

CODES FOR HANDS-ON CHALLENGES IN SALESFORCE SELF LEARNING:

Apex triggers module:

Get Started with Apex Triggers Challenge:

1) AccountAddressTrigger.apxt

```
trigger AccountAddressTrigger on Account (before insert,before update) {  
  
    for(Account acct:Trigger.new)  
    {  
        if(acct.Match_Billing_Address__c == True)  
            acct.ShippingPostalCode = Acct.BillingPostalCode;  
    }  
}
```

Bulk Apex Triggers Challenge:

2) ClosedOpportunityTrigger.aptxt

```
trigger ClosedOpportunityTrigger on Opportunity (after insert, after update)  
{  
  
    List<Task> taskList = new List<Task>();  
  
    for(Opportunity opp : Trigger.new) {  
  
        if(Trigger.isInsert) {  
            if(Opp.StageName == 'Closed Won') {  
                taskList.add(new Task(Subject = 'Follow Up Test Task',  
WhatId = opp.Id));  
            }  
        }  
        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;
}
}

```

APEX TESTING MODULE

Get Started with Apex Unit Tests:

1) VerifyDate.apxc

```

public class VerifyDate {

    public static Date CheckDates(Date date1, Date date2) {
        if(DateWithin30Days(date1,date2)) {
            return date2;
        } else {
            return SetEndOfMonthDate(date1);
        }
    }

    private static Boolean DateWithin30Days(Date date1, Date date2) {
        if( date2 < date1) { return false; }

        Date date30Days = date1.addDays(30);
        if( date2 >= date30Days ) { return false; }
        else { return true; }
    }

    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;
    }
}

```

2) TestVerifyDate.apxc

```
@isTest
private class TestVerifyDate {
    static testMethod void TestVerifyDate() {
        VerifyDate.CheckDates(System.today(), System.today().addDays(10));
        VerifyDate.CheckDates(System.today(), System.today().addDays(78));
    }
}
```

Test Apex Triggers:

1) RestrictContactByName.apxt

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

    For (Contact c : Trigger.New) {
        if(c.LastName == 'INVALIDNAME') {
            c.AddError('The Last Name "' + c.LastName + '" is not allowed for DML');
        }
    }
}
```

2) TestRestrictContactByName.apxc

```
@isTest
private class TestRestrictContactByName {
    @isTest static void metodoTest()
    {
        Contact c = new Contact(LastName = 'INVALIDNAME');
        Database.SaveResult result = Database.insert(c, false);
        System.assert(!result.isSuccess());
        System.assert(result.getErrors().size() > 0);
        System.assertEquals('The Last Name "INVALIDNAME" is not allowed for
```

```

        result.getErrors()[0].getMessage());
    }
}

```

Create Test Data For Apex Tests:

1) RandomContactFactory.apxc

```

public class RandomContactFactory
{
    public static List<Contact> generateRandomContacts(integer numofContacts,string
    LastNameGen)
    {
        List<Contact> con= new List<Contact>();
        for(Integer i=0;i<numofContacts;i++)
        {
            LastNameGen='Test'+ i;
            Contact a=new Contact(FirstName=LastNameGen,LastName=LastNameGen);
            con.add(a);
        }
        return con;
    }
}

```

ASYNCHRONOUS APEX MODULE:

Use Future Methods:

1)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;
}
}

```

2) 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();
    }
}

```

USE BATCH APEX:

1) LeadProcessor.apxc

```
1 global class LeadProcessor implements Database.Batchable <SObject> {
2     global Database.QueryLocator start(Database.BatchableContext bc){
3         String Query='Select id,LeadSource from Lead';
4         return Database.getQueryLocator(Query);
5     }
6     global void execute(Database.BatchableContext bc, List<Lead> scope){
7         for(Lead l: scope){
8             l.LeadSource='DreamForce';
9         }
10        update scope;
11    }
12    global void finish(Database.BatchableContext bc){
13        Id job= bc.getJobId();
14        System.debug(job);
15    }
16 }
```

2) LeadProcessorTest.apxc

