```
//CalculatorCalloutMock.apxc

@isTest
global class CalculatorCalloutMock 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
      calculatorServices.doAddResponse response_x =
         new calculatorServices.doAddResponse();
      response_x.return_x = 3.0;
      // end
      response.put('response_x', response_x);
  }
}

//AwesomeCalculatorTest.apxc

@isTest
private class AwesomeCalculatorTest {
   @isTest static void testCallout() {
      // This causes a fake response to be generated
      Test.setMock(WebServiceMock.class, new CalculatorCalloutMock());
      // Call the method that invokes a callout
      Double x = 1.0;
      Double y = 2.0;
      Double result = AwesomeCalculator.add(x, y);
      // Verify that a fake result is returned
      System.assertEquals(3.0, result);
   }
```

```
}

//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', '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);
    }
}

//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;
    }
}

//ParkService.apxc

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;
      }
   }
}

//AsyncParkService.apxc

public class AsyncParkService {
   public class byCountryResponseFuture extends System.WebServiceCalloutFuture {
      public String[] getValue() {
         ParkService.byCountryResponse response =
(ParkService.byCountryResponse)System.WebServiceCallout.endInvoke(this);
         return response.return_x;
      }
   }
   public class AsyncParksImplPort {
      public String endpoint_x = 'https://th-apex-soap-
service.herokuapp.com/service/parks';
      public Map<String,String> inputHttpHeaders_x;
      public String clientCertName_x;
      public Integer timeout_x;
      private String[] ns_map_type_info = new String[]{'http://parks.services/',
'ParkService'};
      public AsyncParkService.byCountryResponseFuture
beginByCountry(System.Continuation continuation,String arg0) {
         ParkService.byCountry request_x = new ParkService.byCountry();
         request_x.arg0 = arg0;
         return (AsyncParkService.byCountryResponseFuture)
System.WebServiceCallout.beginInvoke(
           this,
```

```
            request_x,
            AsyncParkService.byCountryResponseFuture.class,
            continuation,
            new String[]{endpoint_x,
            '',
            'http://parks.services/',
            'byCountry',
            'http://parks.services/',
            'byCountryResponse',
            'ParkService.byCountryResponse'}
          );
      }
   }
}


//calculatorServices.apxc

public class calculatorServices {
   public class doDivideResponse {
      public Double return_x;
      private String[] return_x_type_info = new
String[]{'return','http://calculator.services/',null,'0','1','false'};
      private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
      private String[] field_order_type_info = new String[]{'return_x'};
   }
   public class doMultiply {
      public Double arg0;
      public Double arg1;
      private String[] arg0_type_info = new
String[]{'arg0','http://calculator.services/',null,'0','1','false'};
      private String[] arg1_type_info = new
String[]{'arg1','http://calculator.services/',null,'0','1','false'};
      private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
      private String[] field_order_type_info = new String[]{'arg0','arg1'};
```

```
    }
    public class doAdd {
        public Double arg0;
        public Double arg1;
        private String[] arg0_type_info = new
String[]{'arg0','http://calculator.services/',null,'0','1','false'};
        private String[] arg1_type_info = new
String[]{'arg1','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'arg0','arg1'};
    }
    public class doAddResponse {
        public Double return_x;
        private String[] return_x_type_info = new
String[]{'return','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'return_x'};
    }
    public class doDivide {
        public Double arg0;
        public Double arg1;
        private String[] arg0_type_info = new
String[]{'arg0','http://calculator.services/',null,'0','1','false'};
        private String[] arg1_type_info = new
String[]{'arg1','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'arg0','arg1'};
    }
    public class doSubtract {
        public Double arg0;
        public Double arg1;
        private String[] arg0_type_info = new
String[]{'arg0','http://calculator.services/',null,'0','1','false'};
        private String[] arg1_type_info = new
```

```
String[]{'arg1','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'arg0','arg1'};
    }
    public class doSubtractResponse {
        public Double return_x;
        private String[] return_x_type_info = new
String[]{'return','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'return_x'};
    }
    public class doMultiplyResponse {
        public Double return_x;
        private String[] return_x_type_info = new
String[]{'return','http://calculator.services/',null,'0','1','false'};
        private String[] apex_schema_type_info = new
String[]{'http://calculator.services/','false','false'};
        private String[] field_order_type_info = new String[]{'return_x'};
    }
    public class CalculatorImplPort {
        public String endpoint_x = 'https://th-apex-soap-
service.herokuapp.com/service/calculator';
        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://calculator.services/',
'calculatorServices'};
        public Double doDivide(Double arg0,Double arg1) {
            calculatorServices.doDivide request_x = new calculatorServices.doDivide();
            request_x.arg0 = arg0;
            request_x.arg1 = arg1;
            calculatorServices.doDivideResponse response_x;
```

```
        Map<String, calculatorServices.doDivideResponse> response_map_x = new
Map<String, calculatorServices.doDivideResponse>();
        response_map_x.put('response_x', response_x);
        WebServiceCallout.invoke(
          this,
          request_x,
          response_map_x,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doDivide',
          'http://calculator.services/',
          'doDivideResponse',
          'calculatorServices.doDivideResponse'}
        );
        response_x = response_map_x.get('response_x');
        return response_x.return_x;
      }
      public Double doSubtract(Double arg0,Double arg1) {
        calculatorServices.doSubtract request_x = new calculatorServices.doSubtract();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        calculatorServices.doSubtractResponse response_x;
        Map<String, calculatorServices.doSubtractResponse> response_map_x = new
Map<String, calculatorServices.doSubtractResponse>();
        response_map_x.put('response_x', response_x);
        WebServiceCallout.invoke(
          this,
          request_x,
          response_map_x,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doSubtract',
          'http://calculator.services/',
          'doSubtractResponse',
          'calculatorServices.doSubtractResponse'}
```

```
        );
        response_x = response_map_x.get('response_x');
        return response_x.return_x;
    }
    public Double doMultiply(Double arg0,Double arg1) {
        calculatorServices.doMultiply request_x = new calculatorServices.doMultiply();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        calculatorServices.doMultiplyResponse response_x;
        Map<String, calculatorServices.doMultiplyResponse> response_map_x = new
Map<String, calculatorServices.doMultiplyResponse>();
        response_map_x.put('response_x', response_x);
        WebServiceCallout.invoke(
          this,
          request_x,
          response_map_x,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doMultiply',
          'http://calculator.services/',
          'doMultiplyResponse',
          'calculatorServices.doMultiplyResponse'}
        );
        response_x = response_map_x.get('response_x');
        return response_x.return_x;
    }
    public Double doAdd(Double arg0,Double arg1) {
        calculatorServices.doAdd request_x = new calculatorServices.doAdd();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        calculatorServices.doAddResponse response_x;
        Map<String, calculatorServices.doAddResponse> response_map_x = new
Map<String, calculatorServices.doAddResponse>();
        response_map_x.put('response_x', response_x);
        WebServiceCallout.invoke(
          this,
```

```
            request_x,
            response_map_x,
            new String[]{endpoint_x,
            '',
            'http://calculator.services/',
            'doAdd',
            'http://calculator.services/',
            'doAddResponse',
            'calculatorServices.doAddResponse'}
          );
          response_x = response_map_x.get('response_x');
          return response_x.return_x;
      }
   }
}

//AsyncCalculatorServices.apxc

public class AsyncCalculatorServices {
   public class doDivideResponseFuture extends System.WebServiceCalloutFuture {
      public Double getValue() {
         calculatorServices.doDivideResponse response =
(calculatorServices.doDivideResponse)System.WebServiceCallout.endInvoke(this);
         return response.return_x;
      }
   }
   public class doSubtractResponseFuture extends System.WebServiceCalloutFuture {
      public Double getValue() {
         calculatorServices.doSubtractResponse response =
(calculatorServices.doSubtractResponse)System.WebServiceCallout.endInvoke(this);
         return response.return_x;
      }
   }
   public class doMultiplyResponseFuture extends System.WebServiceCalloutFuture {
      public Double getValue() {
         calculatorServices.doMultiplyResponse response =
(calculatorServices.doMultiplyResponse)System.WebServiceCallout.endInvoke(this);
```

```
        return response.return_x;
      }
    }
