## APEX TRIGGERS

**AccountAddressTrigger.axpt:**

trigger AccountAddressTrigger on Account (beforeinsert,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;

}

}

public class VerifyDate {

## APEX TESTING

### VerifyData.apxc:

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('01/05/2022')); 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 (beforeinsert, before update){

/ check contactsprior to insertor update for invalid dataFor (Contact c : Trigger.New) {

if(c.LastName == 'INVALIDNAME') { / invalidname is invalid

c.AddError('The Last Name "'+c.LastName+'" is not allowed for DML');

}

}

}

### 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 for DML', 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> accountIds){ List<Account> accountsToUpdate = new List<Account>();

List<Account> accounts= [Select Id, Name, (SelectId from Contacts)from Account Where Id in

:accountIds];

For(Account acc: accounts) {

List<Contact>contactList = acc.contacts;

acc.Number\_Of\_Contacts c = contactList.size();

accountsToUpdate.add(acc);

}

update accountsToUpdate;

}

}

**AccountProcessorTest.apxc:**

@isTest

public class AccountProcessorTest {

@isTest

private static void testCountContacts() {

Account newAccount = new Account(Name = 'Test Account'); insert newAccount;

Contact newContact1 = new Contact(FirstName= 'John',LastName = 'Doe',AccountId =

newAccount.Id);

insert newContact1;

Contact newContact2 = new Contact(FirstName = 'John',LastName = 'Doe',AccountId = newAccount.Id);

insert newContact2;

List<Id> accountIds = new List<Id>(); accountIds.add(newAccount.Id); Test.startTest(); AccountProcessor.countContacts(accountIds); Test.stopTest();

}

}

### 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\_list = new List<lead>(); for(Integer i = 0; i < 200; i++) {

Lead L = new Lead(); L.LastName = 'name' + i; L.Company = 'Company'; L.Status = 'Random Status';L\_list.add(L);

}

insert L\_list; Test.startTest();

LeadProcessor lp = new LeadProcessor(); Id batchId = Database.executeBatch(lp); Test.stopTest();

}

}

### AddPrimaryContact.apxc:

public class AddPrimaryContact implements Queueable{ private Contact con;

private String state;

public AddPrimaryContact(Contact con, String state) { this.con = con;

this.state = state;

}

public void execute(QueueableContext context) {

List<Account> accounts = [Select Id,Name,(Select FirstName,LastName, Id from contacts) from Account whereBillingState = :stateLimit 200];

List<Contact> primaryContacts = new List<Contact>(); for(Accountacc : accounts) {

Contact c = con.clone(); c.AccountId = acc.Id; primaryContacts.add(c);

}

if(primaryContacts.size() > 0) { insert primaryContacts;

}

}

}

### AddPrimaryContactTest.apxc:

@isTest

public class AddPrimaryContactTest { static testmethod void testQueueable() {

List<Account> testAccounts = new List<Account>(); for(Integeri = 0; i < 50; i++) {

testAccounts.add(new Account (Name = 'Account' + i,BillingState = 'CA'));

}

for(Integer j = 0; j < 50; j++) {

testAccounts.add(new Account(Name = 'Account'+ j, BillingState = 'NY'));

}

insert testAccounts;

Contact testContact = new Contact(FirstName = 'John', LastName = 'Doe'); inserttestContact;

AddPrimaryContact addit = new AddPrimaryContact(testContact,'CA'); Test.startTest();

system.enqueueJob(addit); Test.stopTest();

System.assertEquals(50,[Select count() from Contact whereaccountId in (SelectId from Accountwhere BillingState = 'CA')]);

}

}

### DailyLeadProcessor.apxc:

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

List<Lead> leadstoupdate = new List<Lead>();

List<Lead> leads = [Select id From Lead Where LeadSource = NULL Limit200]; for(Lead l: leads) {

l.LeadSource = 'Dreamforce'; leadstoupdate.add(l);

}

update leadstoupdate;

}

}

### DailyLeadProcessorTest.apxc:

@isTest

private class DailyLeadProcessorTest {

public static StringCRON\_EXP = '0 0 0 15 3 ? 2024';static testmethod void testScheduledJob() {

List<Lead> leads = new List<Lead>(); for(Integer i = 0; i < 200; i++) {

Lead l = new Lead( FirstName = 'First' + i, LastName = 'LastName', Company = 'The Inc'

);

leads.add(l);

}

insert leads; Test.startTest();

String jobId = System.schedule('ScheduledApexTest',CRON\_EXP,new DailyLeadProcessor()); Test.stopTest();