```
@isTest
private class LeadProcessorTest {
    @istest
    static void tetslead(){
        List<Lead> l= new List<Lead>();
        Lead l1= new Lead();
        l1.LastName='surya';
        l1.Company='Company';
        l1.Status='Closed-Converted';
        l1.LeadSource='Dreamforce';
        l.add(l1);
        insert l;

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

Control Processes with Queueable Apex:

1) 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;
        }
    }
}
```

2) 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();
    }
}

```

Schedule Jobs Using the Apex Scheduler:

1) DailyLeadProcessor.apxc

```

global class DailyLeadProcessor implements Schedulable {
    global void execute(SchedulableContext ctx) {
        List<Lead> lList = [Select Id, LeadSource from Lead where
LeadSource = null limit 200];
        list<lead> led = new list<lead>();
        if(!lList.isEmpty()) {
            for(Lead l: lList) {
                l.LeadSource = 'Dreamforce';
                led.add(l);
            }
            update led;
        }
    }
}

```



```

    }
}
}

```

2) DailyLeadProcessorTest.apxc

```

@isTest
public class DailyLeadProcessorTest{

    static testMethod void testMethod1()
    {
        Test.startTest();

        List<Lead> lstLead = new List<Lead>();
        for(Integer i=0 ;i <200;i++)
        {
            Lead led = new Lead();
            led.FirstName = 'FirstName';
            led.LastName = 'LastName'+i;
            led.Company = 'demo'+i;
            lstLead.add(led);
        }

        insert lstLead;

        DailyLeadProcessor ab = new DailyLeadProcessor();
        String jobId = System.schedule('jobName','0 5 * * * ? ' ,ab) ;

        Test.stopTest();
    }
}

```

ASYNCHRONOUS APEX MODULE:

Apex REST Callouts :

1)AnimalLocator.apxc

```

public class AnimalLocator
{

```

```

public static String getAnimalNameById(Integer id)
{
    Http http = new Http();
    HttpRequest request = new HttpRequest();
    request.setEndpoint('https://th-apex-http-

    request.setMethod('GET');
    HttpResponse response = http.send(request);
    String strResp = '';
    system.debug('*****response '+response.getStatusCode());
    system.debug('*****response '+response.getBody());
    // If the request is successful, parse the JSON response.
    if (response.getStatusCode() == 200)
    {
        // Deserializes the JSON string into collections of primitive
data types.
        Map<String, Object> results = (Map<String, Object>)
JSON.deserializeUntyped(response.getBody());
        // Cast the values in the 'animals' key as a list
        Map<string,object> animals = (map<string,object>)
results.get('animal');
        System.debug('Received the following animals:' + animals );
        strResp = string.valueOf(animals.get('name'));
        System.debug('strResp >>>>>' + strResp );
    }
    return strResp ;
}
}

```

2) 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);
    }
}

```

Apex SOAP Callouts :

1)ParkService.apxc

```
public class ParkService{
    public class byCountryResponse {
        public String[] return_x;
        private String[] return_x_type_info = new
String[]{'return','http://parks.services/',null,'0','-1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://parks.services/','false','false'};
        private String[] field_order_type_info = new String[]{'return_x'};
    }
    public class byCountry {
        public String arg0;
        private String[] arg0_type_info = new
String[]{'arg0','http://parks.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://parks.services/','false','false'};
        private String[] field_order_type_info = new String[]{'arg0'};
    }
    public class ParksImplPort {
        public String endpoint_x = 'https://th-apex-soap-

        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://calculator.services/', 'calculatorServices',
'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;
}
}
}

```

2) ParkLocator.apxc

```

public class ParkLocator{
    public static String[] country(String country){
        ParkService.ParksImplPort parks = new ParkService.ParksImplPort();
        String[] parksname = parks.byCountry(country);
        return parksname;
    }
}

```

3) ParkLocatorTest.apxc