    public class doAddResponseFuture extends System.WebServiceCalloutFuture {
      public Double getValue() {
        calculatorServices.doAddResponse response =
(calculatorServices.doAddResponse)System.WebServiceCallout.endInvoke(this);
        return response.return_x;
      }
    }
    public class AsyncCalculatorImplPort {
      public String endpoint_x = 'https://th-apex-soap-
service.herokuapp.com/service/calculator';
      public Map<String,String> inputHttpHeaders_x;
      public String clientCertName_x;
      public Integer timeout_x;
      private String[] ns_map_type_info = new String[]{'http://calculator.services/',
'calculatorServices'};
      public AsyncCalculatorServices.doDivideResponseFuture
beginDoDivide(System.Continuation continuation,Double arg0,Double arg1) {
        calculatorServices.doDivide request_x = new calculatorServices.doDivide();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        return (AsyncCalculatorServices.doDivideResponseFuture)
System.WebServiceCallout.beginInvoke(
          this,
          request_x,
          AsyncCalculatorServices.doDivideResponseFuture.class,
          continuation,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doDivide',
          'http://calculator.services/',
          'doDivideResponse',
          'calculatorServices.doDivideResponse'}
        );
```

```
    }
    public AsyncCalculatorServices.doSubtractResponseFuture
beginDoSubtract(System.Continuation continuation,Double arg0,Double arg1) {
        calculatorServices.doSubtract request_x = new calculatorServices.doSubtract();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        return (AsyncCalculatorServices.doSubtractResponseFuture)
System.WebServiceCallout.beginInvoke(
          this,
          request_x,
          AsyncCalculatorServices.doSubtractResponseFuture.class,
          continuation,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doSubtract',
          'http://calculator.services/',
          'doSubtractResponse',
          'calculatorServices.doSubtractResponse'}
        );
    }
    public AsyncCalculatorServices.doMultiplyResponseFuture
beginDoMultiply(System.Continuation continuation,Double arg0,Double arg1) {
        calculatorServices.doMultiply request_x = new calculatorServices.doMultiply();
        request_x.arg0 = arg0;
        request_x.arg1 = arg1;
        return (AsyncCalculatorServices.doMultiplyResponseFuture)
System.WebServiceCallout.beginInvoke(
          this,
          request_x,
          AsyncCalculatorServices.doMultiplyResponseFuture.class,
          continuation,
          new String[]{endpoint_x,
          '',
          'http://calculator.services/',
          'doMultiply',
          'http://calculator.services/',
```

```
            'doMultiplyResponse',
            'calculatorServices.doMultiplyResponse'}
          );
      }
      public AsyncCalculatorServices.doAddResponseFuture
beginDoAdd(System.Continuation continuation,Double arg0,Double arg1) {
          calculatorServices.doAdd request_x = new calculatorServices.doAdd();
          request_x.arg0 = arg0;
          request_x.arg1 = arg1;
          return (AsyncCalculatorServices.doAddResponseFuture)
System.WebServiceCallout.beginInvoke(
            this,
            request_x,
            AsyncCalculatorServices.doAddResponseFuture.class,
            continuation,
            new String[]{endpoint_x,
            '',
            'http://calculator.services/',
            'doAdd',
            'http://calculator.services/',
            'doAddResponse',
            'calculatorServices.doAddResponse'}
          );
      }
   }
}

//PagedResult.apxc

public with sharing class PagedResult {
   @AuraEnabled
   public Integer pageSize { get; set; }

   @AuraEnabled
   public Integer pageNumber { get; set; }

   @AuraEnabled
```

```
    public Integer totalItemCount { get; set; }

    @AuraEnabled
    public Object[] records { get; set; }
}

//PropertyController.apxc

public with sharing class PropertyController {
    @AuraEnabled(cacheable=true)
    public static Property__c[] getPropertyList(
        String searchKey,
        Decimal maxPrice,
        Integer minBedrooms,
        Integer minBathrooms
    ) {
        String key = '%' + searchKey + '%';
        return [
            SELECT
                Id,
                address__c,
                city__c,
                state__c,
                description__c,
                price__c,
                baths__c,
                beds__c,
                thumbnail__c,
                location__latitude__s,
                location__longitude__s
            FROM property__c
            WHERE
                (title__c LIKE :key
                OR city__c LIKE :key
                OR tags__c LIKE :key)
                AND price__c <= :maxPrice
                AND beds__c >= :minBedrooms
```

```
            AND baths__c >= :minBathrooms
        ORDER BY price__c
        LIMIT 100
    ];
}

@AuraEnabled(cacheable=true)
public static PagedResult getPagedPropertyList(
    String searchKey,
    Decimal maxPrice,
    Integer minBedrooms,
    Integer minBathrooms,
    Integer pageSize,
    Integer pageNumber
) {
    maxPrice = Decimal.valueOf(maxPrice + '');
    minBedrooms = Integer.valueOf(minBedrooms + '');
    minBathrooms = Integer.valueOf(minBathrooms + '');
    pageSize = Integer.valueOf(pageSize + '');
    pageNumber = Integer.valueOf(pageNumber + '');

    Integer pSize = (Integer) pageSize;
    String key = '%' + searchKey + '%';
    Integer offset = ((Integer) pageNumber - 1) * pSize;
    PagedResult result = new PagedResult();
    result.pageSize = pSize;
    result.pageNumber = (Integer) pageNumber;
    result.totalItemCount = [
        SELECT COUNT()
        FROM property__c
        WHERE
            (title__c LIKE :key
            OR city__c LIKE :key
            OR tags__c LIKE :key)
            AND price__c <= :maxPrice
            AND beds__c >= :minBedrooms
            AND baths__c >= :minBathrooms
```

```
    ];
    result.records = [
        SELECT
            Id,
            address__c,
            city__c,
            state__c,
            description__c,
            price__c,
            baths__c,
            beds__c,
            thumbnail__c
        FROM property__c
        WHERE
            (title__c LIKE :key
            OR city__c LIKE :key
            OR tags__c LIKE :key)
            AND price__c <= :maxPrice
            AND beds__c >= :minBedrooms
            AND baths__c >= :minBathrooms
        ORDER BY price__c
        LIMIT :pSize
        OFFSET :offset
    ];
    return result;
}

@AuraEnabled(cacheable=true)
public static List<ContentVersion> getPictures(Id propertyId) {
    List<ContentDocumentLink> links = [
        SELECT Id, LinkedEntityId, ContentDocumentId
        FROM ContentDocumentLink
        WHERE
            LinkedEntityId = :propertyId
            AND ContentDocument.FileType IN ('PNG', 'JPG', 'GIF')
    ];
```

```
        if (links.isEmpty()) {
            return null;
        }

        Set<Id> contentIds = new Set<Id>();

        for (ContentDocumentLink link : links) {
            contentIds.add(link.ContentDocumentId);
        }

        return [
            SELECT Id, Title
            FROM ContentVersion
            WHERE ContentDocumentId IN :contentIds AND IsLatest = true
            ORDER BY CreatedDate
        ];
    }
}

//SampleDataController.apxc

public with sharing class SampleDataController {
    @AuraEnabled
    public static void importSampleData() {
        try {
            delete [SELECT Id FROM Property__c];
            delete [SELECT Id FROM Broker__c];

            StaticResource brokersResource = [
                SELECT Id, Body
                FROM StaticResource
                WHERE Name = 'sample_data_brokers'
            ];
            String brokersJSON = brokersResource.body.toString();
            List<Broker__c> brokers = (List<Broker__c>) JSON.deserialize(
                brokersJSON,
                List<Broker__c>.class
```

```
            );
            insert brokers;

            StaticResource propertiesResource = [
                SELECT Id, Body
                FROM StaticResource
                WHERE Name = 'sample_data_properties'
            ];
            String propertiesJSON = propertiesResource.body.toString();
            List<Property__c> properties = (List<Property__c>) JSON.deserialize(
                propertiesJSON,
                List<Property__c>.class
            );
            insert properties;
        } catch (Exception e) {
            System.debug(e);
        }
    }
}

//TestPropertyController.apxc

@isTest
public class TestPropertyController {
    public static void createProperties(Integer amount) {
        List<Property__c> properties = new List<Property__c>();
        for (Integer i = 0; i < amount; i++) {
            properties.add(
                new Property__c(
                    Title__c = 'Name ' + i,
                    Price__c = 20000,
                    Beds__c = 3,
                    Baths__c = 3
                )
            );
        }
        insert properties;
```

```
}
static testMethod void testGetPropertyList() {
    TestPropertyController.createProperties(5);
    Test.startTest();
    Property__c[] properties = PropertyController.getPropertyList(
        '',
        999999,
        0,
        0
    );
    Test.stopTest();
    System.assertEquals(5, properties.size());
}
static testMethod void testGetPagedPropertyList() {
    TestPropertyController.createProperties(5);
    Test.startTest();
    PagedResult result = PropertyController.getPagedPropertyList(
        '',
        999999,
        0,
        0,
        10,
        1
    );
    Test.stopTest();
    System.assertEquals(5, result.records.size());
}

static testMethod void testGetPictures() {
