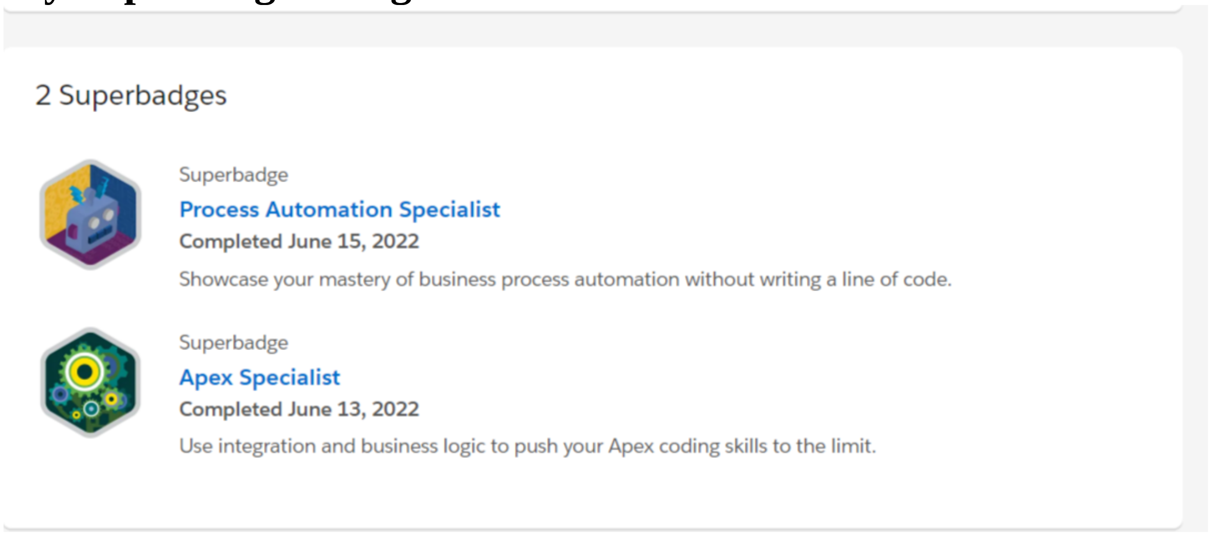
SALESFORCE DEVELOPER :

My Superbadges images:


2 Superbadges

Superbadge
Process Automation Specialist
Completed June 15, 2022
Showcase your mastery of business process automation without writing a line of code.

Superbadge
Apex Specialist
Completed June 13, 2022
Use integration and business logic to push your Apex coding skills to the limit.

Process Automation Specialist:

In this super badge i have learnt about:

1. Automate lead ownership using assignment rules.
2. Enforcing the data integrity with formula fields and validation rules.
3. Creating an custom object in a master-detail relationship to a standard object in trailhead.
4. Define the opportunity sales process using stages, the record types, and the validation rules.
5. It helped to perform Automate business processes to send emails, create related records, and submit opportunities for approval.
6. Creating a flow to display dynamic information on a Lightning record page.
7. Create a process to evaluate and update records.

Apex Specialist:

In this super badge i have learnt about the creating the apex class, apex object and triggers.

1. To Automate record creation using Apex triggers.
2. Synchronize Salesforce data with an external system using asynchronous REST callouts.
3. Scheduling synchronization using Apex code.
4. Allow the Test automation logic to confirm Apex trigger side effects.
5. The Test integration logic using callout mocks.
6. To Test scheduling the logic to confirm action gets queued.

```
}
```

Codes i developed to complete my apex superbadge:

