APEX SUPERBADGE:

CHALLENGE-2

Automate record creation

MaintainenceRequestHelper.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));
            }


            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;
    }
```

```
    }
}
```

MaintaineneceRequest.apxt

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

CHALLENGE-3 Synchronize Salesforce data with an external system

Warehousecalloutservice.apxc

```
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);
            }

        }
    }
}
```

Warehousecalloutservicemock.apxt

```
@isTest
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":fals
e,"quantity":5,"name":"Generator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"}]');
        response.setStatusCode(200);
        return response;
    }
}
```

Challenge-4 Schedule Synchronization

Warehousesynschedule.apxc

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

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}
```

Warehousesynscheduletest.apxt

```
@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-5 test automation logic

Maintainencerequesthelpertest.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,
                       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);
    }
}
```

Maintainencerequesthelper.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));
                }
```

```
            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;
    }
  }
}
```

Maintainencerequest.apxt

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

```
Trigger.OldMap);
    }
}
```

CHALLENGE-6 test callout logic

Warehousecalloutservice.apxc

```
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);
```

```
        }


    }
  }
}
```

Warehousecalloutservicetest.apxc

```
@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]);
  }
}
```

Warehousecalloutservicemock.apxt

```
@isTest
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":fals
e,"quantity":5,"name":"Generator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"}]');
        response.setStatusCode(200);
        return response;
    }
}
```

CHALLENGE-7 test scheduling logic

Warehousesynschedule.apxc

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

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
```

```
}
```

Warehousesynscheduletest.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 ');



    }
}
```

PROCESS AUTOMATION SPECIALIST SUPERBADGE

CHALLENGE-2 Automate leads

Validation rule on lead

ERROR CONDITION FORMULA:

OR(AND(LEN(State) > 2,
NOT(CONTAINS("AL:AK:AZ:AR:CA:CO:CT:DE:DC:FL:GA:HI:ID:IL:IN:IA:KS:KY:LA:ME:MD:MA:MI:MN:MS:MO:MT:NE:NV:NH:NJ:NM:NY:NC:ND:OH:OK:OR:PA:RI:SC:SD:TN:TX:UT:VT:VA:WA:WV:WI:WY", State))),
NOT(OR(Country ="US",Country ="USA",Country ="United States",
ISBLANK(Country))))

CHALLENGE-3 Automate accounts

Create 4 Roll Up Summary fields as below:

Field 1: Label: Number of deals

Summary Type: COUNT

Summarized Object: Opportunity

Filter Criteria: None

Field 2: Label: Number of won deals

Summary Type: COUNT

Summarized Object: Opportunity

Filter Criteria: Stage EQUALS Closed Won

Field 3: Label: Last won deal date

Summary Type: MAX

Field to Aggregate: Opportunity: Close Date

Summarized Object: Opportunity Filter Criteria: Stage EQUALS Closed Won

Field 4: Label: Amount of won deals Summary Type: SUM

Field to Aggregate: Opportunity: Amount

Summarized Object: Opportunity

Filter Criteria: Stage EQUALS Closed Won

And 2 Formula Fields with below:

Field 5:Label: Deal win percent

Return Type: Percent

Decimal Places: 2

Formula: (Number of won_deals/Number_of_deals__c)

Field 6:Label: Call for Service

Return Type: Text Formula: IF(DATE(YEAR(Last won deal date__c)+2, MONTH(Last_won_deal date_e).DAY(Last on deal date))

<= TODAY(), "Yes", "No")

Create 2 validation rules as below

Validation Rule 1: Rule Name: US_Address (Anything)

Error Condition Formula:

OR(AND(LEN(BillingState) > 2,
NOT(CONTAINS("AL:AK:AZ:AR:CA:CO:CT:DE:DC:FL:GA:HI:ID:IL:IN:IA:KS:KY:LA:ME:MD:MA:MI:MN:MS:MO:MT:NE:NV:NH:NJ:NM:NY:NC:ND:OH:OK:OR:PA:RI:SC:SD:TN:TX:UT:VT:VA:WA:WV:WI:WY", BillingState))

),AND(LEN(ShippingState) > 2,
NOT(CONTAINS("AL:AK:AZ:AR:CA:CO:CT:DE:DC:FL:GA:HI:ID:IL:IN:IA:KS:KY:LA:ME:MD:MA:MI:MN:MS:MO:MT:NE:NV:NH:NJ:NM:NY:NC:ND:OH:OK:OR:PA:RI:SC:SD:TN:TX:UT:VT:VA:WA:WV:WI:WY", ShippingState))

),NOT(OR(BillingCountry ="US",BillingCountry ="USA",BillingCountry ="United States", ISBLANK(BillingCountry))),

NOT(OR(ShippingCountry ="US",ShippingCountry

="USA",ShippingCountry ="United States", ISBLANK(ShippingCountry))))

Validation rule 2:

ERROR CONDITION FORMULA:

ISCHANGED(Name) && (OR(ISPICKVAL(Type ,'Customer - Direct') ,ISPICKVAL(Type ,'Customer - Channel')))

CHALLENGE-5 Create sales process and validate opputunities

Opportunity validation rule

IF((Amount > 100000 && Approved__c <> True && ISPICKVAL(StageName,'Closed Won')),True,False)

CHALLENGE-6 Automate opportunities

process builder

CHALLENGE-7 CREATE FLOE FOR OPPORTUNITIES

flow diagram

CHALLENGE-8 Automate setups

Clone the closed won deal from the flow which yyyyou have created

And update the formula

CASE(MOD([Opportunity].CloseDate + 180 - DATE(1900, 1, 7),7), 0, [Opportunity].CloseDate + 181, 6, [Opportunity].CloseDate + 182, [Opportunity].CloseDate + 180)