    Property__c property = new Property__c(Name = 'Name');
    insert property;
    Test.startTest();
    List<ContentVersion> items = PropertyController.getPictures(
        property.Id
    );
    Test.stopTest();
    System.assertEquals(null, items);
```

```
    }
}

//OpportunityAlertController

public class OpportunityAlertController {

    @AuraEnabled
    public static List<Opportunity> getOpportunities(Decimal daysSinceLastModified,
String oppStage, Boolean hasOpen) {
        DateTime lastModifiedDateFilter =
DateTime.now().addDays((Integer)daysSinceLastModified * -1);
        List<Opportunity> opportunities = [
            SELECT Id, Name, StageName, LastModifiedDate, CloseDate
            FROM Opportunity
            WHERE StageName = :oppStage AND LastModifiedDate <=
:lastModifiedDateFilter
        ];
        Map<Id,Opportunity> oppMap = new Map<Id,Opportunity>(opportunities);
        if(hasOpen == true) {
            List<Task> tasks = [SELECT ID, WhatId FROM TASK WHERE IsClosed = false AND
WhatId IN :oppMap.keySet()];
            List<Opportunity> opps_with_tasks = new List<Opportunity>();
            for(Task ta : tasks) {
                if(oppMap.containsKey(ta.WhatId)) {
                    opps_with_tasks.add(oppMap.get(ta.WhatId));
                }
            }
            opportunities = opps_with_tasks;
        }
        return opportunities;
    }

}

//OpportunityAlertControllerTest
```

```
@IsTest
public class OpportunityAlertControllerTest {

    @IsTest
    public static void testGetOpptyWithoutOpenTasks() {

        Opportunity oppty = new Opportunity(
            Name = 'Test Oppty',
            CloseDate = Date.today(),
            StageName = 'Prospecting'
        );
        insert oppty;

        Task tsk = new Task(
            Subject = 'Test Task',
            WhatId = oppty.Id,
            Status = 'Completed'
        );
        insert tsk;

        List<Opportunity> opps;

        opps = OpportunityAlertController.getOpportunities(0, 'Prospecting', false);
        System.assertEquals( 1, opps.size() );

        opps = OpportunityAlertController.getOpportunities(0, 'Prospecting', true);
        System.assertEquals( 0, opps.size() );

    }

    @IsTest
    public static void testGetOpptyWithOpenTasks() {

        Opportunity oppty = new Opportunity(
            Name = 'Test Oppty',
            CloseDate = Date.today(),
            StageName = 'Prospecting'
```

```
        );
        insert oppty;

        Task tsk = new Task(
            Subject = 'Test Task',
            WhatId = oppty.Id,
            Status = 'Not Started'
        );
        insert tsk;

        List<Opportunity> opps;

        opps = OpportunityAlertController.getOpportunities(0, 'Prospecting', false);
        System.assertEquals( 1, opps.size() );

        opps = OpportunityAlertController.getOpportunities(0, 'Prospecting', true);
        System.assertEquals( 1, opps.size() );

    }

}

//ContactsTodayController

public class ContactsTodayController {

    @AuraEnabled
    public static List<Contact> getContactsForToday() {

        List<Task> my_tasks = [SELECT Id, Subject, WhoId FROM Task WHERE OwnerId =
:UserInfo.getUserId() AND IsClosed = false AND WhoId != null];
        List<Event> my_events = [SELECT Id, Subject, WhoId FROM Event WHERE OwnerId
= :UserInfo.getUserId() AND StartDateTime >= :Date.today() AND WhoId != null];
        List<Case> my_cases = [SELECT ID, ContactId, Status, Subject FROM Case WHERE
OwnerId = :UserInfo.getUserId() AND IsClosed = false AND ContactId != null];

        Set<Id> contactIds = new Set<Id>();
```

```
        for(Task tsk : my_tasks) {
            contactIds.add(tsk.WhoId);
        }
        for(Event evt : my_events) {
            contactIds.add(evt.WhoId);
        }
        for(Case cse : my_cases) {
            contactIds.add(cse.ContactId);
        }

        List<Contact> contacts = [SELECT Id, Name, Phone, Description FROM Contact
WHERE Id IN :contactIds];

        for(Contact c : contacts) {
            c.Description = '';
            for(Task tsk : my_tasks) {
                if(tsk.WhoId == c.Id) {
                    c.Description += 'Because of Task "'+tsk.Subject+'"\n';
                }
            }
            for(Event evt : my_events) {
                if(evt.WhoId == c.Id) {
                    c.Description += 'Because of Event "'+evt.Subject+'"\n';
                }
            }
            for(Case cse : my_cases) {
                if(cse.ContactId == c.Id) {
                    c.Description += 'Because of Case "'+cse.Subject+'"\n';
                }
            }
        }

        return contacts;
    }

}
```

```
//ContactsTodayControllerTest

@IsTest
public class ContactsTodayControllerTest {

    @IsTest
    public static void testGetContactsForToday() {

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

        Contact c = new Contact(
            AccountId = acct.Id,
            FirstName = 'Test',
            LastName = 'Contact'
        );
        insert c;

        Task tsk = new Task(
            Subject = 'Test Task',
            WhoId = c.Id,
            Status = 'Not Started'
        );
        insert tsk;

        Event evt = new Event(
            Subject = 'Test Event',
            WhoId = c.Id,
            StartDateTime = Date.today().addDays(5),
            EndDateTime = Date.today().addDays(6)
        );
        insert evt;

        Case cse = new Case(
            Subject = 'Test Case',
```

```
        ContactId = c.Id
    );
    insert cse;

    List<Contact> contacts = ContactsTodayController.getContactsForToday();
    System.assertEquals(1, contacts.size());
    System.assert(contacts[0].Description.containsIgnoreCase(tsk.Subject));
    System.assert(contacts[0].Description.containsIgnoreCase(evt.Subject));
    System.assert(contacts[0].Description.containsIgnoreCase(cse.Subject));

}

@IsTest
public static void testGetNoContactsForToday() {

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

    Contact c = new Contact(
        AccountId = acct.Id,
        FirstName = 'Test',
        LastName = 'Contact'
    );
    insert c;

    Task tsk = new Task(
        Subject = 'Test Task',
        WhoId = c.Id,
        Status = 'Completed'
    );
    insert tsk;

    Event evt = new Event(
        Subject = 'Test Event',
        WhoId = c.Id,
```

```
            StartDateTime = Date.today().addDays(-6),
            EndDateTime = Date.today().addDays(-5)
        );
        insert evt;

        Case cse = new Case(
            Subject = 'Test Case',
            ContactId = c.Id,
            Status = 'Closed'
        );
        insert cse;

        List<Contact> contacts = ContactsTodayController.getContactsForToday();
        System.assertEquals(0, contacts.size());

    }

}

//AnimalsCalloutsTest

@isTest
private class AnimalsCalloutsTest {
    @isTest static  void testGetCallout() {
        // Create the mock response based on a static resource
        StaticResourceCalloutMock mock = new StaticResourceCalloutMock();
        mock.setStaticResource('GetAnimalResource');
        mock.setStatusCode(200);
        mock.setHeader('Content-Type', 'application/json;charset=UTF-8');
        // Associate the callout with a mock response
        Test.setMock(HttpCalloutMock.class, mock);
        // Call method to test
        HttpResponse result = AnimalsCallouts.makeGetCallout();
        // Verify mock response is not null
        System.assertNotEquals(null,result, 'The callout returned a null response.');
        // Verify status code
        System.assertEquals(200,result.getStatusCode(), 'The status code is not 200.');
```

```
        // Verify content type
        System.assertEquals('application/json;charset=UTF-8',
          result.getHeader('Content-Type'),
          'The content type value is not expected.');
        // Verify the array contains 3 items
        Map<String, Object> results = (Map<String, Object>)
            JSON.deserializeUntyped(result.getBody());
        List<Object> animals = (List<Object>) results.get('animals');
        System.assertEquals(3, animals.size(), 'The array should only contain 3 items.');
    }
    @isTest
static void testPostCallout() {
    // Set mock callout class
    Test.setMock(HttpCalloutMock.class, new AnimalsHttpCalloutMock());
    // This causes a fake response to be sent
    // from the class that implements HttpCalloutMock.
    HttpResponse response = AnimalsCallouts.makePostCallout();
    // Verify that the response received contains fake values
    String contentType = response.getHeader('Content-Type');
    System.assert(contentType == 'application/json');
    String actualValue = response.getBody();
    System.debug(response.getBody());
    String expectedValue = '{"animals": ["majestic badger", "fluffy bunny", "scary bear",
"chicken", "mighty moose"]}';
    System.assertEquals(expectedValue, actualValue);
    System.assertEquals(200, response.getStatusCode());
}
}

//AnimalLocatorTest

@isTest
private class AnimalLocatorTest {
    @isTest
    static void AnimalLocatorMock1(){
        Test.setMock(HttpCalloutMock.class,new AnimalLocatorMock());
        String result=AnimalLocator.getAnimalNameById(3);
```

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

}

//AnimalsHttpCalloutMock

@isTest
global class AnimalsHttpCalloutMock 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;
    }
}

//AnimalsCallouts

public class AnimalsCallouts {
    public static HttpResponse makeGetCallout() {
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-http-callout.herokuapp.com/animals');
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        // If the request is successful, parse the JSON response.
        if(response.getStatusCode() == 200) {
            // Deserializes the JSON string into collections of primitive data types.
