

APEX SPECIALIST SUPER BADGE CODES

APEX TRIGGERS

AccountAddressTrigger.apxt:

```
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.apxt:

```
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('01/05/2022'));
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 (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.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, (Select Id 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 where BillingState = :state Limit 200];
List<Contact> primaryContacts = new List<Contact>();
for(Account acc : 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(Integer i = 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');
insert testContact;
AddPrimaryContact addit = new AddPrimaryContact(testContact,'CA');
Test.startTest();
system.enqueueJob(addit);
Test.stopTest();
System.assertEquals(50, [Select count() from Contact where accountId in (Select Id from
Account where 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 Limit 200];
for(Lead l: leads) {
l.LeadSource = 'Dreamforce';
leadstoupdate.add(l);
}
update leadstoupdate;
}
}

```

DailyLeadProcessorTest.apxc:

```

@isTest
private class DailyLeadProcessorTest {
public static String CRON_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');
}
}

```

APEX INTEGRATION SERVICES

AnimalLocator.apxc:

```

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.apxc:

```

@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.apxc:

```
@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;  
    }  
}
```

ParkLocator.apxc:

```
public class ParkLocator {  
    public static String[] country(String theCountry) {  
        ParkService.ParkServiceImpl port = new ParkService.ParkServiceImpl(); // remove space  
        return port.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', 'Mackinac National 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 - 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);
}
}

```

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, (SELECT Id, 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 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;
}
}

```

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_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;
}
}
}

```

MaintenanceRequest.apxt:

```

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

```

MaintenanceRequestHelperTest.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);
}
}

```

Challenge-2

WarehouseCalloutService.apxc:

```

public with sharing class WarehouseCalloutService implements Queueable {
private static final String WAREHOUSE_URL = 'https://th-
superbadgeapex.herokuapp.com/equipment';
//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(){
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 warehouse SKU
//warehouse SKU will be external ID for identifying which equipment records to update within
Salesforce
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 = (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){
upsert warehouseEq;
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 {
// 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":
"Gene
rator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611
100a
af742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100a
af743
","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());
}
}

```

```
}  
}
```

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 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-4

MaintenanceRequestHelperTest.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);
}
}

```

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_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;
}
}
}

```

Challenge-5

WarehouseCalloutService.apxc:

```

public with sharing class WarehouseCalloutService implements Queueable {
private static final String WAREHOUSE_URL = 'https://th-
superbadgeapex.herokuapp.com/equipment';
//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(){
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 warehouse SKU
//warehouse SKU will be external ID for identifying which equipment records to update within
Salesforce
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 = (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){
    upsert warehouseEq;
    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 {
    // 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":
"Gene
rator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611
100a
af742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100a
af743
","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 {
// 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":
"Gene
rator 1000
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226726b611
100a
af742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b611100a
af743
","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(new WarehouseCalloutService());
}
}

```

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 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 ');

}

}