APEX TRIGGERS

1. GETSTARTEDWITHAPEXTRIGGERS:

1.AccountAddressTrigger.apxt

```
trigger AccountAddressTrigger on Account (beforeinsert, before update){
    for(Account a: Trigger.New){
        if(a.Match_Billing_Address__c==true&&a.BillingPostalCode!=null){
            a.ShippingPostalCode=a.BillingPostalCode;
        }
    }

}
```

2. BULKAPEXTRIGGERS:

1.ClosedOpportunityTrigger.apxt

```
triggerClosedOpportunityTriggeronOpportunity(afterinsert,afterupdate){ List<Task>
    taskList=newList<Task>();
    for(Opportunityopp:[SELECTId,StageNameFROMOpportunityWHERE
StageName='ClosedWon'ANDIdIN:Trigger.New]){
        taskList.add(newTask(Subject='FollowUpTestTask',WhatId=opp.Id));
    }
    if(taskList.size()>0){
        inserttasklist;
    }
}
```

APEX TESTING

3. GETSTARTEDWITHAPEXUNITTEST:

1. VerifyDate.apxc

```
public class VerifyDate {
  public static Date CheckDates(Date date1,Date date2) {
          //if date2 is withinthe next 30 days of date1, use date2.Otherwise use the end of the
month
          if(DateWithin30Days(date1,date2)) {
                   returndate2;

          } else {


          }
                                                         }

return SetEndOfMonthDate(date1);

  private static Boolean DateWithin30Days(Date date1, Date date2) {
          Date date30Days = date1.addDays(30); //createa date 30 days away from date1 if( date2 >
          date30Days ) { returnfalse; }
          else { return true; }
  }
  privatestaticDateSetEndOfMonthDate(Datedate1){
```

```
            Integer totalDays = Date.daysInMonth(date1.year(), date1.month());  Date
            lastDay = Date.newInstance(date1.year(), date1.month(), totalDays); return
            lastDay;
  }


}
```

2. TestVerifyDate.apxc

```
@isTest
private class TestVerifyDate {


   @isTest static void testCheckDates() {
       Date now = Date.today();
       Date lastOfTheMonth = Date.newInstance(now.year(), now.month(),


Date.daysInMonth(now.year(), now.month()));
       Date plus60 = Date.today().addDays(60);


          Date d1 = VerifyDate.CheckDates(now, now);
       System.assertEquals(now, d1);

       Date d2 = VerifyDate.CheckDates(now, plus60);
       System.assertEquals(lastOfTheMonth, d2);
   }


}
```

4. TESTAPEXTRIGGERS:

1.RestrictContactByName.apxt

```
trigger RestrictContactByName on Contact (beforeinsert) { For
   (Contactc:Trigger.New){
         if(c.LastName == 'INVALIDNAME') {                    //invalidnameisinvalid
                  c.AddError('TheLastName"'+c.LastName+'"isnotallowedforDML');
         }
   }

}
```

5. CREATETESTDATAFORAPEXTESTS:

1.RandomContactFactory.apxc

```
public class RandomContactFactory {

   publicstaticList<Contact>generateRandomContacts(Integernum,StringlastName){
      List<Contact> contacts = new List<Contact>();
      for (Integer i = 0; i < num;i++) {
         Contact c = new Contact(FirstName=i.format(), LastName=lastName);

         contacts.add(c);
      }
      return contacts;
   }

}
```

ASYNCHRONOUS APEX

6. USEFUTUREMETHODS:

1. AccountProcessor.apxc

```
publicwithoutsharingclassAccountProcessor{
   //Addannotationtodeclareafuturemethod
   @future(callout=false)
   publicstaticvoidcountContacts(List<Id> accountIds){
   //Query all accountsin the list of Ids passed
      Map<Id,Account>accountMap=newMap<Id,Account>([SELECTId,(SELECTId
FROMContacts)FROMAccountWHEREIdIN:accountIds]);

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

      //Loopthrough list of accounts
      for(Account a: accountMap.values()){
         //Assign fieldto number of contact
         a.Number_of_Contacts__c=accountMap.get(a.Id).Contacts.size();
      }
     //UpdateAccounts
      updateaccountMap.values();

   }
}
```

