

## APEX SPECIALIST SUPER BADGE CODES

### APEX TRIGGERS

#### AccountAddressTrigger.axpt:

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

#### ClosedOpportunityTrigger.axpt:

```
trigger ClosedOpportunityTrigger on Opportunity (after
insert,after update) {
List<Task> tasklist = new List<Task>();
for(Opportunity opp: Trigger.New){
if(opp.StageName == 'Closed Won'){
tasklist.add(new Task(Subject = 'Follow Up Test Task',WhatId =
opp.Id));
}
}
if(tasklist.size() > 0){
```

```
insert tasklist;  
}  
}
```

## APEX TESTING

### VerifyData.apxc:

```
public class VerifyDate {  
    public static Date CheckDates(Date date1, Date date2) {  
        if(DateWithin30Days(date1,date2)) {  
            return date2;  
        } else {  
            return SetEndOfMonthDate(date1);  
        }  
    }  
}  
  
@TestVisible 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  
@TestVisible 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;
}
}
```

TestVerifyData.apxc:  
@isTest

```
private class TestVerifyDate {
    @isTest static void Test_CheckDates_case1(){
        Date D =
        VerifyDate.CheckDates(date.parse('01/01/2022'),date.parse('01/05/
        System.assertEquals(date.parse('01/05/2022'), D);
    }
    @isTest static void Test_CheckDates_case2(){
        Date D = VerifyDate.CheckDates(date.parse('01/01/2022'),
        date.parse('05/05/2022'));
        System.assertEquals(date.parse('01/31/2022'), D);
    }
    @isTest static void Test_Within30Days_case1(){
        Boolean flag =
        VerifyDate.DateWithin30Days(date.parse('01/01/2022'),
        date.parse('12/30/2021'));
        System.assertEquals(false, flag);
    }
    @isTest static void Test_Within30Days_case2(){
```

```
Boolean flag =  
VerifyDate.DateWithin30Days(date.parse('01/01/2022'),  
date.parse('02/02/2021'));  
System.assertEquals(false, flag);  
}  
@isTest static void Test_Within30Days_case3(){  
  
Boolean flag =  
VerifyDate.DateWithin30Days(date.parse('01/01/2022'),  
date.parse('01/15/2022'));  
System.assertEquals(true, flag);  
}  
@isTest static void Test_SetEndOfMonthDate(){  
Date returndate =  
VerifyDate.SetEndOfMonthDate(date.parse('01/01/2022'));  
}  
}
```

### **RestrictContactByName.apxt:**

```
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  
        }  
    }  
}
```

```
}
```

**TestRestrictContactByName.apxc:**

```
@isTest
private class TestRestrictContactByName {
    @isTest static void Test_insertupdateContact(){
        Contact cnt = new Contact();
        cnt.LastName = 'INVALIDNAME';
        Test.startTest();

        Database.SaveResult result = Database.insert(cnt,false);
        Test.stopTest();
        System.assert(!result.isSuccess());
        System.assert(result.getErrors().size() > 0);
        System.assertEquals('The Last Name "INVALIDNAME" is not allowed
        result.getErrors()[0].getMessage());
    }
}
```

**RandomContactFactory.apxc:**

```
public class RandomContactFactory {
    public static List<Contact> generateRandomContacts(Integer
    num_cnts, string lastname) {
        List<Contact> contacts = new List<Contact>();
        for(Integer i = 0; i < num_cnts; i++) {
            Contact cnt = new Contact(FirstName = 'Test' +i,LastName =

            lastname);
            contacts.add(cnt);
        }
    }
}
```

```
return contacts;  
}  
}
```

## ASYNCHRONOUS APEX

### AccountProcessor.apxc:

```
public class AccountProcessor {  
    @future  
    public static void countContacts(List<Id> accountId_Lst) {  
  
        Map<Id,Integer> account_cno = new Map<Id,Integer>();  
        List<account> account_Lst_all = new List<account>([select id, (select id  
from contacts) from account]);  
        for(account a:account_Lst_all) {  
            account_cno.put(a.id,a.contacts.size()); //populate the map  
  
        }  
  
        List<account> account_Lst = new List<account>(); // list of account that  
we will upsert  
  
        for(Id accountId : accountId_Lst) {  
            if(account_cno.containsKey(accountId)) {  
                account acc = new account();  
                acc.Id = accountId;  
                acc.Number_of_Contacts__c = account_cno.get(accountId);  
account_Lst.add(acc);  
            }  
        }  
    }  
}
```

```
    }  
    upsert account_lst;  
}
```

```
}
```