```

@Test
private class ParkLocatorTest{
    @Test static void testCallout() {
        // This causes a fake response to be generated
        Test.setMock(WebServiceMock.class, new ParkServiceMock());
        // Call the method that invokes a callout
        List<String> result = new List<String>();
        List<String> expectedvalue = new
List<String>{'Park1','Park2','Park3'};

        result = ParkLocator.country('India');
        // Verify that a fake result is returned
        System.assertEquals(expectedvalue, result);
    }
}

```

4) ParkServiceMock.apxc

```

@Test

```

```

global class ParkServiceMock implements WebServiceMock{
    global void doInvoke(
        Object stub,
        Object request,
        Map<String, Object> response,
        String endpoint,
        String soapAction,
        String requestName,
        String responseNS,
        String responseName,
        String responseType) {
        // start - specify the response you want to send
        ParkService.byCountryResponse response_x =
            new ParkService.byCountryResponse();

        List<String> myStrings = new List<String>
{'Park1','Park2','Park3'};

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

```

Apex Web Services :

1) AccountManager.apxc

```

@RestResource(urlMapping='/Accounts/*/contacts')
global with sharing class AccountManager{
    @HttpGet
    global static Account getAccount(){
        RestRequest request = RestContext.request;
        String accountId =
request.requestURI.substringBetween('Accounts/', '/contacts');
        system.debug(accountId);
        Account objAccount = [SELECT Id,Name,(SELECT Id,Name FROM Contacts)
FROM Account WHERE Id = :accountId LIMIT 1];
        return objAccount;
    }
}

```

2) AccountManagerTest.apxc

```
@isTest
private class AccountManagerTest{
    static testMethod void testMethod1(){
        Account objAccount = new Account(Name = 'test Account');
        insert objAccount;
        Contact objContact = new Contact(LastName = 'test Contact',
                                         AccountId = objAccount.Id);

        insert objContact;
        Id recordId = objAccount.Id;
        RestRequest request = new RestRequest();
        request.requestUri =
            'https://sandeepidentity-dev-
ed.my.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 Account', thisAccount.Name);
    }
}
```

CODES FOR APEX SUPERBADGE IN SALESFORCE DEVELOPER SPECIALIST CHALLENGE:

STEP 2:Automate record creation:

1)MaintenanceRequestHelper.apxc

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

        For (Case c : updWorkOrders){
```

```

        if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status ==
'Closed'){
            if (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){
                validIds.add(c.Id);
            }
        }
    }

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

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

        for(Case cc : closedCasesM.values()){
            Case nc = new Case (
                ParentId = cc.Id,
                Status = 'New',
                Subject = 'Routine Maintenance',
                Type = 'Routine Maintenance',
                Vehicle__c = cc.Vehicle__c,
                Equipment__c =cc.Equipment__c,
                Origin = 'Web',
                Date_Reported__c = Date.Today()

            );

            If (maintenanceCycles.containsKey(cc.Id)){
                nc.Date_Due__c = Date.today().addDays((Integer)
maintenanceCycles.get(cc.Id));
            } 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> 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;
}
}
}
}

```

2) MaintenanceRequest.apxt

```

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

```

STEP 3: Synchronize Salesforce data with an 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'

```
@future(callout=true)
public static void runWarehouseEquipmentSync(){
    Http http = new Http();
    HttpRequest request = new HttpRequest();

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

    List<Product2> warehouseEq = new List<Product2>();

    if (response.getStatusCode() == 200){
        List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
        System.debug(response.getBody());
        for (Object eq : jsonResponse){
            Map<String,Object> mapJson = (Map<String,Object>)eq;
            Product2 myEq = new Product2();
            myEq.Replacement_Part__c = (Boolean)
mapJson.get('replacement');
            myEq.Name = (String) mapJson.get('name');
            myEq.Maintenance_Cycle__c = (Integer)
mapJson.get('maintenanceperiod');
            myEq.Lifespan_Months__c = (Integer)
mapJson.get('lifespan');
            myEq.Cost__c = (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

        }
    }
}
```

```

    }

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