List<Lead> checkleads = new List<Lead>();

checkleads = [Select Id From Lead Where LeadSource = 'Dreamforce' and Company = 'The Inc'];System.assertEquals(200,checkleads.size(),'Leads were not created');

}

}

public class AnimalLocator{

**APEX INTEGRATION SERVICES**

### AnimalLocator.apxc:

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');

}

}

@isTest

private class AnimalLocatorTest{

### AnimalLocatorTest.apxc:

@isTest static void AnimalLocatorMock1() { Test.setMock(HttpCalloutMock.class, new AnimalLocatorMock()); stringresult = AnimalLocator.getAnimalNameById(3);

String expectedResult = 'chicken';System.assertEquals(result,expectedResult );

}

}

### AnimalLocatorMock.apxc:

@isTest

global class AnimalLocatorMock implements HttpCalloutMock {

/ Implementthis 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;

}

}

### ParkLocator.apxc:

public class ParkLocator {

public static string[] country(string theCountry) {

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

}

}

### ParkLocatorTest.apxc:

@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', 'MackinacNational Park', 'Yosemite'}; System.assertEquals(parks, result);

}

}

### 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) {

/ start - specifythe 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);

}

}

### AccountManager.apxc:

@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, (SELECTId, Name FROM Contacts) FROM Account WHERE Id = :accId];

return acc;

}

}

### AccountManagerTest.apxc:

@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 methodto test

Account thisAccount = AccountManager.getAccount();

/ Verify resultsSystem.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;

}

}

## APEX SPECIALIST SUPER BADGE

**Challenge-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\_Itemsr)

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 :ValidIdsGROUP 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;

}

}

}

### MaintenanceRequest.apxt:

trigger MaintenanceRequest on Case (beforeupdate, after update){ if(Trigger.isUpdate && Trigger.isAfter){

MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);

}

}

### MaintenanceRequestHelperTest.apxc:

@istest

public with sharing class MaintenanceRequestHelperTest {

privatestatic 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';

privatestatic ﬁnal string REQUEST\_TYPE = 'Routine Maintenance'; private static ﬁnal string REQUEST\_SUBJECT = 'Testing subject';

PRIVATE STATICVehicle c createVehicle(){

Vehicle c Vehicle= new Vehicle C(name = 'SuperTruck'); returnVehicle;

}

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(){ Vehiclec 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 cworkPart = [selectid

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.Equipmentc, equipmentId); SYSTEM.assertEquals(newReq.Vehicle c,vehicleId);

SYSTEM.assertEquals(newReq.Date\_Reported c, system.today());

}

@istest

private static void testMaintenanceRequestNegative(){ Vehicle Cvehicle = 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); insertworkP;

test.startTest(); emptyReq.Status = WORKING;update emptyReq; test.stopTest();

list<case> allRequest = [select id

from case];

Equipment\_Maintenance\_Item cworkPart = [selectid

from Equipment\_Maintenance\_Item c

Equipment\_Maintenance\_Item cworkPart = [selectid

from Equipment\_Maintenance\_Item c

where Maintenance\_Request c =:newReq.Id];

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 = [selectid

from Equipment\_Maintenance\_Item c

where Maintenance\_Request c in: oldRequestIds];

system.assert(allRequests.size() == 300);

}

}

**Challenge-2**

### WarehouseCalloutService.apxc:

public with sharing class WarehouseCalloutService implements Queueable { privatestatic ﬁnal String WAREHOUSE\_URL = 'https:/ th-superbadge-

apex.herokuapp.com/equipment';

/ class that makes a REST callout to an externalwarehouse system to get a list of equipment that needs to be updated.

/ The callout’s JSON response returns the equipment recordsthat you upsertin Salesforce.

@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());

/ class maps the following ﬁelds: replacement part (always true),cost, current inventory, lifespan, maintenance cycle, and warehouseSKU

/ warehouse SKU will be external ID for identifying which equipment recordsto update withinSalesforce

for (Objecteq : 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){ upsertwarehouseEq;

System.debug('Your equipment was synced with the warehouse one');

}

}

}

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

}

}

@isTest

### WarehouseCalloutServiceMock.apxc:

global class WarehouseCalloutServiceMock implements HttpCalloutMock {

/ implementhttp mock callout

global static HttpResponse respond(HttpRequestrequest) {

Self-Learning & Super Badges 2

**[APEX SPECIALIST SUPER BADGE CODES](#_TOC_250000)**

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

response.setBody('[{"\_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name":"Gene rator 1000

kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"\_id":"55d66226726b611100a af742","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;