2. AccountProcessorTest.apxc

```
@isTest
publicclassAccountProcessorTest{ @isTest
   public static void testNoOfContacts(){
        Accounta=newAccount(); a.Name=
        'TestAccount';
        Insert a;

        Contactc=newContact();
        c.FirstName = 'Bob';
        c.LastName= 'Willie';
        c.AccountId = a.Id;

        Contactc2=newContact();
        c2.FirstName='Tom';
        c2.LastName = 'Cruise';
        c2.AccountId = a.Id;

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

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

}
```

7. USEBATCHAPEX:

1. LeadProcessor.apxc

```
globalclass LeadProcessor implements
Database.Batchable<sObject>, Database.Stateful {

     /instancemembertoretainstateacrosstransactions
    globalInteger recordsProcessed = 0;
    global Database.QueryLocator start(Database.BatchableContext bc) { return
        Database.getQueryLocator('SELECT Id,LeadSource FROM Lead');
    }

    global void execute(Database.BatchableContext bc, List<Lead> scope){
         /processeachbatchofrecords
        List<Lead>leads=newList<Lead>(); for
        (Leadlead:scope){

                lead.LeadSource='Dreamforce';
                 /incrementtheinstancemembercounter
                recordsProcessed = recordsProcessed + 1;

        }
        updateleads;
    }

    globalvoidfinish(Database.BatchableContextbc){ System.debug(recordsProcessed
        +' recordsprocessed. Shazam!');

    }
}
```

2. LeadProcessorTest.apxc

```
@isTest
publicclassLeadProcessorTest{
 @testSetup
    static void setup() {
        List<Lead>leads = new List<Lead>();
         /insert200leads
        for(Integeri=0;i<200;i++){
            leads.add(newLead(LastName='Lead'+i,
                Company='Lead', Status='Open - Not Contacted'));

        }
        insert leads;
    }

    statictestmethodvoidtest(){
        Test.startTest();
        LeadProcessorlp=newLeadProcessor(); Id
        batchId = Database.executeBatch(lp, 200);
        Test.stopTest();

         /afterthetestingstops,assertrecordswereupdatedproperly System.assertEquals(200,
        [selectcount()fromleadwhereLeadSource=
'Dreamforce']);
    }
}
```

8. CONTROLPROCESSESWITHQUEUEABLEAPEX:

1. AddPrimaryContact.apxc

```
public class AddPrimaryContact implements Queueable {

    private ContactcontactObj;

    private String state_code;

    public AddPrimaryContact(Contact c, Strings) {
        this.contactObj=c;
        this.state_code=s;
    }

    publicvoidexecute(QueueableContextcontext){
        List<Account> accounts=[SELECT Id
                                FROM Account
                               WHERE BillingState = :this.state_code
                               LIMIT200];

        List<Contact> contacts= new List<Contact>();
        for(Accounta:accounts){
            Contactc = this.contactObj.clone(false,false, false, false);
            c.AccountId = a.Id;
            contacts.add(c);
        }

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

2. AddPrimaryContactTest.apxc

```
@isTest
publicclassAddPrimaryContactTest{
    @testSetup
    static voidsetup(){
        List<Account>lstOfAcc=newList<Account>();
        for(Integeri=1;i<=100;i++){
            if(i <=50)
                lstOfAcc.add(new Account(name='AC'+i, BillingState = 'NY'));
            else
                lstOfAcc.add(new Account(name='AC'+i, BillingState = 'CA'));
        }

        INSERTlstOfAcc;
    }

    static testmethod void testAddPrimaryContact(){ Contact
        con= new Contact(LastName = 'TestCont');
        AddPrimaryContact addPCIns= new AddPrimaryContact(CON ,'CA');

        Test.startTest();
        System.enqueueJob(addPCIns);
        Test.stopTest();