```

In Anonymous window execute this method:

System.enqueueJob(new WarehouseCalloutService());

STEP 4: Schedule synchronization using Apex code:

1) WarehouseSyncShedule.apxc

```

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

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}

```

STEP 5: TEST AUTOMATION LOGIC:

1) MaintenanceRequestHelperTest.apxc

```

1  @istest
2  public with sharing class MaintenanceRequestHelperTest {
3
4      private static final string STATUS_NEW = 'New';
5      private static final string WORKING = 'Working';
6      private static final string CLOSED = 'Closed';
7      private static final string REPAIR = 'Repair';
8      private static final string REQUEST_ORIGIN = 'Web';
9      private static final string REQUEST_TYPE = 'Routine Maintenance';
10     private static final string REQUEST_SUBJECT = 'Testing subject';
11

```

```

12     PRIVATE STATIC Vehicle__c createVehicle(){
13         Vehicle__c Vehicle = new Vehicle__C(name = 'SuperTruck');
14         return Vehicle;
15     }
16
17     PRIVATE STATIC Product2 createEq(){
18         product2 equipment = new product2(name = 'SuperEquipment',
19                                           lifespan_months__C = 10,
20                                           maintenance_cycle__C = 10,
21                                           replacement_part__c = true);
22         return equipment;
23     }
24
25     PRIVATE STATIC Case createMaintenanceRequest(id vehicleId, id
equipmentId){
26         case cs = new case(Type=REPAIR,
27                           Status=STATUS_NEW,
28                           Origin=REQUEST_ORIGIN,
29                           Subject=REQUEST_SUBJECT,
30                           Equipment__c=equipmentId,
31                           Vehicle__c=vehicleId);
32         return cs;
33     }
34
35     PRIVATE STATIC Equipment_Maintenance_Item__c createWorkPart(id
equipmentId,id requestId){
36         Equipment_Maintenance_Item__c wp = new
Equipment_Maintenance_Item__c(Equipment__c = equipmentId,
37
Maintenance_Request__c = requestId);
38         return wp;
39     }
40
41
42     @istest
43     private static void testMaintenanceRequestPositive(){
44         Vehicle__c vehicle = createVehicle();
45         insert vehicle;
46         id vehicleId = vehicle.Id;
47
48         Product2 equipment = createEq();
49         insert equipment;
50         id equipmentId = equipment.Id;
51

```

```

52         case somethingToUpdate =
createMaintenanceRequest(vehicleId,equipmentId);
53         insert somethingToUpdate;
54
55         Equipment_Maintenance_Item__c workP =
createWorkPart(equipmentId,somethingToUpdate.id);
56         insert workP;
57
58         test.startTest();
59         somethingToUpdate.status = CLOSED;
60         update somethingToUpdate;
61         test.stopTest();
62
63         Case newReq = [Select id, subject, type, Equipment__c,
Date_Reported__c, Vehicle__c, Date_Due__c
64                         from case
65                         where status =:STATUS_NEW];
66
67         Equipment_Maintenance_Item__c workPart = [select id
68                                                         from
Equipment_Maintenance_Item__c
69                                                         where
Maintenance_Request__c =:newReq.Id];
70
71         system.assert(workPart != null);
72         system.assert(newReq.Subject != null);
73         system.assertEquals(newReq.Type, REQUEST_TYPE);
74         SYSTEM.assertEquals(newReq.Equipment__c, equipmentId);
75         SYSTEM.assertEquals(newReq.Vehicle__c, vehicleId);
76         SYSTEM.assertEquals(newReq.Date_Reported__c, system.today());
77     }
78
79     @istest
80     private static void testMaintenanceRequestNegative(){
81         Vehicle__C vehicle = createVehicle();
82         insert vehicle;
83         id vehicleId = vehicle.Id;
84
85         product2 equipment = createEq();
86         insert equipment;
87         id equipmentId = equipment.Id;
88
89         case emptyReq = createMaintenanceRequest(vehicleId,equipmentId);
90         insert emptyReq;