### **AccountProcessorTest.apxc:**

@isTest

```
public class AccountProcessorTest {
```

@isTest

```
    public static void testFunc() {  
        account acc = new account();  
        acc.name = 'MATW INC';  
        insert acc;
```

```
        contact con = new contact();  
        con.lastname = 'Mann1';  
        con.AccountId = acc.Id;  
        insert con;
```

```
        contact con1 = new contact();  
        con1.lastname = 'Mann2';  
        con1.AccountId = acc.Id;  
        insert con1;
```

```
        List<Id> acc_list = new List<Id>();  
        acc_list.add(acc.Id);
```

```
Test.startTest();
    AccountProcessor.countContacts(acc_list);
Test.stopTest();
List<account> acc1 = new List<account>([select
Number_of_Contacts__c from account where id = :acc.id]);
    system.assertEquals(2,acc1[0].Number_of_Contacts__c);
}

}
```

**LeadProcessor.apxc:**

```
global class LeadProcessor implements Database.Batchable<sObject> {
global Integer count = 0;

    global Database.QueryLocator start (Database.BatchableContext bc) {
return Database.getQueryLocator('Select Id, LeadSource from lead');    }

    global void execute (Database.BatchableContext bc,List<Lead> l_list) {
List<lead> l_list_new = new List<lead>();
        for(lead l : l_list) {
            l.leadsource = 'Dreamforce';
            l_list_new.add(l);
            count+=1;
        }
        update l_list_new;
    }

    global void finish (Database.BatchableContext bc) {
```



```
        system.debug('count = '+count);  
    }  
}
```

### **LeadProcessorTest.apxc:**

```
@isTest  
public class LeadProcessorTest {  
  
    @isTest  
    public static void testit() {  
        List<lead> l_lst = new List<lead>();  
        for (Integer i = 0; i<200; i++) {  
            Lead l = new lead();  
            l.LastName = 'name'+i;  
            l.company = 'company';  
            l.Status = 'somestatus';  
            l_lst.add(l);  
  
        }  
        insert l_lst;  
  
        test.startTest();  
  
        Leadprocessor lp = new Leadprocessor();  
        Id batchId = Database.executeBatch(lp);  
        Test.stopTest();  
    }  
}
```

```
}
```

**AddPrimaryContact.apxc:**

```
public class AddPrimaryContact implements Queueable {  
    public contact c;  
    public String state;  
  
    public AddPrimaryContact(Contact c, String state) {  
        this.c = c;  
        this.state = state;  
    }  
  
    public void execute(QueueableContext qc) {  
        system.debug('this.c = '+this.c+' this.state = '+this.state);  
        List<Account> acc_lst = new List<account>([select id, name,  
BillingState from account where account.BillingState = :this.state limit  
200]);    List<contact> c_lst = new List<contact>();  
        for(account a: acc_lst) {  
            contact c = new contact();  
            c = this.c.clone(false, false, false, false);  
            c.AccountId = a.Id;  
            c_lst.add(c);  
        }  
        insert c_lst;  
    }  
}
```

**AddPrimaryContactTest.apxc:**

```
@IsTest
```

```
public class AddPrimaryContactTest {

    @IsTest
    public static void testing() {
        List<account> acc_lst = new List<account>();
        for (Integer i=0; i<50;i++) {
            account a = new account(name=string.valueOf(i),billingstate='NY');
            system.debug('account a = '+a);
            acc_lst.add(a);
        }
        for (Integer i=0; i<50;i++) {
            account a = new
account(name=string.valueOf(50+i),billingstate='CA');
            system.debug('account a = '+a);
            acc_lst.add(a);
        }
        insert acc_lst;
        Test.startTest();
        contact c = new contact(lastname='alex');
        AddPrimaryContact apc = new AddPrimaryContact(c,'CA');
        system.debug('apc = '+apc);
        System.enqueueJob(apc);
        Test.stopTest();
        List<contact> c_lst = new List<contact>([select id from contact]);
        Integer size = c_lst.size();
        system.assertEquals(50, size);
    }

}
```

**DailyLeadProcessor.apxc:**

```
public class DailyLeadProcessor implements schedulable{
    public void execute(schedulableContext sc) {
        List<lead> l_lst_new = new List<lead>();
        List<lead> l_lst = new List<lead>([select id, leadsource from lead where
leadsource = null]);
        for(lead l : l_lst) {
            l.leadsorce = 'Dreamforce';
            l_lst_new.add(l);
        }
        update l_lst_new;
    }
}
```