            Map<String, Object> results = (Map<String, Object>)
JSON.deserializeUntyped(response.getBody());
            // Cast the values in the 'animals' key as a list
```

```
            List<Object> animals = (List<Object>) results.get('animals');
            System.debug('Received the following animals:');
            for(Object animal: animals) {
                System.debug(animal);
            }
        }
        return response;
    }
    public static HttpResponse makePostCallout() {
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint('https://th-apex-http-callout.herokuapp.com/animals');
        request.setMethod('POST');
        request.setHeader('Content-Type', 'application/json;charset=UTF-8');
        request.setBody('{"name":"mighty moose"}');
        HttpResponse response = http.send(request);
        // Parse the JSON response
        if(response.getStatusCode() != 201) {
            System.debug('The status code returned was not expected: ' +
                response.getStatusCode() + ' ' + response.getStatus());
        } else {
            System.debug(response.getBody());
        }
        return response;
    }
}

//AnimalLocator

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

```
        if(res.getStatusCode()==200){
            Map<String, Object> results = (Map<String,
Object>)JSON.deserializeUntyped(res.getBody());
            animal = (Map<String, Object>) results.get('animal');
        }
        return (String)animal.get('name');
    }

}

//CaseManager

@RestResource(urlMapping='/Cases/*')
global with sharing class CaseManager {
    @HttpGet
    global static Case getCaseById() {
        RestRequest request = RestContext.request;
        // grab the caseId from the end of the URL
        String caseId = request.requestURI.substring(
          request.requestURI.lastIndexOf('/')+1);
        Case result =  [SELECT CaseNumber,Subject,Status,Origin,Priority
                        FROM Case
                        WHERE Id = :caseId];
        return result;
    }
    @HttpPost
    global static ID createCase(String subject, String status,
        String origin, String priority) {
        Case thisCase = new Case(
            Subject=subject,
            Status=status,
            Origin=origin,
            Priority=priority);
        insert thisCase;
        return thisCase.Id;
    }
    @HttpDelete
```

```
    global static void deleteCase() {
        RestRequest request = RestContext.request;
        String caseId = request.requestURI.substring(
            request.requestURI.lastIndexOf('/')+1);
        Case thisCase = [SELECT Id FROM Case WHERE Id = :caseId];
        delete thisCase;
    }
    @HttpPut
    global static ID upsertCase(String subject, String status,
        String origin, String priority, String id) {
        Case thisCase = new Case(
                Id=id,
                Subject=subject,
                Status=status,
                Origin=origin,
                Priority=priority);
        // Match case by Id, if present.
        // Otherwise, create new case.
        upsert thisCase;
        // Return the case ID.
        return thisCase.Id;
    }
    @HttpPatch
    global static ID updateCaseFields() {
        RestRequest request = RestContext.request;
        String caseId = request.requestURI.substring(
            request.requestURI.lastIndexOf('/')+1);
        Case thisCase = [SELECT Id FROM Case WHERE Id = :caseId];
        // Deserialize the JSON string into name-value pairs
        Map<String, Object> params = (Map<String,
Object>)JSON.deserializeUntyped(request.requestbody.tostring());
        // Iterate through each parameter field and value
        for(String fieldName : params.keySet()) {
            // Set the field and value on the Case sObject
            thisCase.put(fieldName, params.get(fieldName));
        }
        update thisCase;
```

```
        return thisCase.Id;
    }
}

//AccountManager

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

//AccountManagerTest

@isTest
private class AccountManagerTest {

    @isTest static void testGetContactsByAccountId() {
        Id recordId = createTestRecord();
        // Set up a test request
        RestRequest request = new RestRequest();
        request.requestUri =
'https://yourInstance.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 accountTest = new Account(
          Name='Test record');
        insert accountTest;
        Contact contactTest= new Contact(
            FirstName='John',
            LastName='Doe',
            AccountId = accountTest.Id
        );
        insert contactTest;
        return accountTest.Id;
    }
}

//CaseManagerTest

@IsTest
private class CaseManagerTest {
    @isTest static void testGetCaseById() {
        Id recordId = createTestRecord();
        // Set up a test request
        RestRequest request = new RestRequest();
        request.requestUri =
            'https://yourInstance.my.salesforce.com/services/apexrest/Cases/'
            + recordId;
        request.httpMethod = 'GET';
        RestContext.request = request;
        // Call the method to test
        Case thisCase = CaseManager.getCaseById();
        // Verify results
        System.assert(thisCase != null);
        System.assertEquals('Test record', thisCase.Subject);
```

```
}
@isTest static void testCreateCase() {
    // Call the method to test
    ID thisCaseId = CaseManager.createCase(
        'Ferocious chipmunk', 'New', 'Phone', 'Low');
    // Verify results
    System.assert(thisCaseId != null);
    Case thisCase = [SELECT Id,Subject FROM Case WHERE Id=:thisCaseId];
    System.assert(thisCase != null);
    System.assertEquals(thisCase.Subject, 'Ferocious chipmunk');
}
@isTest static void testDeleteCase() {
    Id recordId = createTestRecord();
    // Set up a test request
    RestRequest request = new RestRequest();
    request.requestUri =
        'https://yourInstance.my.salesforce.com/services/apexrest/Cases/'
        + recordId;
    request.httpMethod = 'DELETE';
    RestContext.request = request;
    // Call the method to test
    CaseManager.deleteCase();
    // Verify record is deleted
    List<Case> cases = [SELECT Id FROM Case WHERE Id=:recordId];
    System.assert(cases.size() == 0);
}
@isTest static void testUpsertCase() {
    // 1. Insert new record
    ID case1Id = CaseManager.upsertCase(
            'Ferocious chipmunk', 'New', 'Phone', 'Low', null);
    // Verify new record was created
    System.assert(Case1Id != null);
    Case case1 = [SELECT Id,Subject FROM Case WHERE Id=:case1Id];
    System.assert(case1 != null);
    System.assertEquals(case1.Subject, 'Ferocious chipmunk');
    // 2. Update status of existing record to Working
    ID case2Id = CaseManager.upsertCase(
```

```
            'Ferocious chipmunk', 'Working', 'Phone', 'Low', case1Id);
        // Verify record was updated
        System.assertEquals(case1Id, case2Id);
        Case case2 = [SELECT Id,Status FROM Case WHERE Id=:case2Id];
        System.assert(case2 != null);
        System.assertEquals(case2.Status, 'Working');
    }
    @isTest static void testUpdateCaseFields() {
        Id recordId = createTestRecord();
        RestRequest request = new RestRequest();
        request.requestUri =
            'https://yourInstance.my.salesforce.com/services/apexrest/Cases/'
            + recordId;
        request.httpMethod = 'PATCH';
        request.addHeader('Content-Type', 'application/json');
        request.requestBody = Blob.valueOf('{"status": "Working"}');
        RestContext.request = request;
        // Update status of existing record to Working
        ID thisCaseId = CaseManager.updateCaseFields();
        // Verify record was updated
        System.assert(thisCaseId != null);
        Case thisCase = [SELECT Id,Status FROM Case WHERE Id=:thisCaseId];
        System.assert(thisCase != null);
        System.assertEquals(thisCase.Status, 'Working');
    }
    // Helper method
    static Id createTestRecord() {
        // Create test record
        Case caseTest = new Case(
            Subject='Test record',
            Status='New',
            Origin='Phone',
            Priority='Medium');
        insert caseTest;
        return caseTest.Id;
    }
}
```

```
//AccountProcessorTest

@isTest
public class AccountProcessorTest {
   public static testmethod void testAccountProcessor(){
      Account a = new Account();
      a.Name = 'Test Account';
      insert a;
      Contact con = new Contact();
      con.FirstName = 'Binary';
      con.LastName = 'Programming';
      con.AccountId = a.Id;
      insert con;
      List<Id> accListId= new List<Id>();
      accListId.add(a.Id);
      Test.startTest();
      AccountProcessor.countContacts(accListId);
      Test.stopTest();
      Account acc=[select Number_Of_Contacts__c from Account where Id=: a.Id];
