

Apex Specialist Superbadge

Step 2. Automate record creation

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

```
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));
            }

            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;
}
}
}

```

Step 3. Synchronize Salesforce Data with external System

```

public with sharing class WarehouseCalloutService {

    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 = (Decimal) mapJson.get('lifespan');
        myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
        myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
        warehouseEq.add(myEq);
    }

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

    }
}
}
}

```

Step 4. Schedule Synchronization

```

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

```

Step 5. Test Automation Logic

@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,
            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];
```

```
    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
                                              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);
    }
    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);
}
}

```

Step 6 Test callout Logic

WarehouseCalloutServiceMock

```

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

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

        // Create a fake response
        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"}');
        response.setStatusCode(200);
        return response;
    }
}

```

WarehouseCalloutServiceTest

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

Step 7. Test Scheduling Logic

```
public with sharing class WarehouseSyncScheduleTest {
    @istest
    static void testWarehouseSyncSchedule(){
        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');
    }
}
```