**DailyLeadProcessorTest.apxc:**

```
@isTest
public class DailyLeadProcessorTest {

    @isTest
    public static void testing() {

        List<lead> l_lst = new List<lead>();
        for(Integer i=0;i<200;i++) {
            lead l = new lead();
            l.lastname = 'lastname'+i;
            l.Company = 'company'+i;
        }
    }
}
```

```
        l_lst.add(l);
    }
    insert l_lst;

    Test.startTest();
    DailyLeadProcessor dlp = new DailyLeadProcessor ();

    String jobId = System.Schedule('dailyleadprocessing','0 0 0 1 12 ?
2016',dlp);
    Test.stopTest();

    List<lead> l_lst_chk = new List<lead>([select id,leadsource from lead
where leadsource != 'Dreamforce']);
    System.assertequals(0,l_lst_chk.size());
}

}
```

## APEX INTEGRATION SERVICES

### AnimalLocator.apxc:

```
public class AnimalLocator {
    public class cls_animal {
        public Integer id;
        public String name;
        public String eats;
        public String says;
    }
    public class JSONOutput{
```

```
        public cls_animal animal;

        //public JSONOutput parse(String json){
        //return (JSONOutput) System.JSON.deserialize(json,
JSONOutput.class);
        //}
    }

    public static String getAnimalNameById (Integer id) {
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-http
callout.herokuapp.com/animals/' + id);
        //request.setHeader('id', String.valueOf(id)); -- cannot be used in this

challenge :)
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        system.debug('response: ' + response.getBody());
        //Map<String,Object> map_results = (Map<String,Object>)
JSON.deserializeUntyped(response.getBody());
        jsonOutput results = (jsonOutput)
JSON.deserialize(response.getBody(), jsonOutput.class);
        //Object results = (Object) map_results.get('animal');
        system.debug('results= ' + results.animal.name);
        return(results.animal.name);
    }
}
```

### **AnimalLocatorMock.apxc:**

```
@IsTest
global class AnimalLocatorMock implements HttpCalloutMock {

    global HTTPResponse respond(HTTPPrerequest request) {
        Httpresponse response = new Httpresponse();
        response.setStatusCode(200);
        //-- directly output the JSON, instead of creating a logic
        //response.setHeader('key, value)
        //Integer id = Integer.valueOf(request.getHeader('id'));
        //Integer id = 1;
        //List<String> lst_body = new List<String> {'majestic badger', 'fluffy
bunny'};
        //system.debug('animal return value: ' + lst_body[id]);
        response.setBody('{"animal":{"id":1,"name":"chicken","eats":"chicken
food","says":"cluck cluck"}}');
        return response;
    }

}
```

### **AnimalLocatorTest.apxc:**

```
@IsTest
public class AnimalLocatorTest {
    @isTest
    public static void testAnimalLocator() {
```

```
Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock());
//HttpResponse response = AnimalLocator.getAnimalNameById(1);
String s = AnimalLocator.getAnimalNameById(1);
    system.debug('string returned: ' + s);
}

}
```

**ParkService.apxc:**

```
//Generated by wsdl2apex

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
service.herokuapp.com/service/parks';
    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://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;  
    }  
}  
}
```

### **ParkLocator.apxc:**

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

### **ParkLocatorTest.apxc:**

```
@isTest  
private class ParkLocatorTest{  
    @isTest  
    static void testParkLocator() {  
        Test.setMock(WebServiceMock.class, new ParkServiceMock());  
        String[] arrayOfParks = ParkLocator.country('India');  
  
        System.assertEquals('Park1', arrayOfParks[0]);  
    }  
}
```

**ParkServiceMock.apxc:**

```
@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) {
        ParkService.byCountryResponse response_x = new
ParkService.byCountryResponse();
        List<String> lstOfDummyParks = new List<String>
{'Park1','Park2','Park3'};
        response_x.return_x = lstOfDummyParks;

        response.put('response_x', response_x);
    }
}
```

**AccountManager.apxc:**

```
@RestResource(urlMapping='/Accounts/*/contacts')
global with sharing class AccountManager {
```

```
@HttpGet
global static account getAccount() {

    RestRequest request = RestContext.request;

    String accountId =
request.requestURI.substring(request.requestURI.lastIndexOf('/')-
18,      request.requestURI.lastIndexOf('/'));

    List<Account> a = [select id, name, (select id, name from contacts)
from account where id = :accountId];
    List<contact> co = [select id, name from contact where account.id =
:accountId];
    system.debug('** a[0]= ' + a[0]);
    return a[0];

}

}
```