}

}

### WarehouseCalloutServiceTest.apxc:

@IsTest

private class WarehouseCalloutServiceTest {

/ implement your mock callout test here @isTest

static void testWarehouseCallout() { test.startTest();

test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock()); WarehouseCalloutService.execute(null);

test.stopTest();

List<Product2> product2List = new List<Product2>(); product2List = [SELECT ProductCode FROM Product2];

System.assertEquals(3, product2List.size()); System.assertEquals('55d66226726b611100aaf741', product2List.get(0).ProductCode); System.assertEquals('55d66226726b611100aaf742', product2List.get(1).ProductCode); System.assertEquals('55d66226726b611100aaf743', product2List.get(2).ProductCode);

}

}

**Challenge-3**

### WarehouseSyncSchedule.apxc:

global with sharing class WarehouseSyncSchedule implements Schedulable{

global void execute(SchedulableContext ctx){ System.enqueueJob(new WarehouseCalloutService());

}

}

### WarehouseSyncScheduuleTest.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 Scheduleto Test', scheduleTime, new WarehouseSyncSchedule());

Test.stopTest();

/ Contains scheduleinformation for a scheduled job. CronTrigger is similar to a cron job on UNIX systems.

/ This object is available in API version17.0 and later.

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

}

}

**Challenge-4**

### MaintenanceRequestHelperTest.apxc:

@istest

public with sharing class MaintenanceRequestHelperTest {

privatestatic 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';

privatestatic ﬁnal string REQUEST\_TYPE = 'Routine Maintenance'; private static ﬁnal string REQUEST\_SUBJECT = 'Testing subject';

PRIVATE STATICVehicle c createVehicle(){

Vehicle c Vehicle= new Vehicle C(name = 'SuperTruck'); returnVehicle;

}

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(){ Vehiclec 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 cworkPart = [selectid

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.Equipmentc, equipmentId); SYSTEM.assertEquals(newReq.Vehicle c,vehicleId);

SYSTEM.assertEquals(newReq.Date\_Reported c, system.today());

}

@istest

private static void testMaintenanceRequestNegative(){ Vehicle Cvehicle = 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); insertworkP;

test.startTest(); emptyReq.Status = WORKING;update emptyReq; test.stopTest();

list<case> allRequest = [select id

from case];

Equipment\_Maintenance\_Item cworkPart = [selectid

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);

}

updaterequestList; test.stopTest();

list<case> allRequests = [select id

from case

where status =: STATUS\_NEW];

list<Equipment\_Maintenance\_Item c>workParts = [selectid

from Equipment\_Maintenance\_Item c

where Maintenance\_Request c in: oldRequestIds];

system.assert(allRequests.size() == 300);

}

}

### 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\_Itemsr)

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 :ValidIdsGROUP 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;

}

}

}

**Challenge-5**

### WarehouseCalloutService.apxc:

public with sharing class WarehouseCalloutService implements Queueable { privatestatic ﬁnal String WAREHOUSE\_URL = 'https:/ th-superbadge-

apex.herokuapp.com/equipment';

/ class that makes a REST callout to an externalwarehouse system to get a list of equipment that needs to be updated.

/ The callout’s JSON response returns the equipment recordsthat you upsertin Salesforce.

@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());

/ class maps the following ﬁelds: replacement part (always true),cost, current inventory, lifespan, maintenance cycle, and warehouseSKU

/ warehouse SKU will be external ID for identifying which equipment recordsto update withinSalesforce

for (Objecteq : 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){ upsertwarehouseEq;

System.debug('Your equipment was synced with the warehouse one');

}

}

}

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

}

}

### WarehouseCalloutServiceMock.apxc:

@isTest

global class WarehouseCalloutServiceMock implements HttpCalloutMock {

/ implementhttp mock callout

global static HttpResponse respond(HttpRequestrequest) {

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

response.setBody('[{"\_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name":"Gene rator 1000 kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"\_id":"55d66226726b611100a af742","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;

}

}

### WarehouseCalloutServiceTest.apxc:

@isTest

global class WarehouseCalloutServiceMock implements HttpCalloutMock {

/ implementhttp mock callout

global static HttpResponse respond(HttpRequestrequest) {

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

response.setBody('[{"\_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name":"Gene rator 1000 kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"\_id":"55d66226726b611100a af742","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;

}

}

**Challenge-6**

### WarehouseSyncSchedule.apxc:

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

System.enqueueJob(newWarehouseCalloutService());

}

}

### 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 Scheduleto Test', scheduleTime, new WarehouseSyncSchedule());

Test.stopTest();

/ Contains scheduleinformation for a scheduled job. CronTrigger is similar to a cron job on UNIX systems.

/ This object is available in API version17.0 and later.

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

}

}