        System.assertEquals(50, [select count() from Contact]);
    }
}
```

9. SCHEDULEJOBSUSINGAPEXSCHEDULER:

1. DailyLeadProcessor.apxc

```
publicclassDailyLeadProcessorimplementsSchedulable {
    Public void execute(SchedulableContext SC){
      List<Lead> LeadObj=[SELECT Id from Lead where LeadSource=null limit 200]; for(Lead
        l:LeadObj){
            l.LeadSource='Dreamforce
            '; updatel;
        }
    }
}
```

2. DailyLeadProcessorTest.apxc

```
@isTest
private class DailyLeadProcessorTest {
  static testMethod void testDailyLeadProcessor() {
           StringCRON_EXP='001**?';
           List<Lead> lList= new List<Lead>();
      for(Integeri=0;i<200;i++){
                     lList.add(newLead(LastName='Dreamforce'+i,Company='Test1 Inc.',
Status='Open - NotContacted'));
           }
           insert lList;


           Test.startTest();
           Stringjob Id=System.schedule('DailyLeadProcessor',CRON_EXP, new
DailyLeadProcessor());
  }


}
```

APEX INTEGRATIONSERVICES

1. APEXRESTCALLOUTS:

1. AnimalLocator.apxc

```
public class AnimalLocator {
  public static String getAnimalNameById(Integer animalId){ String
       animalName;
```

```
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-http-
callout.herokuapp.com/animals/'+animalId);
        request.setMethod('GET');
        HttpResponse response = http.send(request);
         / If the request is successful, parse the JSON response. if(response.getStatusCode() == 200) {
            Map<String, Object> r = (Map<String, Object>)
                JSON.deserializeUntyped(response.getBody());
            Map<String, Object> animal = (Map<String, Object>)r.get('animal');
            animalName = string.valueOf(animal.get('name'));
        }
        return animalName;
    }
}
```

2. AnimalLocatorMock.apxc

```
@isTest
global class AnimalLocatorMock implements HttpCalloutMock {
    global HTTPResponse respond(HTTPRequest request){
        HttpResponse response = new HttpResponse();
        response.setHeader('Content-Type', 'application/json');

        response.setBody('{"animal":{"id":1,"name":"chicken","eats":"chicken
food","says":"cluck cluck"}}');
        response.setStatusCode(200); return
        response;
    }
}
```

3. AnimalLocatorTest.apxc

```
@isTest
privateclass AnimalLocatorTest { @isTest
staticvoidgetAnimalNameById(){
     /Setmockcalloutclass
    Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock());
     /This causesa fake response to be sent
     / from the class that implements HttpCalloutMock. String
    response=AnimalLocator.getAnimalNameById(1);
     / Verify that theresponse received contains fake values System.assertEquals('chicken',
    response);
}
}
```

2. APEXSOAPCALLOUTS:

1. ParkLocator.apxc

```
public class ParkLocator {
    public static String[] country (Stringx) {
        Stringparks = x;/ {'Yellowstone','Kanha','Mount Fuji'}; ParkService.ParksImplPort
        findCountries = new ParkService.ParksImplPort (); return findCountries.byCountry
        (parks);
    }


}
```

2. ParkLocatorTest.apxc

```
@isTest
public class ParkLocatorTest { @isTest
```

```
    static void testCallout () {
        /This causes a fake response to be generated
        Test.setMock (WebServiceMock.class, new ParkServiceMock ());
        Stringx='Yellowstone';
        List <String> result = ParkLocator.country(x);


        stringresultstring = string.join (result,',');
        System.assertEquals ('USA', resultstring);
    }
}
```

3. ParkServiceMock

```
@isTest
globalclassParkServiceMockimplementsWebServiceMock{ global
   voiddoInvoke(
       Objectstub, Object
       request,
       Map<String,Object>response,
       String endpoint,
       StringsoapAction,
       StringrequestName,
       StringresponseNS,
       StringresponseName,
       StringresponseType){
        ParkService.byCountryResponse response_x =new ParkService.byCountryResponse

                                                                                    ();



