# 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.

***Meal Types* *Recipes* *Ingredients***

\* receiptID

\*mealID mealID \*ingredientID

mealName ingredientID ingredientName

\*Primary key

# SQL Questions

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

SELECT ***CUST***.CUSTOMER AS ***NAME***, ***CUST***.CUSTOMER\_ADDRESS (1)

FROM CUSTOMER\_V ***CUST*** (2)

WHERE ***NAME*** = ‘Home Furnishings’; (3)

1. Customer Name and Customer

* 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;

Select OrderID from orders table; CustomerName from Customers table; and OrderDate from Orders table

The INNER JOIN keyword selects all rows from both tables as long as there is a match between the columns in both tables.

**Result: returns all the rows from both tables where the CustomerID in the Orders table is equal to the CustomerID in the Customers table; The CustomerID must be equal/same in the Orders table and Customers table**

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 LEFT JOIN keyword returns all rows from the left table, table1, with the matching rows in the right table, table2. The result is NULL in the right side when there is no match.

**Result: returns complete set of records from Orders table with matching records, if available in Customers table; If there’s no match, data is shown as 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: provides the ability to transform data into objects
  2. Change Tracking (i.e. State Management): ability to track any changes made to objects
  3. Object identities: ability to manage an object and its respective properties and methods.
* Design a code first data model which has a Project class that can contain a bunch of tasks.

public class Employee

{

int empIoyeeID

string employeeName

string employeeAddress

int employeeHourlyWage

TotalHoursCalculate

PayIncrease

CalculateGrossPay

CalculateDeductions

CalculateNetPay

}

# Object Orientation Questions

* What are the basic concepts of OOP?

OOP – object oriented programming

The basic concepts of OOP include:

* Object
* Class
* Instances
* Methods
* Interfaces
* Inheritance
* Abstraction
* Encapsulation
* How do you program behavior into your C# class?

Methods

* Explain method overriding.

Method overriding is utilized when it is necessary to redefine an inherited behavior in more specialized way (replacing a method from a parent class). For example, a child class inherits methods from a parent class. It may be necessary to better define or refine the parent’s methods for the child. In such instances, the parent’s methods are said to be “overwritten”.

* What is Inheritance?

Inheritance refers to when object or class is based upon another object/class. The object/class will use the same implementation (i.e. inherit from a class) in order to maintain the same behavior. The purpose of inheritance is to permit the reuse of code. Notably, the usage of inheritance will introduce a hierarchy.

* What is abstract class?

An abstract class is a class that leaves some or all members unimplemented so implementations can be provided by derived classes.

# MVC Questions

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

<http://mywebsite/courses/index>

Part II: What HTTP Verb is used?

public class CatalogController : Controller

 {

     public ActionResult Specifications(int id)

     {

         var model = new SpecModel(id);

         return View();

     }

}

* **I do not see any HTTP verbs**

***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? IEnumberable; Index (View>Index)
2. Is the model a single object, or a sequence? Single class
3. What properties are on the items in the model?
   * Item Name
   * Item 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.