APEX SPECIALIST SUPER BADGE CODES

APEX TRIGGERS

AccountAddressTrigger.axpt:

```
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.axpt:

```
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
VerifyData.apxc:

```
public class VerifyDate {
        public static Date CheckDates(Date date1, Date date2) {
                if(DateWithin30Days(date1,date2)) {
                        return date2;
                } else {
                        return SetEndOfMonthDate(date1);
                }
        }
        @TestVisible private static Boolean DateWithin30Days(Date date1, Date date2) {
                //check for date2 being in the past
        if( date2 < date1) { return false; }
```

APEX SPECIALIST SUPER BADGE CODES

```
        //check that date2 is within (>=) 30 days of date1
        Date date30Days = date1.addDays(30); //create a date 30 days away from date1
                if( date2 >= date30Days ) { return false; }
                else { return true; }
        }


        //method to return the end of the month of a given date
        @TestVisible private static Date SetEndOfMonthDate(Date date1) {
                Integer totalDays = Date.daysInMonth(date1.year(), date1.month());
                Date lastDay = Date.newInstance(date1.year(), date1.month(), totalDays);
                return lastDay;
        }

}
```

TestVerifyData.apxc:

```
@isTest
private class TestVerifyDate {
   @isTest static void Test_CheckDates_case1(){
      Date D = VerifyDate.CheckDates(date.parse('01/01/2022'),date.parse('01/05/2022'));
      System.assertEquals(date.parse('01/05/2022'), D);
}
   @isTest static void Test_CheckDates_case2(){
      Date D = VerifyDate.CheckDates(date.parse('01/01/2022'), date.parse('05/05/2022'));
      System.assertEquals(date.parse('01/31/2022'), D);
   }
   @isTest static void Test_Within30Days_case1(){
      Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2022'),
date.parse('12/30/2021'));
      System.assertEquals(false, flag);
   }
@isTest static void Test_Within30Days_case2(){
      Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2022'),
date.parse('02/02/2021'));
      System.assertEquals(false, flag);
   }
@isTest static void Test_Within30Days_case3(){
```

APEX SPECIALIST SUPER BADGE CODES

```
    Boolean flag = VerifyDate.DateWithin30Days(date.parse('01/01/2022'),
date.parse('01/15/2022'));
    System.assertEquals(true, flag);
  }
  @isTest static void Test_SetEndOfMonthDate(){
    Date returndate = VerifyDate.SetEndOfMonthDate(date.parse('01/01/2022'));
}
}
```

RestrictContactByName.apxt:

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

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

        }
}
```

TestRestrictContactByName.apxc:

```
@isTest
private 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());
  }
}
```

APEX SPECIALIST SUPER BADGE CODES

RandomContactFactory.apxc:

```
public class RandomContactFactory {
    public static List<Contact> generateRandomContacts(Integer num_cnts, string lastname) {
      List<Contact> contacts = new List<Contact>();
      for(Integer i = 0; i < num_cnts; i++) {
        Contact cnt = new Contact(FirstName = 'Test' +i,LastName = lastname);
        contacts.add(cnt);
      }
      return contacts;
            }
}
```

ASYNCHRONOUS APEX

AccountProcessor.apxc:

```
public class AccountProcessor {
            @future
    public static void countContacts(List<Id> accountIds){
        List<Account> accountsToUpdate = new List<Account>();

        List<Account> accounts = [Select Id, Name, (Select Id from Contacts)from Account Where Id in
:accountIds];
        For(Account acc: accounts) {
                        List<Contact> contactList = acc.contacts;
            acc.Number_Of_Contacts__c = contactList.size();
            accountsToUpdate.add(acc);
        }
        update accountsToUpdate;
    }
}
```

AccountProcessorTest.apxc:

```
@isTest
public 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 =
```

APEX SPECIALIST SUPER BADGE CODES

```
newAccount.Id);
    insert newContact1;

    Contact newContact2 = new Contact(FirstName = 'John',LastName = 'Doe',AccountId =
newAccount.Id);
    insert newContact2;
    List<Id> accountIds = new List<Id>();
    accountIds.add(newAccount.Id);
    Test.startTest();
    AccountProcessor.countContacts(accountIds);
    Test.stopTest();
  }
}
```

LeadProcessor.apxc:

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

  global Database.QueryLocator start(Database.BatchableContext bc) {
    return Database.getQueryLocator('SELECT ID,LeadSource FROM Lead');
  }
  global void execute(Database.BatchableContext bc, List<Lead> L_list){
    List<lead> L_list_new = new List<lead>();
    for(lead L: L_list){
      L.leadSource = 'Dreamforce';
      L_list_new.add(L);
      count += 1;
    }
    update L_list_new;
  }
  global void finish(Database.BatchableContext bc){
    system.debug('count = ' + count);
  }
}
```

LeadProcessorTest.apxc:

```
@isTest
public class LeadProcessorTest {
        @isTest
  public static void testit() {
```