                                                                                      }


       response_x.return_x=newList<String>{'USA'}; response.put
('response_x', response_x);
}
```

1. APEXWEBSERVICES:

1. AccountManager.apxc

```
@RestResource(urlMapping='/Accounts/*/contacts')
globalwithsharingclassAccountManager{
   @HttpGet
   global static Account getAccount(){
      RestRequestreq=RestContext.request;
      StringaccId=req.requestURI.substringBetween('Accounts/','/contacts');
      Accountacc=[SELECTId,Name,(SELECTId,NameFROMContacts)
                 FROMAccountWHEREId=:accId];


      return acc;
   }
}
```

2. AccountManagerTest.apxc

```
@IsTest
private class AccountManagerTest{
   @isTeststaticvoidtestAccountManager(){ Id
      recordId=getTestAccountId();
       /Set up a test request
      RestRequest request = new RestRequest();
      request.requestUri =
         'https://ap5.salesforce.com/services/apexrest/Accounts/'+ recordId+'/contacts';
      request.httpMethod = 'GET';
```

```
        RestContext.request =request;

         /Callthemethodtotest
        Account acc=AccountManager.getAccount();

         / Verify results
        System.assert(acc!=null);
    }

    private static Id getTestAccountId(){
        Accountacc=newAccount(Name='TestAcc2'); Insertacc;

        Contactcon=newContact(LastName='TestCont2',AccountId=acc.Id); Insertcon;

        return acc.Id;
    }
}
```

APEX SPECIALIST SUPERBADGE

2. AUTOMATE RECORD CREATION:

1. MaintenanceRequest.apxt

```
triggerMaintenanceRequestonCase(beforeupdate,afterupdate){
     / ToDo: Call MaintenanceRequestHelper.updateWorkOrders if(Trigger.isUpdate
    &&Trigger.isAfter){

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

2. MaintenanceRequestHelper.apxc

```
publicwithsharingclassMaintenanceRequestHelper{
    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=newMap<Id,Case>([SELECTId,Vehicle__c, Equipment_
c,Equipment_r.Maintenance_Cycle_c,(SELECT
Id,Equipment__c,Quantity__cFROMEquipment_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__cWHEREMaintenance_Request__cIN:ValidIdsGROUP BY
Maintenance_Request_c];

    for(AggregateResultar:results){
      maintenanceCycles.put((Id) ar.get('Maintenance_Request_c'), (Decimal) ar.get('cycle'));
    }


      for(Casecc:closedCasesM.values()){ Case nc
        = new Case (
          ParentId = cc.Id,
        Status='New',
          Subject='RoutineMaintenance', Type
          ='RoutineMaintenance', 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__cwp:
```

```
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items___r){
                Equipment_Maintenance_Item_cwpClone=wp.clone();
                wpClone.Maintenance_Request_c=nc.Id; ClonedWPs.add(wpClone);

             }
          }
          insert ClonedWPs;
       }
    }
}
```

3. SYNCHRONIZATIONSALESFORCEDATAWITHAN EXTERNAL SYSTEM:

1.WarehouseCalloutService.apxc

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


    //classthatmakesaRESTcallouttoanexternalwarehousesystemtogetalistof equipment that
needstobe updated.
    //Thecallout'sJSONresponsereturnstheequipmentrecordsthatyouupsertin Salesforce.

    @future(callout=true)
    publicstaticvoidrunWarehouseEquipmentSync(){ Http
        http=newHttp();
        HttpRequestrequest=newHttpRequest();


        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());

            //classmapsthefollowingfields:replacementpart(alwaystrue),cost,current inventory,
lifespan, maintenance cycle, and warehouse SKU
            //warehouseSKUwillbeexternalIDforidentifyingwhichequipmentrecordsto
updatewithinSalesforce
            for(Objecteq:jsonResponse){
                Map<String,Object> mapJson= (Map<String,Object>)eq;
                Product2myEq=newProduct2();
                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('Yourequipmentwassyncedwiththewarehouseone');
            }
        }
    }
    public static void execute(QueueableContext context){
        runWarehouseEquipmentSync();
    }