      System.assertEquals(Integer.valueOf(acc.Number_Of_Contacts__c),1);
   }

}

//AccountProcessor

public class AccountProcessor {
  @future
   public static void countContacts(List<Id> accountIds){
      List<Account> accList = [SELECT Id, Number_Of_Contacts__c, (select Id from
Contacts) from Account where Id in: accountIds];
      for(Account acc : accList){
         acc.Number_Of_Contacts__c = acc.Contacts.size();
      }
      update accList;
   }
```

```
}

//ContactsListWithController

public class ContactsListWithController {
   // Controller code goes here
   private String sortOrder = 'LastName';
         public List<Contact> getContacts() {
      List<Contact> results = Database.query(
         'SELECT Id, FirstName, LastName, Title, Email ' +
         'FROM Contact ' +
         'ORDER BY ' + sortOrder + ' ASC ' +
         'LIMIT 10'
   );
   return results;
}
}

//NewCaseListController

public class NewCaseListController {
   public List<Case> getNewCases(){
      List<Case> results=[SELECT CaseNumber FROM Case Where Status='New'];
      return results;
   }

}

//AwesomeCalculator

public class AwesomeCalculator {
   public static Double add(Double x, Double y) {
      calculatorServices.CalculatorImplPort calculator =
         new calculatorServices.CalculatorImplPort();
      return calculator.doAdd(x,y);
   }
```

```
}

//ContactsListWithController.vfp

<apex:page controller="ContactsListWithController">
  <apex:form >
    <apex:pageBlock title="Contacts List" id="contacts_list">
      <!-- Contacts List -->
      <apex:pageBlockTable value="{! contacts }" var="ct">
        <apex:column value="{! ct.FirstName }"/>
        <apex:column value="{! ct.LastName }"/>
        <apex:column value="{! ct.Title }"/>
        <apex:column value="{! ct.Email }"/>
      </apex:pageBlockTable>
    </apex:pageBlock>
  </apex:form>
</apex:page>

//Create Contact

<apex:page standardController="Contact">
  <apex:form >
    <apex:pageBlock title="Create Contact">
      <apex:pageBlockSection columns="1">
            <apex:inputField value="{! Contact.FirstName }"/>
            <apex:inputField value="{! Contact.LastName }"/>
                  <apex:inputField value="{! Contact.Email }"/>
            </apex:pageBlockSection>
    <apex:pageBlockButtons >
      <apex:commandButton action="{! save }" value="Save" />
    </apex:pageBlockButtons>
    </apex:pageBlock>
  </apex:form>
</apex:page>

//UserStatus
```

```
<apex:page >
  <apex:pageBlock title="User Status">
    <apex:pageBlockSection columns="1">
      {! $User.FirstName & ' ' & $User.LastName }
      ({! IF($User.isActive, $User.Username, 'inactive') })
    </apex:pageBlockSection>
  </apex:pageBlock>
</apex:page>

//ContactForm

<apex:page standardController="Contact">
  <head>
   <meta charset="utf-8" />
   <meta name="viewport" content="width=device-width, initial-scale=1" />
   <title>Quick Start: Visualforce</title>
   <!-- Import the Design System style sheet -->
   <apex:slds />

  </head>
  <body>
    <apex:form >
   <apex:pageBlock title="New Contact">
    <!--Buttons -->
     <apex:pageBlockButtons >
       <apex:commandButton action="{!save}" value="Save"/>
     </apex:pageBlockButtons>
     <!--Input form -->
     <apex:pageBlockSection columns="1">
     <apex:inputField value="{!Contact.Firstname}"/>
     <apex:inputField value="{!Contact.Lastname}"/>
     <apex:inputField value="{!Contact.Email}"/>
    </apex:pageBlockSection>
   </apex:pageBlock>
   </apex:form>
  </body>
```

```
</apex:page>

//DisplayImage

<apex:page showHeader="false">
  <apex:image alt="Image" url="https://developer.salesforce.com/files/salesforce-
developer-network-logo.png"/>
</apex:page>

//AccountSummary

<apex:page standardController="Account">
  <apex:pageBlock title="Account Summary">
    <apex:pageBlockSection >
      Account owner: {! Account.Owner.Name } <br/>
      Name: {! Account.Name } <br/>
      Phone: {! Account.Phone } <br/>
      Industry: {! Account.Industry } <br/>
      Revenue: {! Account.AnnualRevenue } <br/>
    </apex:pageBlockSection>
  </apex:pageBlock>
</apex:page>

//AccountDetail

<apex:page standardController="Account">
  <apex:outputField value="{! Account.Name }"/>
      <apex:outputField value="{! Account.Phone }"/>
      <apex:outputField value="{! Account.Industry }"/>
      <apex:outputField value="{! Account.AnnualRevenue }"/>
  <apex:relatedList list="Contacts"/>
      <apex:relatedList list="Opportunities" pageSize="5"/>
</apex:page>

//OppView

<apex:page standardController="Opportunity">
```

```
   <apex:pageBlock title="Opportunity Details">
   <apex:pageBlockSection >
      <apex:outputField value="{! Opportunity.Name }"/>
      <apex:outputField value="{! Opportunity.Amount }"/>
      <apex:outputField value="{! Opportunity.CloseDate }"/>
      <apex:outputField value="{! Opportunity.Account.Name }"/>
   </apex:pageBlockSection>
         </apex:pageBlock>
</apex:page>

//AccountEdit

<apex:page standardController="Account">
   <apex:form >
   <apex:pageBlock title="Edit Account">
      <apex:pageMessages />
      <apex:pageBlockSection columns="1">
                  <apex:inputField value="{! Account.Name }"/>
                  <apex:inputField value="{! Account.Phone }"/>
                        <apex:inputField value="{! Account.Industry }"/>
                        <apex:inputField value="{! Account.AnnualRevenue }"/>
                  </apex:pageBlockSection>
      <apex:pageBlockButtons >
         <apex:commandButton action="{! save }" value="Save" />
      </apex:pageBlockButtons>
   </apex:pageBlock>
   <apex:pageBlock title="Contacts">
   <apex:pageBlockTable value="{!Account.contacts}" var="contact">
      <apex:column >
         <apex:outputLink value="{! URLFOR($Action.Contact.Edit, contact.Id) }">
            Edit
         </apex:outputLink>
          
         <apex:outputLink value="{! URLFOR($Action.Contact.Delete, contact.Id) }">
            Del
         </apex:outputLink>
      </apex:column>
```

```
      <apex:column value="{!contact.Name}"/>
      <apex:column value="{!contact.Title}"/>
      <apex:column value="{!contact.Phone}"/>
   </apex:pageBlockTable>
</apex:pageBlock>
   </apex:form>
</apex:page>

//AccountList

<apex:page standardController="Account" recordSetVar="accounts">
   <apex:repeat var="a" value="{! accounts }">
      <li>
         <apex:outputLink value="/{!a.ID}">
                                    {a.Name}
         </apex:outputLink>
      </li>
   </apex:repeat>
</apex:page>

//HelloJQuery

<apex:page >
   <!-- Add the static resource to page's <head> -->
   <apex:includeScript value="{! $Resource.jQuery }"/>
   <!-- A short bit of jQuery to test it's there -->
   <script type="text/javascript">
      jQuery.noConflict();
      jQuery(document).ready(function() {
         jQuery("#message").html("Hello from jQuery!");
      });
   </script>
   <!-- Where the jQuery message will appear -->
   <h1 id="message"></h1>
</apex:page>

//jQueryMobileResources
```

```
<apex:page showHeader="false" sidebar="false" standardStylesheets="false">
  <!-- Add static resources to page's <head> -->
  <apex:stylesheet value="{!
    URLFOR($Resource.jQueryMobile,'jquery/jquery.mobile-1.4.5.css')}"/>
  <apex:includeScript value="{! $Resource.jQueryMobile }"/>
  <apex:includeScript value="{!
    URLFOR($Resource.jQueryMobile,'jquery/jquery.mobile-1.4.5.js')}"/>
  <div style="margin-left: auto; margin-right: auto; width: 50%">
    <!-- Display images directly referenced in a static resource -->
    <h3>Images</h3>
    <p>A hidden message:
      <apex:image alt="eye" title="eye"
        url="{!URLFOR($Resource.jQueryMobile, 'jquery/images/icons-png/eye-
black.png')}"/>
      <apex:image alt="heart" title="heart"
        url="{!URLFOR($Resource.jQueryMobile, 'jquery/images/icons-png/heart-
black.png')}"/>
      <apex:image alt="cloud" title="cloud"
        url="{!URLFOR($Resource.jQueryMobile, 'jquery/images/icons-png/cloud-
black.png')}"/>
    </p>
  <!-- Display images referenced by CSS styles, all from a static resource. -->
  <h3>Background Images on Buttons</h3>
  <button class="ui-btn ui-shadow ui-corner-all
    ui-btn-icon-left ui-icon-action">action</button>
  <button class="ui-btn ui-shadow ui-corner-all
    ui-btn-icon-left ui-icon-star">star</button>
  </div>
</apex:page>

//NewCaseList

<apex:page controller="NewCaseListController" >
  <apex:pageBlock title="New Cases">
    <apex:repeat var="Case" value="{!newCases}">
      <apex:outputLink value="/{!Case.ID}">{!Case.CaseNumber}</apex:outputLink>
```

```
      </apex:repeat>
   </apex:pageBlock>
</apex:page>


//HelloWorld

<apex:page sidebar="false" showHeader="false">
   <h1>Hello World</h1>
   <apex:pageBlock title="A Block Title">
      <apex:pageBlockSection title="A Section Title">
         I'm three components deep!