APEX SPECIALIST SUPER BADGE CODES

```
      List<lead> L_list = new List<lead>();
      for(Integer i = 0; i < 200; i++) {
         Lead L = new Lead();
         L.LastName = 'name' + i;
         L.Company = 'Company';
         L.Status = 'Random Status';
         L_list.add(L);
      }
      insert L_list;
      Test.startTest();
      LeadProcessor lp = new LeadProcessor();
      Id batchId = Database.executeBatch(lp);
      Test.stopTest();
   }
}
```

AddPrimaryContact.apxc:

```
public class AddPrimaryContact implements Queueable{
            private Contact con;
   private String state;
   public AddPrimaryContact(Contact con, String state) {
      this.con = con;
      this.state = state;
   }
   public void execute(QueueableContext context) {
      List<Account> accounts = [Select Id,Name,(Select FirstName,LastName, Id from contacts)
                  from Account where BillingState = :state Limit 200];
      List<Contact> primaryContacts = new List<Contact>();
      for(Account acc : accounts) {
         Contact c = con.clone();
         c.AccountId = acc.Id;
         primaryContacts.add(c);
      }
      if(primaryContacts.size() > 0) {
         insert primaryContacts;
      }
   }
}
```

APEX SPECIALIST SUPER BADGE CODES

AddPrimaryContactTest.apxc:

```apex
@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:

```apex
global class DailyLeadProcessor implements Schedulable{
    global void execute(SchedulableContext ctx) {
        List<Lead> leadstoupdate = new List<Lead>();
        List<Lead> leads = [Select id From Lead Where LeadSource = NULL Limit 200];
        for(Lead l: leads) {
            l.LeadSource = 'Dreamforce';
            leadstoupdate.add(l);
        }
        update leadstoupdate;
    }
}
```

APEX SPECIALIST SUPER BADGE CODES

DailyLeadProcessorTest.apxc:

```apex
@isTest
private class DailyLeadProcessorTest {
        public static String CRON_EXP = '0 0 0 15 3 ? 2024';
   static testmethod void testScheduledJob() {
      List<Lead> leads = new List<Lead>();
      for(Integer i = 0; i < 200; i++) {
        Lead l = new Lead(
           FirstName = 'First' + i,
           LastName = 'LastName',
           Company = 'The Inc'
        );
        leads.add(l);
      }
      insert leads;
      Test.startTest();
      String jobId = System.schedule('ScheduledApexTest',CRON_EXP,new DailyLeadProcessor());
           Test.stopTest();
      List<Lead> checkleads = new List<Lead>();
      checkleads = [Select Id From Lead Where LeadSource = 'Dreamforce' and Company = 'The Inc'];
      System.assertEquals(200,checkleads.size(),'Leads were not created');
   }
}
```

APEX INTEGRATION SERVICES

AnimalLocator.apxc:

```apex
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) {
```

APEX SPECIALIST SUPER BADGE CODES

```
    Map<String, Object> results = (Map<String, Object>)JSON.deserializeUntyped(res.getBody());
    animal = (Map<String, Object>) results.get('animal');
    }
return (String)animal.get('name');
  }
}
```

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 );
   }
}
```

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;
   }
}
```

ParkLocator.apxc:

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

APEX SPECIALIST SUPER BADGE CODES

ParkLocatorTest.apxc:

```apex
@isTest
private class ParkLocatorTest {
    @isTest static void testCallout() {
        Test.setMock(WebServiceMock.class, new ParkServiceMock ());
        String country = 'United States';
        List<String> result = ParkLocator.country(country);
        List<String> parks = new List<String>{'Yellowstone', 'Mackinac National Park', 'Yosemite'};
        System.assertEquals(parks, result);
    }
}
```

ParkServiceMock.apxc:

```apex
@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:

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

APEX SPECIALIST SUPER BADGE CODES

```apex
    Account acc = [SELECT Id, Name, (SELECT Id, Name FROM Contacts)
            FROM Account WHERE Id = :accId];
    return acc;
  }
}
```

AccountManagerTest.apxc:

```apex
@isTest
private class AccountManagerTest {

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

  }

  // Helper method
    static Id createTestRecord() {
    // Create test record
    Account TestAcc = new Account(
      Name='Test record');
    insert TestAcc;
    Contact TestCon= new Contact(
    LastName='Test',
    AccountId = TestAcc.id);
    return TestAcc.Id;
  }
}
```

APEX SPECIALIST SUPER BADGE CODES

APEX SPECIALIST SUPER BADGE

Challenge-1

MaintenanceRequestHelper.apxc:

```apex
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',
```

APEX SPECIALIST SUPER BADGE CODES

```apex
            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;
   }
  }
}
```

APEX SPECIALIST SUPER BADGE CODES

MaintenanceRequest.apxt:

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

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,
```

APEX SPECIALIST SUPER BADGE CODES

```apex
            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];
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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
```

APEX SPECIALIST SUPER BADGE CODES