}
```

4. SCHEDULESYNCHRONIZATIONUSINGAPEXCODE:

1.WarehouseSyncSchedule.apxc

```
global class WarehouseSyncSchedule implements Schedulable { global
    voidexecute(SchedulableContext ctx) {

        System.enqueueJob(new  WarehouseCalloutService());
    }
}
```

5. TESTAUTOMATIONLOGIC:

1. MaintenanceRequestHelperTest.apxc

```
publicwithsharingclassMaintenanceRequestHelper {
    public static void updateworkOrders(List<Case> updWorkOrders, Map<Id,Case>
nonUpdCaseMap) {
        Set<Id> validIds= new Set<Id>();



        For (Case c : updWorkOrders){
            if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){ if
```

```
                (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){
                    validIds.add(c.Id);



                }
            }
        }

        if (!validIds.isEmpty()){
            List<Case> newCases = new List<Case>();
            Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT Id, Vehicle__c, Equipment_
c,Equipment_r.Maintenance_Cycle_c,(SELECT
Id,Equipment__c,Quantity__c FROM Equipment_Maintenance_Items__r)
                                                         FROM Case WHERE Id IN :validIds]);
            Map<Id,Decimal> maintenanceCycles = new Map<ID,Decimal>();
            AggregateResult[] results = [SELECT Maintenance_Request__c,
MIN(Equipment__r.Maintenance_Cycle__c)cycle FROM
Equipment_Maintenance_Item__c WHERE Maintenance_Request__c IN :ValidIds GROUP BY
Maintenance_Request_c];

        for (AggregateResult ar : results){
            maintenanceCycles.put((Id) ar.get('Maintenance_Request_c'), (Decimal) ar.get('cycle'));
        }

            for(Case cc : closedCasesM.values()){ Case nc
                = new Case (
                    ParentId = cc.Id,
                Status='New',
                    Subject='RoutineMaintenance', Type
                    ='RoutineMaintenance', 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__cwp:
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items___r){
                    Equipment_Maintenance_Item_cwpClone=wp.clone();
                    wpClone.Maintenance_Request_c=nc.Id; ClonedWPs.add(wpClone);

                }
            }
            insert ClonedWPs;
        }
    }
}
```

2. MaintenanceRequestHelper.apxc

```
@istest
```

```
}

publicwithsharingclassMaintenanceRequestHelperTest{

  privatestaticfinalstringSTATUS_NEW='New';



  privatestaticfinalstringWORKING='Working';
  private staticfinal string CLOSED= 'Closed';
  privatestaticfinalstringREPAIR='Repair';
  private staticfinal string REQUEST_ORIGIN = 'Web';
  privatestatic final stringREQUEST_TYPE = 'RoutineMaintenance';
  privatestaticfinalstringREQUEST_SUBJECT='Testingsubject';

  PRIVATESTATICVehicle__ccreateVehicle(){
    Vehicle__cVehicle=newVehicle__C(name='SuperTruck'); return
    Vehicle;
  }

  PRIVATESTATICProduct2createEq(){
    product2 equipment= new product2(name = 'SuperEquipment', lifespan_months_C=
                                10,
                                maintenance_cycle_C=10,
                                replacement_part__c=true);
    return equipment;
  }

  PRIVATE STATICCase createMaintenanceRequest(id vehicleId, id equipmentId){ casecs=
    newcase(Type=REPAIR,
                Status=STATUS_NEW,
                Origin=REQUEST_ORIGIN,
                Subject=REQUEST_SUBJECT,
                Equipment_c=equipmentId,
                Vehicle_c=vehicleId);
    return cs;
  }
```

```
    PRIVATESTATICEquipment_Maintenance_Item__ccreateWorkPart(idequipmentId,id
requestId){
        Equipment_Maintenance_Item_cwp=new Equipment_Maintenance_Item_
c(Equipment_c=equipmentId,
                                                                            Maintenance_Request__c=requestId);
        return wp;
    }




    @istest
    private staticvoid testMaintenanceRequestPositive(){ Vehicle_
        cvehicle=createVehicle();
        insert vehicle;
        id vehicleId = vehicle.Id;