      </apex:pageBlockSection>
      <apex:pageBlockSection title="A New Section">
         This is another section.
      </apex:pageBlockSection>
   </apex:pageBlock>
</apex:page>

//ContactList

<apex:page standardController="Contact" recordSetVar="contacts">
   <apex:form >
      <apex:pageBlock title="Contacts List" id="contacts_list">
         Filter:
         <apex:selectList value="{! filterId }" size="1">
            <apex:selectOptions value="{! listViewOptions }"/>
            <apex:actionSupport event="onchange" reRender="contacts_list"/>
         </apex:selectList>
         <!-- Contacts List -->
         <apex:pageBlockTable value="{! contacts }" var="ct">
            <!-- Pagination -->
<table style="width: 100%"><tr>
   <td>
      Page: <apex:outputText value=" {!PageNumber} of {! CEILING(ResultSize /
PageSize) }"/>
   </td>
```

```
   <td align="center">
      <!-- Previous page -->
<!-- active -->
<apex:commandLink action="{! Previous }" value="« Previous"
    rendered="{! HasPrevious }"/>
<!-- inactive (no earlier pages) -->
<apex:outputText style="color: #ccc;" value="« Previous"
    rendered="{! NOT(HasPrevious) }"/>
  
<!-- Next page -->
<!-- active -->
<apex:commandLink action="{! Next }" value="Next »"
    rendered="{! HasNext }"/>
<!-- inactive (no more pages) -->
<apex:outputText style="color: #ccc;" value="Next »"
    rendered="{! NOT(HasNext) }"/>
   </td>
   <td align="right">
      Records per page:
<apex:selectList value="{! PageSize }" size="1">
   <apex:selectOption itemValue="5" itemLabel="5"/>
   <apex:selectOption itemValue="20" itemLabel="20"/>
   <apex:actionSupport event="onchange" reRender="contacts_list"/>
</apex:selectList>
   </td>
</tr></table>
            <apex:column value="{! ct.FirstName }"/>
            <apex:column value="{! ct.LastName }"/>
            <apex:column value="{! ct.Email }"/>
            <apex:column value="{! ct.Account.Name }"/>
         </apex:pageBlockTable>
      </apex:pageBlock>
   </apex:form>
</apex:page>

//DisplayUserInfo
```

```
<apex:page >
   {! $User.FirstName }
</apex:page>

//ContactView

<apex:page standardController="Contact">
   <apex:pageBlock title="Contact View">
   <apex:pageBlockSection >
      First Name: {! Contact.FirstName }
      Last Name: {! Contact.LastName }
      Contact owner: {! Contact.Owner.Email }
   </apex:pageBlockSection>
   </apex:pageBlock>
</apex:page>

//ShowImage

<apex:page >
   <apex:image url="{!URLFOR($Resource.vfimagetest,'cats/kitten1.jpg')}"/>
</apex:page>

//DailyLeadProcessorTest.apxc

@isTest
private class DailyLeadProcessorTest{
//Seconds Minutes Hours Day_of_month Month Day_of_week optional_year
public static String CRON_EXP = '0 0 0 2 6 ? 2022';

static testmethod void testScheduledJob(){
List<Lead> leads = new List<Lead>();

for(Integer i = 0; i < 200; i++){
Lead lead = new Lead(LastName = 'Test ' + i, LeadSource = '', Company = 'Test Company
' + i, Status = 'Open - Not Contacted');
leads.add(lead);
}
```

```
insert leads;

Test.startTest();
// Schedule the test job
String jobId = System.schedule('Update LeadSource to DreamForce', CRON_EXP, new
DailyLeadProcessor());

// Stopping the test will run the job synchronously
Test.stopTest();
}
}

//LeadProcessorTest.apxc

@isTest
public class LeadProcessorTest {
@testSetup
static void setup() {
List<Lead> leads = new List<Lead>();
// insert 200 leads
for (Integer i=0;i<200;i++) {
leads.add(new Lead(LastName='Lead '+i,
Company='Lead', Status='Open - Not Contacted'));
}
insert leads;
}

static testmethod void test() {
Test.startTest();
LeadProcessor lp = new LeadProcessor();
Id batchId = Database.executeBatch(lp, 200);
Test.stopTest();

// after the testing stops, assert records were updated properly
System.assertEquals(200, [select count() from lead where LeadSource = 'Dreamforce']);
}
```

```
}

//AddPrimaryContactTest.apxc

@isTest
public class AddPrimaryContactTest
{
@isTest static void TestList()
{
List<Account> Teste = new List <Account>();
for(Integer i=0;i<50;i++)
{
Teste.add(new Account(BillingState = 'CA', name = 'Test'+i));
}
for(Integer j=0;j<50;j++)
{
Teste.add(new Account(BillingState = 'NY', name = 'Test'+j));
}
insert Teste;

Contact co = new Contact();
co.FirstName='demo';
co.LastName ='demo';
insert co;
String state = 'CA';

AddPrimaryContact apc = new AddPrimaryContact(co, state);
Test.startTest();
System.enqueueJob(apc);
Test.stopTest();
}
}

//AddPrimaryContact

public class AddPrimaryContact implements Queueable
{
```

```
private Contact c;
private String state;
public AddPrimaryContact(Contact c, String state)
{
this.c = c;
this.state = state;
}
public void execute(QueueableContext context)
{
List<Account> ListAccount = [SELECT ID, Name ,(Select id,FirstName,LastName from
contacts ) FROM ACCOUNT WHERE BillingState = :state LIMIT 200];
List<Contact> lstContact = new List<Contact>();
for (Account acc:ListAccount)
{
Contact cont = c.clone(false,false,false,false);
cont.AccountId = acc.id;
lstContact.add( cont );
}

if(lstContact.size() >0 )
{
insert lstContact;
}

}

}

//AccountProcessor

public class AccountProcessor {
  @future
   public static void countContacts(List<Id> accountIds){
      List<Account> accList = [SELECT Id, Number_Of_Contacts__c, (select Id from
Contacts) from Account where Id in: accountIds];
      for(Account acc : accList){
         acc.Number_Of_Contacts__c = acc.Contacts.size();
```

```
        }
        update accList;
    }

}

//DailyLeadProcessor

global class DailyLeadProcessor implements Schedulable{
global void execute(SchedulableContext ctx){
List<Lead> leads = [SELECT Id, LeadSource FROM Lead WHERE LeadSource = ''];

if(leads.size() > 0){
List<Lead> newLeads = new List<Lead>();

for(Lead lead : leads){
lead.LeadSource = 'DreamForce';
newLeads.add(lead);
}

update newLeads;
}
}
}

//AccountProcessorTest

@isTest
public class AccountProcessorTest {
    public static testmethod void testAccountProcessor(){
        Account a = new Account();
        a.Name = 'Test Account';
        insert a;
        Contact con = new Contact();
        con.FirstName = 'Binary';
        con.LastName = 'Programming';
        con.AccountId = a.Id;
```

```
        insert con;
        List<Id> accListId= new List<Id>();
        accListId.add(a.Id);
        Test.startTest();
        AccountProcessor.countContacts(accListId);
        Test.stopTest();
        Account acc=[select Number_Of_Contacts__c from Account where Id=: a.Id];
        System.assertEquals(Integer.valueOf(acc.Number_Of_Contacts__c),1);
    }

}

//LeadProcessor

global class LeadProcessor implements
Database.Batchable<sObject>, Database.Stateful {

// instance member to retain state across transactions
global Integer recordsProcessed = 0;

global Database.QueryLocator start(Database.BatchableContext bc) {
return Database.getQueryLocator('SELECT Id, LeadSource FROM Lead');
}

global void execute(Database.BatchableContext bc, List<Lead> scope){
// process each batch of records
List<Lead> leads = new List<Lead>();
for (Lead lead : scope) {

lead.LeadSource = 'Dreamforce';
// increment the instance member counter
recordsProcessed = recordsProcessed + 1;

}
update leads;
}
```

```
global void finish(Database.BatchableContext bc){
System.debug(recordsProcessed + ' records processed. Shazam!');

}
}

//AccountManager

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

//AccountManagerTest

@isTest
private class AccountManagerTest {

   @isTest static void testGetContactsByAccountId() {
      Id recordId = createTestRecord();
      // Set up a test request
      RestRequest request = new RestRequest();
      request.requestUri =
'https://yourInstance.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 accountTest = new Account(
          Name='Test record');
        insert accountTest;
        Contact contactTest= new Contact(
            FirstName='John',
            LastName='Doe',
            AccountId = accountTest.Id
        );
        insert contactTest;