**AccountManagerTest.apxc:**

```
@IsTest(SeeAllData=true)
public class AccountManagerTest {
    @IsTest
    public static void testaccountmanager() {
```

```
RestRequest request = new RestRequest();
request.requestUri = 'https://mannharleen-dev
ed.my.salesforce.com/services/apexrest/Accounts/00190000016cw4tAAA/c
ontacts';
request.httpMethod = 'GET';
RestContext.request = request;

    system.debug('test account result = '+
AccountManager.getAccount());

}

}
```

## APEX SPECIALIST SUPER BADGE

### Challenge 1

#### MaintenanceRequestHelper.apxc:

```
public with sharing class MaintenanceRequestHelper {
    public static void updateWorkOrders(List<Case> caseList) {
        List<case> newCases = new List<Case>();
        Map<String,Integer> result=getDueDate(caseList);
        for(Case c : caseList){
            if(c.status=='closed')
            if(c.type=='Repair' || c.type=='Routine Maintenance'){
                Case newCase = new Case();
                newCase.Status='New';
                newCase.Origin='web';

                newCase.Type='Routine Maintenance';
```

```
newCase.Subject='Routine Maintenance of Vehicle';
newCase.Vehicle__c=c.Vehicle__c;
newCase.Equipment__c=c.Equipment__c;
newCase.Date_Reported__c=Date.today();
if(result.get(c.Id)!=null)
newCase.Date_Due__c=Date.today()+result.get(c.Id);
else
newCase.Date_Due__c=Date.today();
newCases.add(newCase);
}
}
insert newCases;
}
//
public static Map<String,Integer> getDueDate(List<case> CaseIDs){
Map<String,Integer> result = new Map<String,Integer>();
Map<Id, case> caseKeys = new Map<Id, case> (CaseIDs);
List<AggregateResult> wpc=[select Maintenance_Request__r.ID
cID,min(Equipment__r.Maintenance_Cycle__c)cycle
from Work_Part__c where Maintenance_Request__r.ID in :caseKeys.keySet()
group by      Maintenance_Request__r.ID ];
for(AggregateResult res :wpc){
Integer addDays=0;
if(res.get('cycle')!=null)
addDays+=Integer.valueOf(res.get('cycle'));
result.put((String)res.get('cID'),addDays);
}
return result;
}
```

```
}
```

### **MaintenanceRequest.apxt:**

```
trigger MaintenanceRequest on Case (before update, after update) {  
    // ToDo: Call MaintenanceRequestHelper.updateWorkOrders
```

```
    if(trigger.isAfter)  
        MaintenanceRequestHelper.updateWorkOrders(trigger.New);  
}
```

### **Challenge 2:**

#### **WarehouseCalloutService.apxt:**

```
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() {  
        //ToDo: complete this method to make the callout (using @future) to the  
        //    REST endpoint and update equipment on hand.  
        HttpResponse response = getResponse();  
        if(response.getStatusCode() == 200)  
        {  
            List<Product2> results = getProductList(response); //get list of products from  
            Http callout response  
            if(results.size() >0)  
                upsert results Warehouse_SKU__c; //Upsert the products in your org based on  
            the external ID SKU  
        }  
    }
```

```
}  
//Get the product list from the external link  
public static List<Product2> getProductList(HttpResponse response)  
{  
    List<Object> externalProducts = (List<Object>)  
    JSON.deserializeUntyped(response.getBody()); //desrialize the json response  
    List<Product2> newProducts = new List<Product2>();  
    for(Object p : externalProducts)  
    {  
        Map<String, Object> productMap = (Map<String, Object>) p;  
        Product2 pr = new Product2();  
        //Map the fields in the response to the appropriate fields in the Equipment  
        object  
  
        pr.Replacement_Part__c =  
        (Boolean)productMap.get('replacement'); pr.Cost__c =  
        (Integer)productMap.get('cost');  
        pr.Current_Inventory__c = (Integer)productMap.get('quantity');  
        pr.Lifespan_Months__c = (Integer)productMap.get('lifespan') ;  
        pr.Maintenance_Cycle__c =  
        (Integer)productMap.get('maintenanceperiod'); pr.Warehouse_SKU__c =  
        (String)productMap.get('sku');  
        pr.ProductCode = (String)productMap.get('_id');  
        pr.Name = (String)productMap.get('name');  
        newProducts.add(pr);  
    }  
    return newProducts;  
}
```



```
// Send Http GET request and receive Http response
public static HttpResponse getResponse() {
    Http http = new Http();
    HttpRequest request = new HttpRequest();
    request.setEndpoint(WAREHOUSE_URL);
    request.setMethod('GET');
    HttpResponse response = http.send(request);
    return response;
}
}
```