        Product2equipment=createEq(); insert
        equipment;
        idequipmentId=equipment.Id;


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


        Equipment_Maintenance_Item_cworkP=
createWorkPart(equipmentId,somethingToUpdate.id);
        insert workP;


        test.startTest();
        somethingToUpdate.status=CLOSED;
        updatesomethingToUpdate;
        test.stopTest();


        CasenewReq=[Selectid,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
                                    fromEquipment_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_Cvehicle=createVehicle();
        insert vehicle;
        id vehicleId = vehicle.Id;

        product2equipment=createEq(); insert
        equipment;
        idequipmentId=equipment.Id;

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

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

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

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


        Equipment_Maintenance_Item__c workPart=[select id
                                                fromEquipment_Maintenance_Item__c
                                                whereMaintenance_Request__c=:emptyReq.Id];


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


    @istest
    privatestaticvoidtestMaintenanceRequestBulk(){ list<Vehicle_C>
        vehicleList=newlist<Vehicle_C>(); list<Product2>
        equipmentList=newlist<Product2>();
        list<Equipment_Maintenance_Item__c>workPartList=new
list<Equipment_Maintenance_Item_c>();
        list<case>requestList=newlist<case>();
        list<id> oldRequestIds = new list<id>();


        for(integeri=0;i<300;i++){
           vehicleList.add(createVehicle());
           equipmentList.add(createEq());
        }
        insertvehicleList;
        insertequipmentList;


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

        list<case> allRequests = [select id
                                  from case

                                  where status =: STATUS_NEW];

        list<Equipment_Maintenance_Item__c>workParts=[selectid
                                                      fromEquipment_Maintenance_Item__c
                                                      whereMaintenance_Request_cin:oldRequestIds];

        system.assert(allRequests.size() == 300);
    }
}
```

3. MaintenanceRequest.apxt

```
triggerMaintenanceRequestonCase(beforeupdate,afterupdate){
     / ToDo: Call MaintenanceRequestHelper.updateWorkOrders if(Trigger.isUpdate
    &&Trigger.isAfter){
        MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);

    }
}
```

6. TESTCALLOUTLOGIC:

1. 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();

        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());

            //classmapsthe following fields:replacement part(alwaystrue), cost, current inventory,
lifespan, maintenance cycle, and warehouse SKU
            //warehouseSKUwillbeexternalIDforidentifyingwhichequipmentrecordsto
updatewithinSalesforce
            for(Objecteq:jsonResponse){
                Map<String,Object> mapJson= (Map<String,Object>)eq;
                Product2myEq=newProduct2();
                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('Yourequipmentwassyncedwiththewarehouseone');
            }
        }

    }

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

}
```

2. WarehouseCalloutServiceTest.apxc

```
@isTest

private class WarehouseCalloutServiceTest {
   @isTest
   static void testWareHouseCallout(){
       Test.startTest();
        /implementmockcallouttesthere
       Test.setMock(HTTPCalloutMock.class, new WarehouseCalloutServiceMock());
       WarehouseCalloutService.runWarehouseEquipmentSync();
       Test.stopTest();
       System.assertEquals(1, [SELECT count() FROM Product2]);
   }
}
```

3. WarehouseCalloutServiceMock.apxc

```
@isTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
    /implementhttpmockcallout
   globalstaticHttpResponserespond(HttpRequestrequest){

       System.assertEquals('https://th-superbadge-apex.herokuapp.com/equipment',
request.getEndpoint());
       System.assertEquals('GET', request.getMethod());

        /Createafakeresponse
       HttpResponseresponse=newHttpResponse();

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

response.setBody('[{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5
,"name":"Generator1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"}]');
        response.setStatusCode(200); return
        response;
    }
}
```

7. TEST SCHEDULING LOGIC:

1. WarehouseSyncSchedule.apxc

```
global class WarehouseSyncSchedule implements Schedulable { global
    voidexecute(SchedulableContext ctx) {

        System.enqueueJob(new  WarehouseCalloutService());
    }
}
```

