecords(equipment, maintenanceRequest);

        updateCustomSetting(true);
    }

```

```

    public static void updateCustomSetting(Boolean isDataCreated){
        How_We_Roll_Settings__c    customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
        customSetting.Is_Data_Created__c = isDataCreated;
        upsert customSetting;
    }

```

```

    public static List<Vehicle__c> createVehicles(){
        List<Vehicle__c> vehicles = new List<Vehicle__c>();
        vehicles.add(new Vehicle__c(Name = 'Toy Hauler RV', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Toy Hauler RV'));
        vehicles.add(new Vehicle__c(Name = 'Travel Trailer RV', Air_Conditioner__c = true,
Bathrooms__c = 2, Bedrooms__c = 2, Model__c = 'Travel Trailer RV'));
        vehicles.add(new Vehicle__c(Name = 'Teardrop Camper', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Teardrop Camper'));
        vehicles.add(new Vehicle__c(Name = 'Pop-Up Camper', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Pop-Up Camper'));
        insert vehicles;
        return vehicles;
    }

```

```

    public static List<Product2> createEquipment(){
        List<Product2> equipments = new List<Product2>();
        equipments.add(new Product2(Warehouse_SKU__c =
'55d66226726b611100aaf741',name = 'Generator 1000 kW', Replacement_Part__c =
true, Cost__c = 100 ,Maintenance_Cycle__c = 100));
        equipments.add(new Product2(name = 'Fuse 20B',Replacement_Part__c =
true, Cost__c = 1000, Maintenance_Cycle__c = 30 ));
        equipments.add(new Product2(name = 'Breaker 13C',Replacement_Part__c =
true, Cost__c = 100 , Maintenance_Cycle__c = 15));
        equipments.add(new Product2(name = 'UPS 20 VA',Replacement_Part__c =

```

```

true, Cost__c = 200 , Maintenance_Cycle__c = 60));
    insert equipments;
    return equipments;

}

```

```

public static List<Case> createMaintenanceRequest(List<Vehicle__c> vehicles){
    List<Case> maintenanceRequests = new List<Case>();
    maintenanceRequests.add(new Case(Vehicle__c = vehicles.get(1).Id, Type =
TYPE_ROUTINE_MAINTENANCE, Date_Reported__c = Date.today()));
    maintenanceRequests.add(new Case(Vehicle__c = vehicles.get(2).Id, Type =
TYPE_ROUTINE_MAINTENANCE, Date_Reported__c = Date.today()));
    insert maintenanceRequests;
    return maintenanceRequests;
}

```

```

public static List<Equipment_Maintenance_Item__c>
createJoinRecords(List<Product2> equipment, List<Case> maintenanceRequest){
    List<Equipment_Maintenance_Item__c> joinRecords = new
List<Equipment_Maintenance_Item__c>();
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(0).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(1).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(2).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(0).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(1).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
    joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(2).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
    insert joinRecords;
    return joinRecords;

}
}

```

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 ');

    }
}
```

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]);
    }
}
```

```

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;
}
}
}

```

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;
}
}

```

WarehouseCalloutService.apxc

```

public with sharing class WarehouseCalloutService {

    private static final String WAREHOUSE_URL = 'https://th-superbadge-
apex.herokuapp.com/equipment';

    // @future(callout=true)
    public static void runWarehouseEquipmentSync(){

        Http http = new Http();
        HttpRequest request = new HttpRequest();

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

        List<Product2> warehouseEq = new List<Product2>();

        if (response.getStatusCode() == 200){

```

```

        List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
        System.debug(response.getBody());

        for (Object eq : jsonResponse){
            Map<String,Object> mapJson = (Map<String,Object>)eq;
            Product2 myEq = new Product2();
            myEq.Replacement_Part__c = (Boolean) mapJson.get('replacement');
            myEq.Name = (String) mapJson.get('name');
            myEq.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
            myEq.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
            myEq.Cost__c = (Decimal) mapJson.get('lifespan');
            myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
            myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
            warehouseEq.add(myEq);
        }

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

    }
}
}

```

WarehouseSyncSchedule.apxc

```

global class WarehouseSyncSchedule implements Schedulable {
    global void execute(SchedulableContext ctx) {

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}

```

MaintenanceRequest .apxt

```

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

```

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;

```

```
}  
}  
}
```

MaintenanceRequestHelperTest.apxc

@istest

```
public with sharing class MaintenanceRequestHelperTest {
```

```
    private static final string STATUS_NEW = 'New';  
    private static final string WORKING = 'Working';  
    private static final string CLOSED = 'Closed';  
    private static final string REPAIR = 'Repair';  
    private static final string REQUEST_ORIGIN = 'Web';  
    private static final string REQUEST_TYPE = 'Routine Maintenance';  
    private static final string REQUEST_SUBJECT = 'Testing subject';
```

```
    PRIVATE STATIC 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);
}
}
```