APEX TRIGGERS:

get started with apex triggers:

```
trigger AccountAddressTrigger on Account (before insert,before update) {
    for (Account account : trigger.new){
        if(account.Match_Billing_Address__c==true){
            account.ShippingPostalCode=account.BillingPostalCode;
        }
    }
}
```

bulk apex:

```
trigger ClosedOpportunityTrigger on Opportunity (after insert, after update) {
   List<Task> taskListToInsert = new List<Task>();
     for(Opportunity opp:Trigger.new)
     {
         if(opp.StageName == 'Closed Won')
         {
             Task t = new Task();
             t.Subject = 'Follow Up Test Task';
             t.WhatId = opp.Id;
             taskListToInsert.add(t);
         }
     }
          if(taskListToInsert.size() > 0)
     {
         insert taskListToInsert;
     }
```

APEX TESTING:

get started with apex unit tests:

VerifyDate class :

```
public class VerifyDate {

  //method to handle potential checks against two dates
  public static Date CheckDates(Date date1, Date date2) {
    //if date2 is within the next 30 days of date1, use date2.  Otherwise use the end of the month
    if(DateWithin30Days(date1,date2)) {
      return date2;
    } else {
      return SetEndOfMonthDate(date1);
    }
  }

  //method to check if date2 is within the next 30 days of date1
  private static Boolean DateWithin30Days(Date date1, Date date2) {
    //check for date2 being in the past
          if( date2 < date1) { return false; }

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

}
```

TestVerifyDate :

```
@isTest
public class TestVerifyDate
{
    static testMethod void testMethod1()
    {
        Date d = VerifyDate.CheckDates(System.today(),System.today()+1);
        Date d1 = VerifyDate.CheckDates(System.today(),System.today()+60);
    }
}
```

test apex triggers:

RestrictContactByName :

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

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

TestRestrictContactByName :

```
@isTest
private class TestRestrictContactByName {

    static testMethod void  metodoTest()
    {

        List<Contact> listContact= new List<Contact>();
        Contact c1 = new Contact(FirstName='Francesco', LastName='Riggio' , email='Test@test.com');
        Contact c2 = new Contact(FirstName='Francesco1', LastName = 
'INVALIDNAME',email='Test@test.com');
        listContact.add(c1);
        listContact.add(c2);

        Test.startTest();
            try
            {
                insert listContact;
            }
            catch(Exception ee)
            {
            }

        Test.stopTest();

    }

}
```

cretae test data for apex tests:

RandomContactFactory class :

```
//@isTest
public class RandomContactFactory {
    public static List<Contact> generateRandomContacts(Integer numContactsToGenerate, String
FName) {
        List<Contact> contactList = new List<Contact>();

        for(Integer i=0;i<numContactsToGenerate;i++) {
            Contact c = new Contact(FirstName=FName + ' ' + i, LastName = 'Contact '+i);
            contactList.add(c);
            System.debug(c);
        }
        //insert contactList;
        System.debug(contactList.size());
        return contactList;
    }

}
```

ASYNCHRONOUS APEX:

use future methods:

```
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;
    }

}
```

test class

```
@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:

```
public class LeadProcessor implements Database.Batchable<sObject> {


     public Database.QueryLocator start(Database.BatchableContext bc) {
        // collect the batches of records or objects to be passed to execute
          return Database.getQueryLocator([Select LeadSource From Lead ]);
    }
    public void execute(Database.BatchableContext bc, List<Lead> leads){
         // process each batch of records
            for (Lead Lead : leads) {
                lead.LeadSource = 'Dreamforce';
            }
        update leads;
    }
    public void finish(Database.BatchableContext bc){
      }


}
```

test class

```
@isTest
```

```
public class LeadProcessorTest {


        @testSetup
    static void setup() {
        List<Lead> leads = new List<Lead>();
        for(Integer counter=0 ;counter <200;counter++){
            Lead lead = new Lead();
            lead.FirstName ='FirstName';
            lead.LastName ='LastName'+counter;
            lead.Company
 ='demo'+counter;
            leads.add(lead);
        }
        insert leads;
    }

    @isTest static void test() {
        Test.startTest();
        LeadProcessor leadProcessor = new LeadProcessor();
        Id batchId = Database.executeBatch(leadProcessor);
        Test.stopTest();
    }