2. WarehouseSyncScheduleTest.apxc

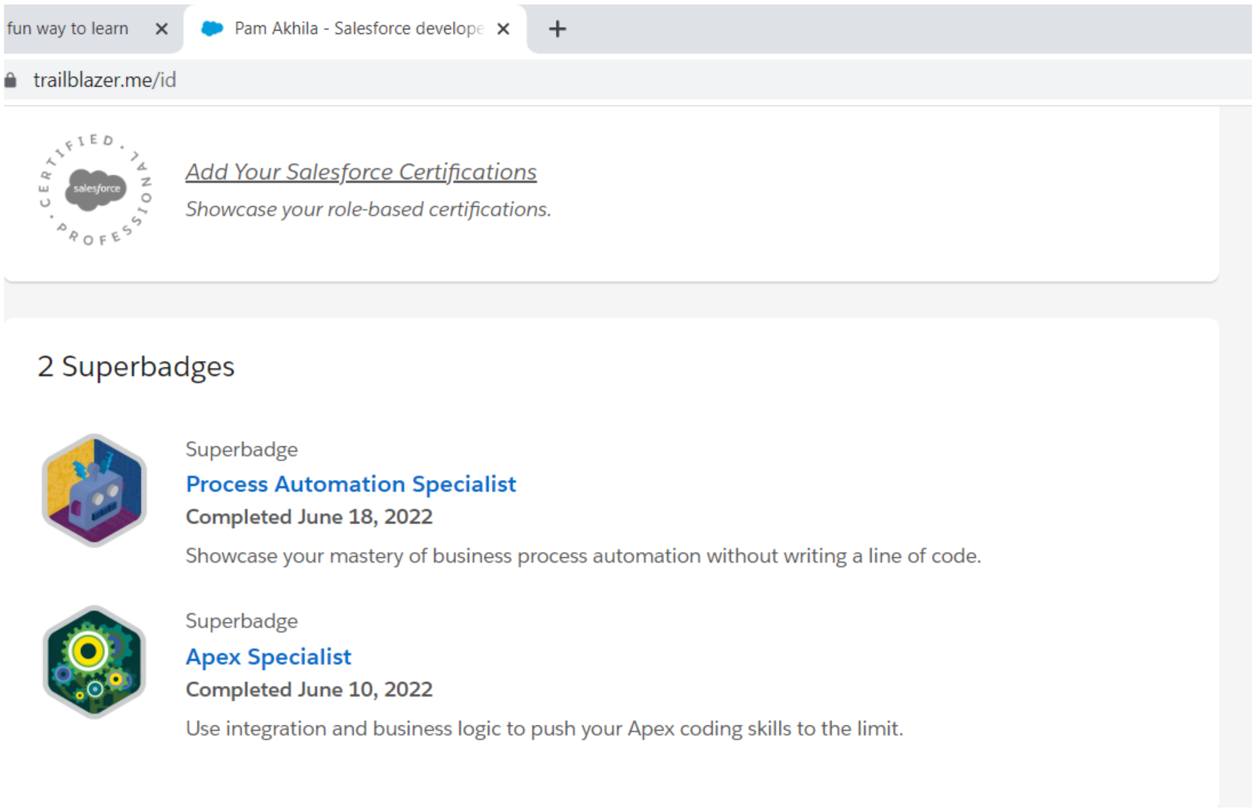
```
@isTest
public class WarehouseSyncScheduleTest {


    @isTest staticvoid WarehousescheduleTest(){
        StringscheduleTime = '00 00 01 * * ?';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock()); String
        jobID=System.schedule('Warehouse Time To Scheduleto Test',
scheduleTime, new WarehouseSyncSchedule());
        Test.stopTest();
        //Contains scheduleinformation for a scheduled job. CronTrigger is similar to a cronjobon
UNIXsystems.
      /This object is available in API version17.0 and later.

     CronTrigger a=[SELECT Id FROM CronTrigger whereNextFireTime > today];
     System.assertEquals(jobID, a.Id,'Schedule ');



   }
}
```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