### Challenge 3:

#### WarehouseSyncSchedule.apxt

```
global class WarehouseSyncSchedule implements Schedulable{
    // implement scheduled code here
    global void execute (SchedulableContext sc){
        WarehouseCalloutService.runWarehouseEquipmentSync();
        //optional this can be done by debug mode
        String sch = '00 00 01 * * ?';//on 1 pm
        System.schedule('WarehouseSyncScheduleTest', sch, new
            WarehouseSyncSchedule());
    }
}
```

### Challenge 4:

#### MaintenanceRequest.apxt:

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

### **InstallationTests.apxt:**

```
@IsTest  
private class InstallationTests {  
    private static final String STRING_TEST = 'TEST';  
    private static final String NEW_STATUS = '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 = 'AMC Spirit';  
    public static String CRON_EXP = '0 0 1 * * ?';  
    static testmethod void testMaintenanceRequestNegative() {  
        Vehicle__c vehicle = createVehicle();  
        insert vehicle;  
        Id vehicleId = vehicle.Id;  
        Product2 equipment = createEquipment();  
        insert equipment;  
        Id equipmentId = equipment.Id;  
        Case r = createMaintenanceRequest(vehicleId, equipmentId);  
        insert r;  
        Work_Part__c w = createWorkPart(equipmentId, r.Id);
```

```
insert w;
Test.startTest();
r.Status = WORKING;
update r;
Test.stopTest();
List<case> allRequest = [SELECT Id
FROM Case];
Work_Part__c workPart = [SELECT Id
FROM Work_Part__c
WHERE Maintenance_Request__c =: r.Id];
System.assert(workPart != null);
System.assert(allRequest.size() == 1);
}

static testmethod void testWarehouseSync() {
Test.setMock(HttpCalloutMock.class, new
WarehouseCalloutServiceMock());
Test.startTest();
String jobId = System.schedule('WarehouseSyncSchedule',
CRON_EXP,
new WarehouseSyncSchedule());
CronTrigger ct = [SELECT Id, CronExpression, TimesTriggered, NextFireTime
FROM CronTrigger
WHERE id = :jobId];
System.assertEquals(CRON_EXP, ct.CronExpression);
System.assertEquals(0, ct.TimesTriggered);
Test.stopTest();
}

private static Vehicle__c createVehicle() {
Vehicle__c v = new Vehicle__c(Name = STRING_TEST);
```

```
return v;
}

private static Product2 createEquipment() {
    Product2 p = new Product2(Name = STRING_TEST,
    Lifespan_Months__c = 10,
    Maintenance_Cycle__c = 10,

    Replacement_Part__c = true);
    return p;
}

private static Case createMaintenanceRequest(Id vehicleId, Id equipmentId)
{
    Case c = new Case(Type = REPAIR,
    Status = NEW_STATUS,
    Origin = REQUEST_ORIGIN,
    Subject = REQUEST_SUBJECT,
    Equipment__c = equipmentId,
    Vehicle__c = vehicleId);
    return c;
}

private static Work_Part__c createWorkPart(Id equipmentId, Id requestId) {
    Work_Part__c wp = new Work_Part__c(Equipment__c = equipmentId,
    Maintenance_Request__c = requestId);
    return wp;
}
}
```

