# Data Modeling Questions

* Design a database to model a cookbook with meal types, recipes, ingredients.
  1. You can use paper to document your data model.

# SQL Questions

* Given the following SQL SELECT statement what are the highlighted text represent?

SELECT ***CUST***.CUSTOMER AS ***NAME***, ***CUST***.CUSTOMER\_ADDRESS

FROM CUSTOMER\_V ***CUST***

WHERE ***NAME*** = ‘Home Furnishings’;

*‘CUST’ and ‘NAME’ each represent a different column in the database ‘CUSTOMER\_V’.   
‘CUST’ is the unique identifier of each customer (probably the customer ID), whereas ‘NAME’ is the business associated with that identifier (even if multiple businesses have identical names).*

* Given the following Orders and Customers tables:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **OrderID** | | **CustomerID** | **OrderDate** | |
| 10308 | | 2 | 1996-09-18 | |
| 10309 | | 37 | 1996-09-19 | |
| 10310 | | 77 | 1996-09-20 | |
| **CustomerID** | **CustomerName** | | | **ContactName** | | **Country** |
| 1 | Alfreds Futterkiste | | | Maria Anders | | Germany |
| 2 | Ana Trujillo Emparedados y helados | | | Ana Trujillo | | Mexico |
| 3 | Antonio Moreno Taquería | | | Antonio Moreno | | Mexico |

What would the result set be given the following SQL SELECT statement?

SELECT Orders.OrderID, Customers.CustomerName, Orders.OrderDate  
FROM Orders  
INNER JOIN Customers  
ON Orders.CustomerID=Customers.CustomerID;

*10308, Ana Trujillo Emparedados y helados, 1996-09-18*

What would the result set be given the following SQL SELECT statement?

SELECT Orders.OrderID, Customers.CustomerName, Orders.OrderDate  
FROM Orders  
LEFT JOIN Customers  
ON Orders.CustomerID=Customers.CustomerID;  
*null, Alfreds Futterkiste, null*  
*10308, Ana Trujillo Emparedados y helados, 1996-09-18  
null, Antonio Moreno Taqueria, null*

# Entity Framework Questions

* What do the following Entity Framework Object Services provide for your application in regards to data from a database?
  1. Materialization
     1. *EF automatically creates C# classes to match each entity in the database. I had to look this up online.*
  2. Change Tracking
     1. *Change Tracking updates values in the original entity when the SaveChanges operation executes, ensuring the entity is up to date. I had to look this up online.*
  3. Object identities
     1. *Assigning an ‘Id’ property to an object allows the class and the entity structure to keep track of every instance and object individually. This is obviously useful in a database that may contain thousands of objects built from the same class. I had to look this up online, and I still don’t know what I’m being asked, as “object identity” is not a term that appears anywhere on the internet.*
* Design a code first data model which has a Project class that can contain a bunch of tasks.
  1. *What does this mean? I can’t understand what I’m being asked to do, or what form my answer is to take.*

# Object Orientation Questions

* What are the basic concepts of OOP?
  1. *Classes are ‘blueprints’ that define the basic way in which something will function, but they do not do anything by themselves. Objects are the things actually created from that ‘blueprint’; they may add additional abilities/traits, but all objects created from one class share common features.*
* How do you program behavior into your C# class?
  1. *Add methods that result in various actions (or behaviors). Any object created from that class will have those methods and can therefore carry out those behaviors.*
* Explain method overriding.
  1. *Class B is inherited from Class A, meaning that Class B has the StartCounting method included in Class A. However, it is necessary for StartCounting to function in a different way when it is part of Class B. To accomplish this, the developer ‘overrides’ the method: (s)he defines a new behavior for StartCounting that occurs ONLY within that class, but the method name remains the same.*
* What is Inheritance?
  1. *When one class ‘inherits’ another, it automatically gains all of the traits and methods included in the original class. For example,*
* What is abstract class?
  1. *An abstract class is a class that exists solely to provide inherited methods or properties to child classes. It is an ‘umbrella’ that can contain multiple classes related to each other by virtue of having the common inherited traits from the ‘parent’ abstract class.*

# MVC Questions

What is an example URL that would call the following controller method, assuming the default routes have been configured?  
*www.example.com/Catalog/Specifications/*

Part II: What HTTP Verb is used?   
*ActionResult? I have no idea what this question means. We have NEVER talked about ‘HTTP verbs’, ever.*

public class CatalogController : Controller

 {

     public ActionResult Specifications(int id)

     {

         var model = new SpecModel(id);

         return View();

     }

}

Examine the following View for an MVC Application:

@model IEnumerable<MVCGuidedLab.Models.Color>

@{

    ViewBag.Title = "Index";

}

<h2>Index</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Value)

        </th>

        <th></th>

    </tr>

@foreach (var item in Model) {Go

    <tr>

        <td>

            @Html.DisplayFor(modelItem => item.Name)

        </td>

        <td>

            @Html.DisplayFor(modelItem => item.Value)

        </td>

        <td>

            @Html.ActionLink("Edit", "Edit", new { id=item.Id }) |

            @Html.ActionLink("Details", "Details", new { id=item.Id }) |

            @Html.ActionLink("Delete", "Delete", new { id=item.Id })

        </td>

    </tr>

}

</table>

1. What type is the Model? *IEnumerable*
2. Is the model a single object, or a sequence? *A sequence.*
3. What properties are on the items in the model? *Name, Value*

# Programming Exercises

To turn in this exam, you’ll create a fork of a repository, make modifications to the project in that repository, and submit a pull request with your changes.

We’ll walk you through the github workflow for those pieces. However, the code will be yours.

Go to Github.com and fork the repository <https://github.com/BillWagner/ExperienceITExam>

Then, clone your fork to your desktop. You’ll do that by clicking the “Clone in Desktop” button on the github page.

Now, you’re ready to do your work.

1. Open the program.cs file in the Loops project. The Main method has comments that describe what you should do. Make your changes.
2. Open the program.cs file in the Extension methods project. The Main method has comments that describe the code you should add. Make your changes.
3. Open the program.cs file in the Lazy Evaluation project. The Main method has comments that describe the code you should add. Make those changes as well.
4. Open the program.cs file in the Query Expresssions project. As before, the Main method has comments that describe the code you should or change.
5. Make a new ASP.NET MVC project and add it to the solution. Add a controller called DiceRoll controller. Modify the index method and the index view to display all the combinations of results from rolling 2 six-sided dice. (For example, { 1, 1}, {1, 2} etc.

Commit your changes, and then push them to github.

Now, you’re ready to submit a pull request. Navigate to your fork of the repository in github.com in a browser. Below the Code tab on the right side, you’ll see a link that says “Pull Request”. Click that. Once you’re on the Pull Request page, submit a new pull request. Add your name, and any comments you would like on your pull request, and submit the request.

We can now look at your changes, and see how you did.