Apex Triggers

AccountAddressTrigger.apxt

```
trigger AccountAddressTrigger on Account (before insert, before update) {

    for(Account a: Trigger.New){
        if(a.Match_Billing_Address__c == true && a.BillingPostalCode!= null){
            a.ShippingPostalCode=a.BillingPostalCode;

        }

    }

}
```

ClosedOpportunityTrigger.apxt

```
trigger ClosedOpportunityTrigger on Opportunity (after insert, after update) {

    List<Task> taskList = new List<Task>();

    for(Opportunity opp : Trigger.new) {

    //Only create Follow Up Task only once when Opp StageName is to 'Closed Won' on
Create
    if(Trigger.isInsert) {
      if(Opp.StageName == 'Closed Won') {
        taskList.add(new Task(Subject = 'Follow Up Test Task', WhatId = opp.Id));
      }

    }


//Only create Follow Up Task only once when Opp StageName changed to 'Closed Won'
```

```
on Update

   if(Trigger.isUpdate) {
     if(Opp.StageName == 'Closed Won'
     && Opp.StageName != Trigger.oldMap.get(opp.Id).StageName) {
       taskList.add(new Task(Subject = 'Follow Up Test Task', WhatId = opp.Id));
     }

   }

  }

   if(taskList.size()>0) {
      insert taskList;
   }

}
```

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');
    }


 }



}
```

MaintenanceRequest.apxt

```
trigger MaintenanceRequest on Case (before update, after update) {

   if(Trigger.isUpdate && Trigger.isAfter){

      MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);
   }
}
```

Apex Classes

DailyLeadProcessor.apxc

```
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;

       }

   }

}
```

AnimalLocatorMock.apxc

```
@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;
    }

}
```

LeadProcessorTest.apxc

```
@isTest
public class LeadProcessorTest {

        @testSetup
    static void setup() {

        List<Lead> leads = new List<Lead>();
        for(Integer counter=0 ;counter <200;counter++){

            Lead lead = new Lead();
            lead.FirstName ='FirstName';
            lead.LastName ='LastName'+counter;
            lead.Company ='demo'+counter;
            leads.add(lead);
        }

        insert leads;
    }

    @isTest static void test() {
```

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

}
```

LeadProcessor.apxc

```
public class LeadProcessor implements Database.Batchable<sObject> {

    public Database.QueryLocator start(Database.BatchableContext bc) {
        // collect the batches of records or objects to be passed to execute

         return Database.getQueryLocator([Select LeadSource From Lead ]);
    }
    public void execute(Database.BatchableContext bc, List<Lead> leads){
        // process each batch of records

          for (Lead Lead : leads) {
             lead.LeadSource = 'Dreamforce';
          }
        update leads;
    }
    public void finish(Database.BatchableContext bc){

     }


}
```

AddPrimaryContact.apxc

```
public class AddPrimaryContact implements Queueable
{
   private Contact c;
   private String state;
   public  AddPrimaryContact(Contact c, String state)
   {
      this.c = c;
      this.state = state;
   }
   public void execute(QueueableContext context)
   {

       List<Account> ListAccount = [SELECT ID, Name ,(Select id,FirstName,LastName
from contacts ) FROM ACCOUNT WHERE BillingState = :state LIMIT 200];
       List<Contact> lstContact = new List<Contact>();
       for (Account acc:ListAccount)

       {

             Contact cont = c.clone(false,false,false,false);
             cont.AccountId =  acc.id;
             lstContact.add( cont );
       }


       if(lstContact.size() >0 )
       {

          insert lstContact;
       }


   }
```

ParkService.apxc

```
//Generated by wsdl2apex

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;
        }

    }

}
```

AsyncParkService.apxc

```
public class AsyncParkService {
```

```
  public class byCountryResponseFuture extends System.WebServiceCalloutFuture {
    public String[] getValue() {

      ParkService.byCountryResponse response =
(ParkService.byCountryResponse)System.WebServiceCallout.endInvoke(this);
      return response.return_x;
    }
  }
  public class AsyncParksImplPort {

    public String endpoint_x = 'https://th-apex-soap-
service.herokuapp.com/service/parks';
    public Map<String,String> inputHttpHeaders_x;
    public String clientCertName_x;
    public Integer timeout_x;
    private String[] ns_map_type_info = new String[]{'http://parks.services/',
'ParkService'};
    public AsyncParkService.byCountryResponseFuture
beginByCountry(System.Continuation continuation,String arg0) {

      ParkService.byCountry request_x = new ParkService.byCountry();
      request_x.arg0 = arg0;
      return (AsyncParkService.byCountryResponseFuture)
System.WebServiceCallout.beginInvoke(
        this,
        request_x,
        AsyncParkService.byCountryResponseFuture.class,
        continuation,
        new String[]{endpoint_x,
        '',
        'http://parks.services/',
        'byCountry',
        'http://parks.services/',
        'byCountryResponse',
        'ParkService.byCountryResponse'}
      );
```

```
    }
  }
}
```