**MaintenanceRequestHelper.apxt:**

```
public with sharing class MaintenanceRequestHelper {
    public static void updateWorkOrders(List<case> caseList) {
        List<case> newCases = new List<case>();
        Map<String,Integer> result=getDueDate(caseList);
        for(Case c : caseList){
            if(c.status=='closed')
            if(c.type=='Repair' || c.type=='Routine Maintenance'){
                Case newCase = new Case();
                newCase.Status='New';
                newCase.Origin='web';
                newCase.Type='Routine Maintenance';
                newCase.Subject='Routine Maintenance of Vehicle';
                newCase.Vehicle__c=c.Vehicle__c;
                newCase.Equipment__c=c.Equipment__c;

                newCase.Date_Reported__c=Date.today();
                if(result.get(c.Id)!=null)
                    newCase.Date_Due__c=Date.today()+result.get(c.Id);
                else
                    newCase.Date_Due__c=Date.today();
                newCases.add(newCase);
            }
        }
        insert newCases;
    }
    //
    public static Map<String,Integer> getDueDate(List<case> CaseIds){
```

```
Map<String,Integer> result = new Map<String,Integer>();
Map<Id, case> caseKeys = new Map<Id, case> (CaseIDs);
List<aggregateresult> wpc=[select Maintenance_Request__r.ID
cID,min(Equipment__r.Maintenance_Cycle__c)cycle
from Work_Part__c where Maintenance_Request__r.ID in :caseKeys.keySet()
group by      Maintenance_Request__r.ID ];
for(AggregateResult res :wpc){
Integer addDays=0;
if(res.get('cycle')!=null)
addDays+=Integer.valueOf(res.get('cycle'));
result.put((String)res.get('cID'),addDays);
}
return result;
}
}
```

**MaintenanceRequestTest.apxt:**

```
@isTest
public class MaintenanceRequestTest {
static List<case> caseList1 = new List<case>();
static List<product2> prodList = new List<product2>();

static List<work_part__c> wpList = new List<work_part__c>();
@TestSetup
static void getData(){
caseList1= CreateData( 300,3,3,'Repair');
}
}
```

```
public static List<case> CreateData( Integer numOfcase, Integer
numofProd, Integer numofVehicle,
String type){
List<case> caseList = new List<case>();
//Create Vehicle
Vehicle__c vc = new Vehicle__c();
vc.name='Test Vehicle';
upsert vc;
//Create Equipment
for(Integer i=0;i<numofProd;i++){
Product2 prod = new Product2();
prod.Name='Test Product'+i;
if(i!=0)
prod.Maintenance_Cycle__c=i;
prod.Replacement_Part__c=true;
prodList.add(prod);
}
upsert prodlist;
//Create Case
for(Integer i=0;i< numOfcase;i++){
Case newCase = new Case();
newCase.Status='New';
newCase.Origin='web';
if( math.mod(i, 2) ==0)
newCase.Type='Routine Maintenance';
else
newCase.Type='Repair';
newCase.Subject='Routine Maintenance of Vehicle' +i;
newCase.Vehicle__c=vc.Id;
```

```
if(i<numofProd)

newCase.Equipment__c=prodList.get(i).ID;
else
newCase.Equipment__c=prodList.get(0).ID;
caseList.add(newCase);
}
upsert caseList;
for(Integer i=0;i<numofProd;i++){
Work_Part__c wp = new Work_Part__c();
wp.Equipment__c =prodlist.get(i).Id ;
wp.Maintenance_Request__c=caseList.get(i).id;
wplist.add(wp) ;
}
upsert wplist;
return caseList;
}

public static testmethod void testMaintenanceHelper(){
Test.startTest();
getData();
for(Case cas: caseList1)
cas.Status ='Closed';
update caseList1;
Test.stopTest();
}
}
```



## Challenge 5:

### WarehouseCalloutServiceTest.apxt:

```
@IsTest
private class WarehouseCalloutServiceTest {

    // implement your mock callout test here
    @isTest
    static void testWareHouseCallout(){
        Test.setMock(HttpCalloutMock.class, new
        WarehouseCalloutServiceMock());
        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}
```

### WarehouseCalloutServiceMock.apxt:

```
@isTest
public class WarehouseCalloutServiceMock implements HTTPCalloutMock
{
    // implement http mock callout
    public HTTPResponse respond (HttpRequest request){
        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"},{"_id"
:"55d66226726b611100aaf742","replacement":true,"quantity":183,"name":"Co
oling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d
66226726b611100aaf743","replacement":true,"quantity":143,"name":"Fuse
20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]);
response.setStatusCode(200);
return response;
}
}
```

## Challenge 6:

### WarehouseSyncScheduleTest.apxt:

```
@isTest
private class WarehouseSyncScheduleTest {
    public static String CRON_EXP = '0 0 0 15 3 ? 2022';
    static testmethod void testjob(){

        MaintenanceRequestTest.CreateData( 5,2,2,'Repair');
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new
        WarehouseCalloutServiceMock());
        String jobID= System.schedule('TestScheduleJob', CRON_EXP, new
        WarehouseSyncSchedule());
        // List<Case> caselist = [Select count(id) from case where case]
        Test.stopTest();
    }
}
```

}