```

```

91
92     Equipment_Maintenance_Item__c workP =
createWorkPart(equipmentId, emptyReq.Id);
93     insert workP;
94
95     test.startTest();
96     emptyReq.Status = WORKING;
97     update emptyReq;
98     test.stopTest();
99
100    list<case> allRequest = [select id
101                            from case];
102
103    Equipment_Maintenance_Item__c workPart = [select id
104                                                from
105                                                Equipment_Maintenance_Item__c
106                                                where
107                                                Maintenance_Request__c = :emptyReq.Id];
108
109    system.assert(workPart != null);
110    system.assert(allRequest.size() == 1);
111 }
112
113 @istest
114 private static void testMaintenanceRequestBulk(){
115     list<Vehicle__C> vehicleList = new list<Vehicle__C>();
116     list<Product2> equipmentList = new list<Product2>();
117     list<Equipment_Maintenance_Item__c> workPartList = new
list<Equipment_Maintenance_Item__c>();
118     list<case> requestList = new list<case>();
119     list<id> oldRequestIds = new list<id>();
120
121     for(integer i = 0; i < 300; i++){
122         vehicleList.add(createVehicle());
123         equipmentList.add(createEq());
124     }
125     insert vehicleList;
126     insert equipmentList;
127
128     for(integer i = 0; i < 300; i++){
129         requestList.add(createMaintenanceRequest(vehicleList.get(i).id,
equipmentList.get(i).id));
130     }

```

```

129         insert requestList;
130
131         for(integer i = 0; i < 300; i++){
132             workPartList.add(createWorkPart(equipmentList.get(i).id,
133             requestList.get(i).id));
134         }
135         insert workPartList;
136
137         test.startTest();
138         for(case req : requestList){
139             req.Status = CLOSED;
140             oldRequestIds.add(req.Id);
141         }
142         update requestList;
143         test.stopTest();
144
145         list<case> allRequests = [select id
146                                 from case
147                                 where status =: STATUS_NEW];
148
149         list<Equipment_Maintenance_Item__c> workParts = [select id
150                                                         from
151                                                         Equipment_Maintenance_Item__c
152                                                         where
153                                                         Maintenance_Request__c in: oldRequestIds];
154
155         system.assert(allRequests.size() == 300);
156     }

```

2)MaintenanceRequestHelper.apxc

```

1  public with sharing class MaintenanceRequestHelper {
2      public static void updateWorkOrders(List<Case> updWorkOrders,
3      Map<Id,Case> nonUpdCaseMap) {
4          Set<Id> validIds = new Set<Id>();
5
6          For (Case c : updWorkOrders){
7              if (nonUpdCaseMap.get(c.Id).Status != 'Closed' &&
8              c.Status == 'Closed'){
9                  if (c.Type == 'Repair' || c.Type == 'Routine

```

```

9             validIds.add(c.Id);
10
11
12         }
13     }
14 }
15
16     if (!validIds.isEmpty()){
17         List<Case> newCases = new List<Case>();
18         Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT
19             Id, Vehicle__c, Equipment__c,
20             Equipment__r.Maintenance_Cycle__c,(SELECT
21             Id,Equipment__c,Quantity__c FROM Equipment_Maintenance_Items__r)
22                                     FROM
23             Case WHERE Id IN :validIds]);
24         Map<Id,Decimal> maintenanceCycles = new
25             Map<ID,Decimal>();
26         AggregateResult[] results = [SELECT
27             Maintenance_Request__c,
28             MIN(Equipment__r.Maintenance_Cycle__c)cycle FROM
29             Equipment_Maintenance_Item__c WHERE Maintenance_Request__c IN
30             :ValidIds GROUP BY Maintenance_Request__c];
31
32         for (AggregateResult ar : results){
33             maintenanceCycles.put((Id)
34             ar.get('Maintenance_Request__c'), (Decimal) ar.get('cycle'));
35         }
36
37         for(Case cc : closedCasesM.values()){
38             Case nc = new Case (
39                 ParentId = cc.Id,
40                 Status = 'New',
41                 Subject = 'Routine Maintenance',
42                 Type = 'Routine Maintenance',
43                 Vehicle__c = cc.Vehicle__c,
44                 Equipment__c =cc.Equipment__c,
45                 Origin = 'Web',
46                 Date_Reported__c = Date.Today()
47             );