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;
```

```
    }

}
```

ParkLocator.apxc

```
public class ParkLocator {

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

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) {

        // start - specify the response you want to send
        ParkService.byCountryResponse response_x = new

 ParkService.byCountryResponse();

        response_x.return_x = new List<String>{'Yellowstone', 'Mackinac National Park',
```

```
'Yosemite'};

        // end
        response.put('response_x', response_x);
    }

}
```

AccountManager.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;
    }

}
```

AnimalLocatorTest.apxc

```
@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 );
    }

}
```

DailyLeadProcessorTest.apxc

```
@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());
  }

}
```

AnimalLocator.apxc

```
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');
   }

}
```

AddPrimaryContactTest.apxc

```
@isTest
public class AddPrimaryContactTest
{
    @isTest static void TestList()
    {
       List<Account> Teste = new List <Account>();
       for(Integer i=0;i<50;i++)
       {
          Teste.add(new Account(BillingState = 'CA', name = 'Test'+i));
       }
       for(Integer j=0;j<50;j++)
```

```
        {
           Teste.add(new Account(BillingState = 'NY', name = 'Test'+j));
        }
        insert Teste;

        Contact co = new Contact();
        co.FirstName='demo';
        co.LastName ='demo';
        insert co;
        String state = 'CA';

         AddPrimaryContact apc = new AddPrimaryContact(co, state);
         Test.startTest();
          System.enqueueJob(apc);
         Test.stopTest();
    }
}
```

AccountProcessorTest.apxc

```
@isTest
public class AccountProcessorTest {

   @isTest
   public static void testNoOfContacts(){
      Account a = new Account();
      a.Name = 'Test Account';
      Insert a;

      Contact c = new Contact();
      c.FirstName = 'Bob';
      c.LastName =  'Willie';
      c.AccountId = a.Id;

      Contact c2 = new Contact();
      c2.FirstName = 'Tom';
      c2.LastName = 'Cruise';
```

```
        c2.AccountId = a.Id;

        List<Id> acctIds = new List<Id>();
        acctIds.add(a.Id);

        Test.startTest();
        AccountProcessor.countContacts(acctIds);
        Test.stopTest();
    }

}
```

AccountProcessor.apxc

```
public class AccountProcessor {

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

        List<Account> accounts = [Select Id, Name from Account Where Id IN : accountIds];
        List<Account> updatedAccounts = new List<Account>();
        for(Account account : accounts){

            account.Number_of_Contacts__c = [Select count() from Contact Where AccountId
=: account.Id];
            System.debug('No Of Contacts = ' + account.Number_of_Contacts__c);
            updatedAccounts.add(account);

        }

        update updatedAccounts;
    }


}
```

TestVerifyDate.apxc

```
@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);
   }
}
```

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;
  }

}
```

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;

    }
}
```

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');

    }
}
```

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);
                }
            }
        }

        //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.apxc

```
@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.apxc

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

    //Write a class that makes a REST callout to an external warehouse system to get a list of equipment that needs to be updated.
    //The callout's JSON response returns the equipment records that you upsert in Salesforce.

    @future(callout=true)
    public static void runWarehouseEquipmentSync(){
        System.debug('go into runWarehouseEquipmentSync');
        Http http = new Http();
        HttpRequest request = new HttpRequest();

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

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

            //class maps the following fields:
            //warehouse SKU will be external ID for identifying which equipment records to update within Salesforce
            for (Object jR : jsonResponse){
                Map<String,Object> mapJson = (Map<String,Object>)jR;
```

```
            Product2 product2 = new Product2();
            //replacement part (always true),
            product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
            //cost
            product2.Cost__c = (Integer) mapJson.get('cost');
            //current inventory
            product2.Current_Inventory__c = (Double) mapJson.get('quantity');
            //lifespan
            product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
            //maintenance cycle
            product2.Maintenance_Cycle__c = (Integer)
mapJson.get('maintenanceperiod');
            //warehouse SKU
            product2.Warehouse_SKU__c = (String) mapJson.get('sku');

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

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

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

}
```

WarehouseCalloutServiceMock.apxc

```
@isTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
    // implement http mock callout
    global static HttpResponse respond(HttpRequest request) {

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

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

        return response;
    }
}
```

WarehouseCalloutServiceTest.apxc

```
@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.apxc

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

WarehouseSyncScheduleTest

```
@isTest
public with sharing class WarehouseSyncScheduleTest {
    // implement scheduled code here
    //
    @isTest static void test() {
        String scheduleTime = '00 00 00 * * ? *';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        String jobId = System.schedule('Warehouse Time to Schedule to test',
scheduleTime, new WarehouseSyncSchedule());
        CronTrigger c = [SELECT State FROM CronTrigger WHERE Id =: jobId];
```

```
        System.assertEquals('WAITING', String.valueOf(c.State), 'JobId does not match');

        Test.stopTest();
    }
}
```