}
```

control processes with queueable apex:

```
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;
         }

    }

}
```

test class

```
@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:

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

```
            update l;
        }
    }
}
```

test class

```
@isTest
private class DailyLeadProcessorTest {
            static testMethod void testDailyLeadProcessor() {
                        String CRON_EXP = '0 0 1 * * ?';
                        List<Lead> lList = new List<Lead>();
                for (Integer i = 0; i < 200; i++) {
                                    lList.add(new Lead(LastName='Dreamforce'+i, Company='Test1 Inc.',
Status='Open - Not Contacted'));
                        }
                        insert lList;

                        Test.startTest();
                        String jobId = System.schedule('DailyLeadProcessor', CRON_EXP, new
DailyLeadProcessor());
            }
}
```

APEX INTEGRATION SERVICES:

Apex REST Callouts:

Class AnimalLocator

```
public class AnimalLocator{
    public static String getAnimalNameById(Integer x){
        Http http = new Http();
        HttpRequest req = new HttpRequest();
        req.setEndpoint('https://th-apex-http-callout.herokuapp.com/animals/'
 + x);
        req.setMethod('GET');
        Map<String, Object> animal= new Map<String, Object>();
        HttpResponse res = http.send(req);
            if (res.getStatusCode() == 200) {
        Map<String, Object> results = (Map<String, Object>)JSON.deserializeUntyped(res.getBody());
      animal = (Map<String, Object>) results.get('animal');
        }
return (String)animal.get('name');
    }
}
```

AnimalLocatorTest

```
@isTest
private class AnimalLocatorTest{
    @isTest static void AnimalLocatorMock1() {
        Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock());
        string result = AnimalLocator.getAnimalNameById(3);
        String expectedResult = 'chicken';
        System.assertEquals(result,expectedResult );
    }
}
```

AnimalLocatorMock

```
@isTest

global class AnimalLocatorMock implements HttpCalloutMock {

     // Implement this interface method

    global HTTPResponse respond(HTTPRequest request) {

        // Create a fake response

        HttpResponse response = new HttpResponse();

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

        response.setBody('{"animals": ["majestic badger", "fluffy bunny", "scary bear", "chicken", 
"mighty moose"]}');

        response.setStatusCode(200);

        return response;

    }

}
```

Apex SOAP Callouts:

ParkLocator class

```
public class ParkLocator {

    public static string[] country(string theCountry) {

        ParkService.ParksImplPort  parkSvc = new  ParkService.ParksImplPort(); // remove space

        return parkSvc.byCountry(theCountry);

    }

}
```

ParkLocatorTest class

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

ParkServiceMock class

```
@isTest
global class ParkServiceMock implements WebServiceMock {
   global void doInvoke(
           Object stub,
           Object request,
           Map<String, Object> response,
           String endpoint,
           String soapAction,
           String requestName,
           String responseNS,
           String responseName,
           String responseType) {
        // start - specify the response you want to send
        ParkService.byCountryResponse response_x = new ParkService.byCountryResponse();
        response_x.return_x = new List<String>{'Yellowstone', 'Mackinac National Park', 'Yosemite'};
        // end
        response.put('response_x', response_x);
   }
}
```

Apex Web Services:

AccountManagerTest/////

```
@isTest
private class AccountManagerTest {

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

    }

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

AccountManager//////

```
@RestResource(urlMapping='/Accounts/*/contacts')
global class AccountManager {
    @HttpGet
    global static Account getAccount() {
        RestRequest req = RestContext.request;
        String accId = req.requestURI.substringBetween('Accounts/', '/contacts');
        Account acc = [SELECT Id, Name, (SELECT Id, Name FROM Contacts)
                       FROM Account WHERE Id = :accId];
        return acc;
    }
}
```

APEX SPECIALIST:

For MaintenanceRequestHelper.cls

```
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);
                }
            }
        }