```

```

39
40         If (maintenanceCycles.containsKey(cc.Id)){
41             nc.Date_Due__c =
Date.today().addDays((Integer) maintenanceCycles.get(cc.Id));
42         }
43
44         newCases.add(nc);
45     }
46
47     insert newCases;
48
49     List<Equipment_Maintenance_Item__c> clonedWPs = new
List<Equipment_Maintenance_Item__c>();
50     for (Case nc : newCases){
51         for (Equipment_Maintenance_Item__c wp :
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items__r){
52             Equipment_Maintenance_Item__c wpClone =
wp.clone();
53             wpClone.Maintenance_Request__c = nc.Id;
54             ClonedWPs.add(wpClone);
55         }
56     }
57     insert ClonedWPs;
58 }
59 }
60 }

```

2)MaintenanceRequest.apxt

```

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

```

STEP 6)Test callout logic:-

1) WarehouseCalloutService.apxc

```
1  public with sharing class WarehouseCalloutService {
2  private static final String WAREHOUSE_URL = 'https://th-superbadge-

3  public static void runWarehouseEquipmentSync(){
4
5      Http http = new Http();
6      HttpRequest request = new HttpRequest();
7
8      request.setEndpoint(WAREHOUSE_URL);
9      request.setMethod('GET');
10     HttpResponse response = http.send(request);
11
12
13     List<Product2> warehouseEq = new List<Product2>();
14
15     if (response.getStatusCode() == 200){
16         List<Object> jsonResponse = (List<Object>)JSON.deserializeUntyped(response.getBody());
17         System.debug(response.getBody());
18
19         for (Object eq : jsonResponse){
20             Map<String,Object> mapJson = (Map<String,Object>)eq;
21             Product2 myEq = new Product2();
22             myEq.Replacement_Part__c = (Boolean) mapJson.get('replacement');
23             myEq.Name = (String) mapJson.get('name');
24             myEq.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
25             myEq.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
26             myEq.Cost__c = (Decimal) mapJson.get('lifespan');
27             myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
28             myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
29             warehouseEq.add(myEq);
30         }
31
32         if (warehouseEq.size() > 0){
33             upsert warehouseEq;
34             System.debug("Your equipment was synced with the warehouse one");
35             System.debug(warehouseEq);
36         }
37     }
38 }
39 }
40 }
```

2) WarehouseCalloutServiceMock.apxc

```
1  @isTest
2  global class WarehouseCalloutServiceMock implements HttpCalloutMock {
3      // implement http mock callout
4      global static HttpResponse respond(HttpRequest request){
5
6          System.assertEquals('https://th-superbadge-
7      ));
8          System.assertEquals('GET', request.getMethod());
9
10         // Create a fake response
11         HttpResponse response = new HttpResponse();
12         response.setHeader('Content-Type', 'application/json');
13
14         response.setBody('{"_id":"55d66226726b611100aaf741","replacement":fal
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STEP 7)Test scheduling logic:

1)WarehouseSyncSchedule.apxc :

```
global class WarehouseSyncSchedule implements Schedulable {  
    global void execute(SchedulableContext ctx) {  
  
        WarehouseCalloutService.runWarehouseEquipmentSync();  
    }  
}
```

2) 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();  
  
        CronTrigger a=[SELECT Id FROM CronTrigger where NextFireTime >  
today];  
        System.assertEquals(jobID, a.Id,'Schedule ');  
    }  
}
```