        return accountTest.Id;
    }
}

//CreateDefaultData

public with sharing class CreateDefaultData{
    Static Final String TYPE_ROUTINE_MAINTENANCE = 'Routine Maintenance';
    //gets value from custom metadata How_We_Roll_Settings__mdt to know if Default
data was created
    @AuraEnabled
    public static Boolean isDataCreated() {
        How_We_Roll_Settings__c      customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
        return customSetting.Is_Data_Created__c;
    }
    //creates Default Data for How We Roll application
    @AuraEnabled
    public static void createDefaultData(){
        List<Vehicle__c> vehicles = createVehicles();
```

```
        List<Product2> equipment = createEquipment();
        List<Case> maintenanceRequest = createMaintenanceRequest(vehicles);
        List<Equipment_Maintenance_Item__c> joinRecords =
createJoinRecords(equipment, maintenanceRequest);

        updateCustomSetting(true);
    }


    public static void updateCustomSetting(Boolean isDataCreated){
        How_We_Roll_Settings__c      customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
        customSetting.Is_Data_Created__c = isDataCreated;
        upsert customSetting;
    }

    public static List<Vehicle__c> createVehicles(){
        List<Vehicle__c> vehicles = new List<Vehicle__c>();
        vehicles.add(new Vehicle__c(Name = 'Toy Hauler RV', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Toy Hauler RV'));
        vehicles.add(new Vehicle__c(Name = 'Travel Trailer RV', Air_Conditioner__c = true,
Bathrooms__c = 2, Bedrooms__c = 2, Model__c = 'Travel Trailer RV'));
        vehicles.add(new Vehicle__c(Name = 'Teardrop Camper', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Teardrop Camper'));
        vehicles.add(new Vehicle__c(Name = 'Pop-Up Camper', Air_Conditioner__c = true,
Bathrooms__c = 1, Bedrooms__c = 1, Model__c = 'Pop-Up Camper'));
        insert vehicles;
        return vehicles;
    }

    public static List<Product2> createEquipment(){
        List<Product2> equipments = new List<Product2>();
        equipments.add(new Product2(Warehouse_SKU__c =
'55d66226726b611100aaf741',name = 'Generator 1000 kW', Replacement_Part__c =
true,Cost__c = 100 ,Maintenance_Cycle__c = 100));
        equipments.add(new Product2(name = 'Fuse 20B',Replacement_Part__c =
true,Cost__c = 1000, Maintenance_Cycle__c = 30  ));
```

```
        equipments.add(new Product2(name = 'Breaker 13C',Replacement_Part__c =
true,Cost__c = 100  , Maintenance_Cycle__c = 15));
        equipments.add(new Product2(name = 'UPS 20 VA',Replacement_Part__c =
true,Cost__c = 200  , Maintenance_Cycle__c = 60));
        insert equipments;
        return equipments;
    }

    public static List<Case> createMaintenanceRequest(List<Vehicle__c> vehicles){
        List<Case> maintenanceRequests = new List<Case>();
        maintenanceRequests.add(new Case(Vehicle__c = vehicles.get(1).Id, Type =
TYPE_ROUTINE_MAINTENANCE, Date_Reported__c = Date.today()));
        maintenanceRequests.add(new Case(Vehicle__c = vehicles.get(2).Id, Type =
TYPE_ROUTINE_MAINTENANCE, Date_Reported__c = Date.today()));
        insert maintenanceRequests;
        return maintenanceRequests;
    }

    public static List<Equipment_Maintenance_Item__c>
createJoinRecords(List<Product2> equipment, List<Case> maintenanceRequest){
        List<Equipment_Maintenance_Item__c> joinRecords = new
List<Equipment_Maintenance_Item__c>();
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(0).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(1).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(2).Id, Maintenance_Request__c = maintenanceRequest.get(0).Id));
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(0).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(1).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
        joinRecords.add(new Equipment_Maintenance_Item__c(Equipment__c =
equipment.get(2).Id, Maintenance_Request__c = maintenanceRequest.get(1).Id));
        insert joinRecords;
        return joinRecords;
```

```
    }
}

//CreateDefaultDataTest

@isTest
private class CreateDefaultDataTest {
    @isTest
    static void createData_test(){
        Test.startTest();
        CreateDefaultData.createDefaultData();
        List<Vehicle__c> vehicles = [SELECT Id FROM Vehicle__c];
        List<Product2> equipment = [SELECT Id FROM Product2];
        List<Case> maintenanceRequest = [SELECT Id FROM Case];
        List<Equipment_Maintenance_Item__c> joinRecords = [SELECT Id FROM
Equipment_Maintenance_Item__c];

        System.assertEquals(4, vehicles.size(), 'There should have been 4 vehicles
created');
        System.assertEquals(4, equipment.size(), 'There should have been 4 equipment
created');
        System.assertEquals(2, maintenanceRequest.size(), 'There should have been 2
maintenance request created');
        System.assertEquals(6, joinRecords.size(), 'There should have been 6 equipment
maintenance items created');

    }

    @isTest
    static void updateCustomSetting_test(){
        How_We_Roll_Settings__c      customSetting =
How_We_Roll_Settings__c.getOrgDefaults();
        customSetting.Is_Data_Created__c = false;
        upsert customSetting;

        System.assertEquals(false, CreateDefaultData.isDataCreated(), 'The custom setting
How_We_Roll_Settings__c.Is_Data_Created__c should be false');
```

```
        customSetting.Is_Data_Created__c = true;
        upsert customSetting;
        System.assertEquals(true, CreateDefaultData.isDataCreated(), 'The custom setting
How_We_Roll_Settings__c.Is_Data_Created__c should be true');

    }
}

//MaintenanceRequestHelper

public with sharing class MaintenanceRequestHelper {
    public static void updateworkOrders(List<Case> updWorkOrders, Map<Id,Case>
nonUpdCaseMap) {
        Set<Id> validIds = new Set<Id>();
        For (Case c : updWorkOrders){
            if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){
                if (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){
                    validIds.add(c.Id);
                }
            }
        }
        //When an existing maintenance request of type Repair or Routine Maintenance is
closed,
        //create a new maintenance request for a future routine checkup.
        if (!validIds.isEmpty()){
            Map<Id,Case> closedCases = new Map<Id,Case>([SELECT Id, Vehicle__c,
Equipment__c, Equipment__r.Maintenance_Cycle__c,
                                        (SELECT Id,Equipment__c,Quantity__c FROM
Equipment_Maintenance_Items__r)
                                        FROM Case WHERE Id IN :validIds]);
            Map<Id,Decimal> maintenanceCycles = new Map<ID,Decimal>();
            //calculate the maintenance request due dates by using the maintenance cycle
defined on the related equipment records.
            AggregateResult[] results = [SELECT Maintenance_Request__c,
                                MIN(Equipment__r.Maintenance_Cycle__c)cycle
                                FROM Equipment_Maintenance_Item__c
```

```
                        WHERE Maintenance_Request__c IN :ValidIds GROUP BY
Maintenance_Request__c];
        for (AggregateResult ar : results){
            maintenanceCycles.put((Id) ar.get('Maintenance_Request__c'), (Decimal)
ar.get('cycle'));
        }
        List<Case> newCases = new List<Case>();
        for(Case cc : closedCases.values()){
            Case nc = new Case (
                ParentId = cc.Id,
                Status = 'New',
                Subject = 'Routine Maintenance',
                Type = 'Routine Maintenance',
                Vehicle__c = cc.Vehicle__c,
                Equipment__c =cc.Equipment__c,
                Origin = 'Web',
                Date_Reported__c = Date.Today()
            );
            //If multiple pieces of equipment are used in the maintenance request,
            //define the due date by applying the shortest maintenance cycle to today's
date.