        //When an existing maintenance request of type Repair or Routine Maintenance is
closed,
        //create a new maintenance request for a future routine checkup.
        if (!validIds.isEmpty()){
            Map<Id,Case> closedCases = 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>();

            //calculate the maintenance request due dates by using the maintenance cycle defined
on the related equipment records.
            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'));
            }

            List<Case> newCases = new List<Case>();
            for(Case cc : closedCases.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 multiple pieces of equipment are used in the maintenance request,
                //define the due date by applying the shortest maintenance cycle to today’s date.
                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> clonedList = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
            for (Equipment_Maintenance_Item__c clonedListItem :
closedCases.get(nc.ParentId).Equipment_Maintenance_Items__r){
                Equipment_Maintenance_Item__c item = clonedListItem.clone();
                item.Maintenance_Request__c = nc.Id;
                clonedList.add(item);
            }
        }
        insert clonedList;
    }
  }
}
```

MaintenanceRequestHelper.cls

```
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);
               }
           }
       }

       //When an existing maintenance request of type Repair or Routine Maintenance is closed,
       //create a new maintenance request for a future routine checkup.
       if (!validIds.isEmpty()){
           Map<Id,Case> closedCases = 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>();

           //calculate the maintenance request due dates by using the maintenance cycle defined on the
related equipment records.
```

```
        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'));
        }

        List<Case> newCases = new List<Case>();
        for(Case cc : closedCases.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 multiple pieces of equipment are used in the maintenance request,
          //define the due date by applying the shortest maintenance cycle to today’s date.
          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> clonedList = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
          for (Equipment_Maintenance_Item__c clonedListItem :
closedCases.get(nc.ParentId).Equipment_Maintenance_Items__r){
            Equipment_Maintenance_Item__c item = clonedListItem.clone();
            item.Maintenance_Request__c = nc.Id;
            clonedList.add(item);
          }
        }
        insert clonedList;
      }
    }
}
```

WarehouseCalloutService.cls

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

    //Write a 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(){
        System.debug('go into runWarehouseEquipmentSync');
        Http http = new Http();
        HttpRequest request = new HttpRequest();

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

        List<Product2> product2List = new List<Product2>();
        System.debug(response.getStatusCode());
        if (response.getStatusCode() == 200){
            List<Object> jsonResponse = (List<Object>)JSON.deserializeUntyped(response.getBody());
            System.debug(response.getBody());

            //class maps the following fields:
            //warehouse SKU will be external ID for identifying which equipment records to update within
Salesforce
            for (Object jR : jsonResponse){
                Map<String,Object> mapJson = (Map<String,Object>)jR;
                Product2 product2 = new Product2();
                //replacement part (always true),
                product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
                //cost
                product2.Cost__c = (Integer) mapJson.get('cost');
                //current inventory
                product2.Current_Inventory__c = (Double) mapJson.get('quantity');
                //lifespan
                product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
                //maintenance cycle
                product2.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
                //warehouse SKU
                product2.Warehouse_SKU__c = (String) mapJson.get('sku');

                product2.Name = (String) mapJson.get('name');
                product2.ProductCode = (String) mapJson.get('_id');
                product2List.add(product2);
            }

            if (product2List.size() > 0){
                upsert product2List;
                System.debug('Your equipment was synced with the warehouse one');
            }
        }
    }

    public static void execute (QueueableContext context){
        System.debug('start runWarehouseEquipmentSync');
        runWarehouseEquipmentSync();
        System.debug('end runWarehouseEquipmentSync');
    }

}
```

WarehouseCalloutServiceMock.cls

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

        HttpResponse response = new HttpResponse();
        response.setHeader('Content-Type', 'application/json');
        response.setBody('[{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name":"Generator 1000 kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611100aaf742","replacement":true,"quantity":183,"name":"Cooling Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100aaf743","replacement":true,"quantity":143,"name":"Fuse 20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]');
        response.setStatusCode(200);

        return response;
    }
}
```