APEX TRIGGERS

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;
    }
}
```

APEX TESTING

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
  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:

```
@isTest
public class TestVerifyDate
{
    static testMethod void testMethod1()
    {
        Date d = VerifyDate.CheckDates(System.today(),System.today()+1);
        Date d1 = VerifyDate.CheckDates(System.today(),System.today()+60);
    }
}
```

RestrictContactByName:

```
trigger RestrictContactByName on Contact (before insert, before update) {

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

        }
}
```

TestRestrictContactByName:

```
@isTest
```

```
public class TestRestrictContactByName {

    @isTest static void testInvalidName() {
        //try inserting a Contact with INVALIDNAME
        Contact myConact = new Contact(LastName='INVALIDNAME');
        insert myConact;

        // Perform test
        Test.startTest();
        Database.SaveResult result = Database.insert(myConact, false);
        Test.stopTest();
        // Verify
        // In this case the creation should have been stopped by the trigger,
        // so verify that we got back an error.
        System.assert(!result.isSuccess());
        System.assert(result.getErrors().size() > 0);
        System.assertEquals('Cannot create contact with invalid last name.',
                             result.getErrors()[0].getMessage());

    }
}
```

RandomContactFactory

```
public class RandomContactFactory {
    public static List<contact> generateRandomContacts(Integer n, string m) {
        List<Contact> con = new List<contact>();
        for(Integer i=1; i<n+1; i++) {
            Contact c = new Contact(Firstname='test'+i,Lastname=m);
            con.add(c);
        }
        return con;
    }
}
```

Asynchronous Apex

AccountProcessor:

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

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

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

        For(Account acc:accounts){
            List<Contact> contactList = acc.Contacts;
            acc.Number_Of_Contacts__c = contactList.size();
```

```
            accountsToUpdate.add(acc);

        }
        update accountsToUpdate;

    }
}
```

AccountProcessorTest:

```
@IsTest
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:

```
global class LeadProcessor implements Database.Batchable<sObject> {
    global Integer count = 0;

    global Database.QueryLocator start(Database.BatchableContext bc){
        return Database.getQueryLocator('SELECT ID, LeadSource FROM Lead');
    }

    global void execute (Database.BatchableContext bc, List<Lead> L_list){
        List<lead> L_list_new = new List<lead>();

        for(lead L:L_list){
            L.leadsource = 'Dreamforce';
            L_list_new.add(L);
            count += 1;
        }
        update L_list_new;
    }
    global void finish(Database.BatchableContext bc){
```

```
        system.debug('count = ' + count);
    }

}
```

LeadProcessorTest:

```
@isTest
public class LeadProcessorTest {

    @isTest
    public static void testit(){
        List<lead> L_list = new List<lead>();

        for(Integer i=0; i<200; i++){
            Lead L = new lead();
            L.LastName = 'name' + i;
            L.Company = 'Company';
            L.Status = 'Random Status';
            L_list.add(L);
        }
        insert L_list;

        Test.startTest();
        LeadProcessor lp = new LeadProcessor();
        Id batchId = Database.executeBatch(lp);
        Test.stopTest();
    }
}
```

AddPrimaryContact :

```
public class AddPrimaryContact implements Queueable {

    private Contact con;
    private String state;

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

    public void execute(QueueableContext context){
        List<Account> accounts = [Select Id, Name, (Select FirstName, LastName,Id from contacts)
                                  from Account where BillingState = :state Limit 200];
        List<Contact> primaryContacts = new List<Contact>();

        for (Account acc:accounts){
            Contact c = con.clone();
            c.AccountId = acc.Id;
            primaryContacts.add(c);
        }
```

```
        if(primaryContacts.size() > 0){
            insert primaryContacts;
        }
    }

}
```

AddPrimaryContactTest

```
@isTest
public class AddPrimaryContactTest {

    static testmethod void testQueueable(){
        List<Account> testAccounts = new List<Account>();
        for(Integer i=0;i<50;i++){
            testAccounts.add(new Account(Name='Account ' +i,BillingState='CA'));
        }
        for(Integer j=0;j<50;j++){
            testAccounts.add(new Account(Name='Account ' +j,BillingState='NY'));
        }
        insert testAccounts;

        Contact testContact = new Contact(FirstName = 'John', LastName = 'Doe');
        insert testContact;

        AddPrimaryContact addit = new addPrimaryContact(testContact, 'CA');
        Test.startTest();
        system.enqueueJob(addit);
        Test.stopTest();

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

}
```

DailyLeadProcessor

```
public class DailyLeadProcessor implements Schedulable {
    Public void execute (SchedulableContext SC) {
        List<Lead> LeadObj = [SELECT Id from Lead Where LeadSource = null limit 200 ] ;
        for(Lead l : LeadObj ) {
            l.LeadSource = 'Dreamforce' ;
            update l ;
        }
    }
}
```

DailyLeadProcessorTest:

```
@isTest
```

```
private class DailyLeadProcessorTest {
    static testMethod void testDailyLeadProcessor( ) {
        String CRON_EXP = '0 0 1 * * ?' ;
        List<Lead> lList = new List<Lead>( ) ;
        for (Integer i = 0; i<200; i++) {
            lList.add(new Lead ( LastName='Dreamforce' +i, Company= ' Test1 Inc.', Status= 'Open - Not Contacted' )) ;

        }
        insert lList ;

        Test.startTest() ;
        String jobId = System.schedule('DailyLeadProcessor' , CRON_EXP , new DailyLeadProcessor( )) ;
    }
}
```

APEX INTEGRATION

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);
   }
}
```

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;
    }
}
```

APEX SPECIALIST

CreateDefaultData:

```
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 100(
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;

    }
}
```

CreateDefaultDataTest:

```
@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 be
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 custo
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');

    }
}
```

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 equipmentMaintenanceItem = [select id
                                        from Equipment_Maintenance_Item__c
                                        where Maintenance_Request__c = :createdCase.Id];

        system.assert(equipmentMaintenanceItem != 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> equipmentMaintenanceItemList = 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++){
            equipmentMaintenanceItemList.add(createEquipmentMaintenanceItem(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 need
be updated.
    //The callout's JSON response returns the equipment records that you upsert in Salesforce.
    @future(callout=true)
    public static void runWarehouseEquipmentSync(){
        System.debug('go into runWarehouseEquipmentSync');
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint(WAREHOUSE_URL);
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        List<Product2> product2List = new List<Product2>();
        System.debug(response.getStatusCode());
        if (response.getStatusCode() == 200){
            List<Object> jsonResponse = (List<Object>)JSON.deserializeUntyped(response.getBody());
            System.debug(response.getBody());
            //class maps the following fields:
            //warehouse SKU will be external ID for identifying which equipment records to update within Salesforce
            for (Object jR : jsonResponse){
                Map<String,Object> mapJson = (Map<String,Object>)jR;
                Product2 product2 = new Product2();
```

```
            //replacement part (always true),
            product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
            //cost
            product2.Cost__c = (Integer) mapJson.get('cost');
            //current inventory
            product2.Current_Inventory__c = (Double) mapJson.get('quantity');
            //lifespan
            product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
            //maintenance cycle
            product2.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
            //warehouse SKU
            product2.Warehouse_SKU__c = (String) mapJson.get('sku');
            product2.Name = (String) mapJson.get('name');
            product2.ProductCode = (String) mapJson.get('_id');
            product2List.add(product2);
        }
        if (product2List.size() > 0){
            upsert product2List;
            System.debug('Your equipment was synced with the warehouse one');
        }
    }
  }
  public static void execute (QueueableContext context){
    System.debug('start runWarehouseEquipmentSync');
    runWarehouseEquipmentSync();
    System.debug('end runWarehouseEquipmentSync');
  }
}
```

WarehouseCalloutServiceMock:

```
@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":"Generato
1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611100aaf742","re
ement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100aaf743","replace
t":true,"quantity":143,"name":"Fuse 20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]');
    response.setStatusCode(200);
    return response;
  }
}
```

WarehouseCalloutServiceTest :

```
@IsTest
private class WarehouseCalloutServiceTest {
    // implement your mock callout test here
  @isTest
    static void testWarehouseCallout() {
        test.startTest();
        test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        WarehouseCalloutService.execute(null);
        test.stopTest();
        List<Product2> product2List = new List<Product2>();
        product2List = [SELECT ProductCode FROM Product2];
        System.assertEquals(3, product2List.size());
        System.assertEquals('55d66226726b611100aaf741', product2List.get(0).ProductCode);
        System.assertEquals('55d66226726b611100aaf742', product2List.get(1).ProductCode);
        System.assertEquals('55d66226726b611100aaf743', product2List.get(2).ProductCode);
    }
}
```

WarehouseSyncSchedule:

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

WarehouseSyncScheduleTest:

```
@isTest
public with sharing class WarehouseSyncScheduleTest {
    // implement scheduled code here
    //
    @isTest static void test() {
        String scheduleTime = '00 00 00 * * ? *';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        String jobId = System.schedule('Warehouse Time to Schedule to test', scheduleTime, new
WarehouseSyncSchedule());
        CronTrigger c = [SELECT State FROM CronTrigger WHERE Id =: jobId];
        System.assertEquals('WAITING', String.valueOf(c.State), 'JobId does not match');
        Test.stopTest();
    }
}
```