            //If (maintenanceCycles.containskey(cc.Id)){
                nc.Date_Due__c = Date.today().addDays((Integer)
maintenanceCycles.get(cc.Id));
            //} else {
            //    nc.Date_Due__c = Date.today().addDays((Integer)
cc.Equipment__r.maintenance_Cycle__c);
            //}
            newCases.add(nc);
        }
        insert newCases;
        List<Equipment_Maintenance_Item__c> clonedList = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
            for (Equipment_Maintenance_Item__c clonedListItem :
closedCases.get(nc.ParentId).Equipment_Maintenance_Items__r){
                Equipment_Maintenance_Item__c item = clonedListItem.clone();
```

```
                item.Maintenance_Request__c = nc.Id;
                clonedList.add(item);
            }
        }
        insert clonedList;
    }
  }
}

//MaintenanceRequestHelperTest

@isTest
public with sharing class MaintenanceRequestHelperTest {
  // createVehicle
  private static Vehicle__c createVehicle(){
    Vehicle__c vehicle = new Vehicle__C(name = 'Testing Vehicle');
    return vehicle;
  }
  // createEquipment
  private static Product2 createEquipment(){
    product2 equipment = new product2(name = 'Testing equipment',
                                      lifespan_months__c = 10,
                                      maintenance_cycle__c = 10,
                                      replacement_part__c = true);
    return equipment;
  }
  // createMaintenanceRequest
  private static Case createMaintenanceRequest(id vehicleId, id equipmentId){
    case cse = new case(Type='Repair',
                        Status='New',
                        Origin='Web',
                        Subject='Testing subject',
                        Equipment__c=equipmentId,
                        Vehicle__c=vehicleId);
    return cse;
  }
  // createEquipmentMaintenanceItem
```

```
    private static Equipment_Maintenance_Item__c createEquipmentMaintenanceItem(id
equipmentId,id requestId){
        Equipment_Maintenance_Item__c equipmentMaintenanceItem = new
Equipment_Maintenance_Item__c(
            Equipment__c = equipmentId,
            Maintenance_Request__c = requestId);
        return equipmentMaintenanceItem;
    }
    @isTest
    private static void testPositive(){
        Vehicle__c vehicle = createVehicle();
        insert vehicle;
        id vehicleId = vehicle.Id;
        Product2 equipment = createEquipment();
        insert equipment;
        id equipmentId = equipment.Id;
        case createdCase = createMaintenanceRequest(vehicleId,equipmentId);
        insert createdCase;
        Equipment_Maintenance_Item__c equipmentMaintenanceItem =
createEquipmentMaintenanceItem(equipmentId,createdCase.id);
        insert equipmentMaintenanceItem;
        test.startTest();
        createdCase.status = 'Closed';
        update createdCase;
        test.stopTest();
        Case newCase = [Select id,
                        subject,
                        type,
                        Equipment__c,
                        Date_Reported__c,
                        Vehicle__c,
                        Date_Due__c
                       from case
                       where status ='New'];
        Equipment_Maintenance_Item__c workPart = [select id
                                    from Equipment_Maintenance_Item__c
                                    where Maintenance_Request__c =:newCase.Id];
```

```
        list<case> allCase = [select id from case];
        system.assert(allCase.size() == 2);
        system.assert(newCase != null);
        system.assert(newCase.Subject != null);
        system.assertEquals(newCase.Type, 'Routine Maintenance');
        SYSTEM.assertEquals(newCase.Equipment__c, equipmentId);
        SYSTEM.assertEquals(newCase.Vehicle__c, vehicleId);
        SYSTEM.assertEquals(newCase.Date_Reported__c, system.today());
    }
    @isTest
    private static void testNegative(){
        Vehicle__C vehicle = createVehicle();
        insert vehicle;
        id vehicleId = vehicle.Id;
        product2 equipment = createEquipment();
        insert equipment;
        id equipmentId = equipment.Id;
        case createdCase = createMaintenanceRequest(vehicleId,equipmentId);
        insert createdCase;
        Equipment_Maintenance_Item__c workP =
createEquipmentMaintenanceItem(equipmentId, createdCase.Id);
        insert workP;
        test.startTest();
        createdCase.Status = 'Working';
        update createdCase;
        test.stopTest();
        list<case> allCase = [select id from case];
        Equipment_Maintenance_Item__c equipmentMaintenanceItem = [select id
                                    from Equipment_Maintenance_Item__c
                                    where Maintenance_Request__c = :createdCase.Id];
        system.assert(equipmentMaintenanceItem != null);
        system.assert(allCase.size() == 1);
    }
    @isTest
    private static void testBulk(){
        list<Vehicle__C> vehicleList = new list<Vehicle__C>();
        list<Product2> equipmentList = new list<Product2>();
```

```
    list<Equipment_Maintenance_Item__c> equipmentMaintenanceItemList = new
list<Equipment_Maintenance_Item__c>();
    list<case> caseList = new list<case>();
    list<id> oldCaseIds = new list<id>();
    for(integer i = 0; i < 300; i++){
      vehicleList.add(createVehicle());
      equipmentList.add(createEquipment());
    }
    insert vehicleList;
    insert equipmentList;
    for(integer i = 0; i < 300; i++){
      caseList.add(createMaintenanceRequest(vehicleList.get(i).id,
equipmentList.get(i).id));
    }
    insert caseList;
    for(integer i = 0; i < 300; i++){

equipmentMaintenanceItemList.add(createEquipmentMaintenanceItem(equipmentList.
get(i).id, caseList.get(i).id));
    }
    insert equipmentMaintenanceItemList;
    test.startTest();
    for(case cs : caseList){
      cs.Status = 'Closed';
      oldCaseIds.add(cs.Id);
    }
    update caseList;
    test.stopTest();
    list<case> newCase = [select id
                  from case
                  where status ='New'];

    list<Equipment_Maintenance_Item__c> workParts = [select id
                                from Equipment_Maintenance_Item__c
                                where Maintenance_Request__c in: oldCaseIds];
    system.assert(newCase.size() == 300);
    list<case> allCase = [select id from case];
```

```
        system.assert(allCase.size() == 600);
    }
}

//WarehouseCalloutService

public with sharing class WarehouseCalloutService implements Queueable {
    private static final String WAREHOUSE_URL = 'https://th-superbadge-
apex.herokuapp.com/equipment';
    //Write a class that makes a REST callout to an external warehouse system to get a
list of equipment that needs to be updated.
    //The callout's JSON response returns the equipment records that you upsert in
Salesforce.
    @future(callout=true)
    public static void runWarehouseEquipmentSync(){
        System.debug('go into runWarehouseEquipmentSync');
        Http http = new Http();
        HttpRequest request = new HttpRequest();
        request.setEndpoint(WAREHOUSE_URL);
        request.setMethod('GET');
        HttpResponse response = http.send(request);
        List<Product2> product2List = new List<Product2>();
        System.debug(response.getStatusCode());
        if (response.getStatusCode() == 200){
            List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
            System.debug(response.getBody());
            //class maps the following fields:
            //warehouse SKU will be external ID for identifying which equipment records to
update within Salesforce
            for (Object jR : jsonResponse){
                Map<String,Object> mapJson = (Map<String,Object>)jR;
                Product2 product2 = new Product2();
                //replacement part (always true),
                product2.Replacement_Part__c = (Boolean) mapJson.get('replacement');
                //cost
                product2.Cost__c = (Integer) mapJson.get('cost');
```

```
            //current inventory
            product2.Current_Inventory__c = (Double) mapJson.get('quantity');
            //lifespan
            product2.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
            //maintenance cycle
            product2.Maintenance_Cycle__c = (Integer)
mapJson.get('maintenanceperiod');
            //warehouse SKU
            product2.Warehouse_SKU__c = (String) mapJson.get('sku');
            product2.Name = (String) mapJson.get('name');
            product2.ProductCode = (String) mapJson.get('_id');
            product2List.add(product2);
        }
        if (product2List.size() > 0){
            upsert product2List;
            System.debug('Your equipment was synced with the warehouse one');
        }
    }
  }
  public static void execute (QueueableContext context){
    System.debug('start runWarehouseEquipmentSync');
    runWarehouseEquipmentSync();
    System.debug('end runWarehouseEquipmentSync');
  }
}

//WarehouseCalloutServiceMock

@isTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
  // implement http mock callout
  global static HttpResponse respond(HttpRequest request) {
    HttpResponse response = new HttpResponse();
    response.setHeader('Content-Type', 'application/json');

response.setBody('[{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5
,"name":"Generator 1000
```

```
kW","maintenanceperiod":365,"lifespan":120,"cost":5000,"sku":"100003"},{"_id":"55d66226
726b611100aaf742","replacement":true,"quantity":183,"name":"Cooling
Fan","maintenanceperiod":0,"lifespan":0,"cost":300,"sku":"100004"},{"_id":"55d66226726b6
11100aaf743","replacement":true,"quantity":143,"name":"Fuse
20A","maintenanceperiod":0,"lifespan":0,"cost":22,"sku":"100005"}]');
        response.setStatusCode(200);
        return response;
    }
}

//WarehouseCalloutServiceTest

@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);
    }
}

//WarehouseSyncSchedule

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

```
        System.enqueueJob(new WarehouseCalloutService());
    }
}

//WarehouseSyncScheduleTes

@isTest
public with sharing class WarehouseSyncScheduleTest {
    // implement scheduled code here
    //
    @isTest static void test() {
        String scheduleTime = '00 00 00 * * ? *';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        String jobId = System.schedule('Warehouse Time to Schedule to test',
scheduleTime, new WarehouseSyncSchedule());
        CronTrigger c = [SELECT State FROM CronTrigger WHERE Id =: jobId];
        System.assertEquals('WAITING', String.valueOf(c.State), 'JobId does not match');
        Test.stopTest();
    }
}

//MaintenanceRequest.apxt

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