

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.apxc:

```
trigger ClosedOpportunityTrigger on Opportunity (before 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
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
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:

```

@Test
private class TestVerifyDate {

    @isTest static void Test_CheckDates_casel(){
        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'));
}

}

```

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());
    }
}

```

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');
        }
    }

}
```

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:

```

@Test
private class AccountProcessorTest {
    @Test
    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();
    }
}

```

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){
    List<Lead> leads = [SELECT Id, LeadSource FROM Lead WHERE LeadSource = "];
    if(leads.size() > 0){
        List<Lead> newLeads = new List<Lead>();
        for(Lead lead : leads){
            lead.LeadSource = 'DreamForce';
            newLeads.add(lead);
        }
        update newLeads;
    }
}
}

```

DailyLeadProcessorTest.apxc:

```

@isTest
private class DailyLeadProcessorTest{
    //Seconds Minutes Hours Day_of_month Month Day_of_week optional_year
    public static String CRON_EXP = '0 0 0 2 6 ? 2022';
    static testmethod void testScheduledJob(){
        List<Lead> leads = new List<Lead>();
        for(Integer i = 0; i < 200; i++){
            Lead lead = new Lead(LastName = 'Test ' + i, LeadSource = ", Company = 'Test
Company ' + i, Status = 'Open - Not Contacted');
            leads.add(lead);
        }
        insert leads;
        Test.startTest();
        // Schedule the test job
        String jobId = System.schedule('Update LeadSource to DreamForce', CRON_EXP,
new DailyLeadProcessor());
        // Stopping the test will run the job synchronously
        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
private class LeadProcessorTest
{
    private static testMethod void LeadProcess()
    {
        List<Lead> lstLead = new List<Lead>();
        for(Integer i=0 ;i <200;i++)
        {
            lstLead.add(new Lead(LastName ='LastName'+i, Company ='demo'+i, City='New
York', Country='US', LeadSource='Phone inquiry'));
        }
        insert lstLead;
        Test.startTest();

        LeadProcessor obj = new LeadProcessor();
        DataBase.executeBatch(obj);
        Test.stopTest();
    }
}

```

APEX INTEGRATION SERVICES

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
    ;
    }
}

```

AnimalLocator.apxc:

```

public class AnimalLocator {
    public class cls_animal {
        public Integer id;
        public String name;
        public String eats;
        public String says;
    }
    public class JSONOutput{
        public cls_animal animal;

        //public JSONOutput parse(String json){
        //return (JSONOutput) System.JSON.deserialize(json, JSONOutput.class);
        //}
    }

    public static String getAnimalNameById (Integer id) {
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-http-callout.herokuapp.com/animals/' + id);
        //request.setHeader('id', String.valueOf(id)); -- cannot be used in this challenge :)
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        system.debug('response: ' + response.getBody());
        //Map<String,Object> map_results = (Map<String,Object>)
JSON.deserializeUntyped(response.getBody());
        jsonOutput results = (jsonOutput) JSON.deserialize(response.getBody(),
jsonOutput.class);
        //Object results = (Object) map_results.get('animal');
        system.debug('results= ' + results.animal.name);
        return(results.animal.name);
    }
}

```

```
}
```

```
}
```

AnimalLocatorMock.apxc:

@IsTest

```
global class AnimalLocatorMock implements HttpCalloutMock {  
    global HTTPResponse respond(HTTPRequest request) {  
        HttpResponse response = new HttpResponse();  
        response.setStatusCode(200);  
        //-- directly output the JSON, instead of creating a logic  
        //response.setHeader('key, value)  
        //Integer id = Integer.valueOf(request.getHeader('id'));  
        //Integer id = 1;  
        //List<String> lst_body = new List<String> {'majestic badger', 'fluffy bunny'};  
        //system.debug('animal return value: ' + lst_body[id]);  
        response.setBody({'animal':{'id':1,'name':"chicken",'eats':"chicken  
food",'says':"cluck cluck"}});  
        return response;  
    }  
}
```

```
}
```

AnimalLocatorTest.apxc:

@IsTest

```
public class AnimalLocatorTest {  
    @isTest  
    public static void testAnimalLocator() {  
        Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock());  
        //HttpResponse response = AnimalLocator.getAnimalNameById(1);  
        String s = AnimalLocator.getAnimalNameById(1);  
        system.debug('string returned: ' + s);  
    }  
}
```

```
}
```

ParkLocatorTest.apxc:

@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);
}
}

```

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;
}
}
}

```

ParkServiceMock.apxc:

```

@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);
    }
}

```

APEX SPECIALIST SUPERBADGE

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;
}
}
}

```

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();
    }
}

```

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);

```

```

}

```

```

@Test
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);
}
}
```

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);
}

}
}
}

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;
    }
}

```

WarehouseCalloutServiceTest.apxc:

```

@isTest
private class WarehouseCalloutServiceTest {
    // implement your mock callout test here
    @isTest
    static void WarehouseEquipmentSync(){
        Test.startTest();
        // Set mock callout class
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        // This causes a fake response to be sent from the class that implements
        HttpCalloutMock.
        WarehouseCalloutService.runWarehouseEquipmentSync();
        Test.stopTest();
        System.assertEquals(1, [SELECT count() FROM Product2]);
    }
}

```

WarehouseSyncSchedule.apxc:

```

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

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}

```

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 ');

}

}