```
                    from Equipment_Maintenance_Item__c
                    where Maintenance_Request__c = :emptyReq.Id];

    system.assert(workPart != null);
    system.assert(allRequest.size() == 1);
  }

  @istest
  private static void testMaintenanceRequestBulk(){
    list<Vehicle__C> vehicleList = new list<Vehicle__C>();
    list<Product2> equipmentList = new list<Product2>();
    list<Equipment_Maintenance_Item__c> workPartList = new
list<Equipment_Maintenance_Item__c>();
    list<case> requestList = new list<case>();
    list<id> oldRequestIds = new list<id>();

    for(integer i = 0; i < 300; i++){
      vehicleList.add(createVehicle());
       equipmentList.add(createEq());
    }
    insert vehicleList;
    insert equipmentList;

    for(integer i = 0; i < 300; i++){
       requestList.add(createMaintenanceRequest(vehicleList.get(i).id, equipmentList.get(i).id));
    }
    insert requestList;

    for(integer i = 0; i < 300; i++){
       workPartList.add(createWorkPart(equipmentList.get(i).id, requestList.get(i).id));
    }
    insert workPartList;

    test.startTest();
    for(case req : requestList){
       req.Status = CLOSED;
       oldRequestIds.add(req.Id);
    }
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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);
  }
}
```

Challenge-2
WarehouseCalloutService.apxc:

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

    //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(){
        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){
```

APEX SPECIALIST SUPER BADGE CODES

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


        //class maps the following fields: replacement part (always true), cost, current inventory,
lifespan, maintenance cycle, and warehouse SKU
        //warehouse SKU will be external ID for identifying which equipment records to update within
Salesforce
        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 = (Integer) mapJson.get('cost');
            myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
            myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
            myEq.ProductCode = (String) mapJson.get('_id');
            warehouseEq.add(myEq);
        }

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


    public static void execute (QueueableContext context){
        runWarehouseEquipmentSync();
    }

}
```

WarehouseCalloutServiceMock.apxc:

```apex
@isTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
    // implement http mock callout
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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":"55d66226726b611100aaf742","replacement":true,"quantity":183,"name":"Cooling Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100aaf743","replacement":true,"quantity":143,"name":"Fuse 20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]');
        response.setStatusCode(200);

        return response;
    }
}
```

WarehouseCalloutServiceTest.apxc:

```apex
@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);
    }
}
```

Challenge-3

APEX SPECIALIST SUPER BADGE CODES

WarehouseSyncSchedule.apxc:

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

WarehouseSyncScheduuleTest.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 ');


    }
}
```

Challenge-4

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';
```

APEX SPECIALIST SUPER BADGE CODES

```
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();
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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();
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    insert equipment;
    id equipmentId = equipment.Id;

    case emptyReq = createMaintenanceRequest(vehicleId,equipmentId);
    insert emptyReq;

    Equipment_Maintenance_Item__c workP = createWorkPart(equipmentId, emptyReq.Id);
    insert workP;

    test.startTest();
    emptyReq.Status = WORKING;
    update emptyReq;
    test.stopTest();

    list<case> allRequest = [select id
                    from case];

    Equipment_Maintenance_Item__c workPart = [select id
                            from Equipment_Maintenance_Item__c
                            where Maintenance_Request__c = :emptyReq.Id];

    system.assert(workPart != null);
    system.assert(allRequest.size() == 1);
  }

  @istest
  private static void testMaintenanceRequestBulk(){
    list<Vehicle__C> vehicleList = new list<Vehicle__C>();
    list<Product2> equipmentList = new list<Product2>();
    list<Equipment_Maintenance_Item__c> workPartList = new
list<Equipment_Maintenance_Item__c>();
    list<case> requestList = new list<case>();
    list<id> oldRequestIds = new list<id>();

    for(integer i = 0; i < 300; i++){
      vehicleList.add(createVehicle());
       equipmentList.add(createEq());
    }
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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);
    }
}
```

MaintenanceRequestHelper.apxc:

```apex
public with sharing class MaintenanceRequestHelper {
    public static void updateworkOrders(List<Case> updWorkOrders, Map<Id,Case> nonUpdCaseMap) {
        Set<Id> validIds = new Set<Id>();
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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()

            );
```

APEX SPECIALIST SUPER BADGE CODES

```
        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;
    }
  }
}
```

Challenge-5
WarehouseCalloutService.apxc:

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

    //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(){
        Http http = new Http();
        HttpRequest request = new HttpRequest();
```

APEX SPECIALIST SUPER BADGE CODES

```apex
    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());

        //class maps the following fields: replacement part (always true), cost, current inventory,
lifespan, maintenance cycle, and warehouse SKU
        //warehouse SKU will be external ID for identifying which equipment records to update within
Salesforce
        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 = (Integer) mapJson.get('cost');
            myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
            myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
            myEq.ProductCode = (String) mapJson.get('_id');
            warehouseEq.add(myEq);
        }

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

public static void execute (QueueableContext context){
    runWarehouseEquipmentSync();
```

APEX SPECIALIST SUPER BADGE CODES

```
   }

}
```

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":"Gene
rator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611100a
af742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100aaf743
","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];
```

APEX SPECIALIST SUPER BADGE CODES

```
        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);
    }
}
```

Challenge-6

WarehouseSyncSchedule.apxc:

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

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 ');


    }
}
```