# 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.

CREATE TABLE [dbo].[MealType] (

[CatID] INT IDENTITY (1, 1) NOT NULL,

[CatName] NVARCHAR (50) NULL,

CONSTRAINT [PK\_dbo.MealType] PRIMARY KEY CLUSTERED ([CatID] ASC)

);

CREATE TABLE [dbo].[RecipeCase] (

[RecipeCaseID] INT IDENTITY (1, 1) NOT NULL,

[CatID] INT NULL,

[RecipeID] INT NULL,

CONSTRAINT [PK\_dbo.RecipeCase] PRIMARY KEY CLUSTERED ([RecipeCaseID] ASC),

CONSTRAINT [FK\_dbo.RecipeCase\_dbo.MealType\_CatID] FOREIGN KEY ([CatID]) REFERENCES [dbo].[MealType] ([CatID]) ON DELETE CASCADE

);

CREATE TABLE [dbo].[Recipe] (

[RecipeID] INT IDENTITY (1, 1) NOT NULL,

[RecipeName] NVARCHAR (50) NULL,

PRIMARY KEY CLUSTERED ([RecipeID] ASC)

);

GO

CREATE NONCLUSTERED INDEX [IX\_CatID]

ON [dbo].[RecipeCase]([CatID] ASC);

CREATE TABLE [dbo].[Ingredient] (

[IngredientID] INT IDENTITY (1, 1) NOT NULL,

[IngredientName] NVARCHAR (50) NULL,

PRIMARY KEY CLUSTERED ([IngredientID] ASC)

);

# 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 represents the column name. NAME represents the alias to use on that column.

* 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;

The result set would be the 3 columns: OrderID, CustomerName, and OrderDate. Ana Trujillo Emparedados y helados’ data will appear.

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;

The result set would be the 3 columns: OrderID, CustomerName, and OrderDate. All data from the Orders table will be returned. Row 2 from the Customer table will be returned as well.

# 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. Allows for the generation of objects within your database.
  2. Change Tracking
     1. Allows for the logging of changes to data that occurs.
  3. Object identities
     1. Allows for references to be given to objects.
* Design a code first data model which has a Project class that can contain a bunch of tasks.

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace EFQuestion

{

public class Project

{

}

}

# Object Orientation Questions

* What are the basic concepts of OOP?
  1. Classes – contains a set of related methods and functions.
  2. Objects – instantiated classes built from a class.
  3. Method – a segment of code that can be called upon in different areas of your program.
* How do you program behavior into your C# class?
  1. Through the use of conditional statements to branch off into different courses of action or return different values. (Ex: If statements).
* Explain method overriding.
  1. Method overriding allows different versions of methods with the same name to be called upon.
* What is Inheritance?
  1. Inheritance allows functions that exist within one class to be used in another without directly writing a duplicate of it into another class.
* What is abstract class?
  1. An abstract class is a class that cannot be instantiated but may contain coded functions.

# MVC Questions

What is an example URL that would call the following controller method, assuming the default routes have been configured?

http://www.yoursite.com/Catalog

Part II: What HTTP Verb is used?

View.

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?
   1. An Enum.
2. Is the model a single object, or a sequence?
   1. A sequence.
3. What properties are on the items in the model?
   1. Name and 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.