# 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.

My Answer:



# SQL Questions

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

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

FROM CUSTOMER\_V ***CUST***

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

My Answer:

CUST is the alias for the table

CUSTOMER is a column in the table CUST

CUSTOMER\_ADDRESS is a column in the table CUST

The SQL Select statement is querying for the customer name Home Furnishings and the customer address from the table CUST

* 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;

My Answer:

|  |  |  |
| --- | --- | --- |
| **OrderID** | **CustomerName** | **OrderDate** |
| 10308 | Ana Trujillo Emparedados y helados | 1996-09-18 |
| 10309 | Customer ID 37’s Name from Customer table | 1996-09-19 |
| 10310 | Customer ID 77’s Name from Customer table | 1996-09-20 |

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;

My Answer:

|  |  |  |
| --- | --- | --- |
| **OrderID** | **CustomerName** | **OrderDate** |
| 10308 | Ana Trujillo Emparedados y helados | 1996-09-18 |
| 10309 | Customer ID 37’s Name from Customer table | 1996-09-19 |
| 10310 | Customer ID 77’s Name from Customer table | 1996-09-20 |

# Entity Framework Questions

* What do the following Entity Framework Object Services provide for your application in regards to data from a database?
  1. Materialization
  2. Change Tracking
  3. Object identities

My Answer:

Reference: <http://www.slideshare.net/EyalV/entity-framework-object-services>

Materialization - The process of transforming the data obtained from the Entity Client data provider, which has a tabular structure, into objects

Change Tracking - Tracks any changes made to the objects

Object identities – Identifies the objects

* Design a code first data model which has a Project class that can contain a bunch of tasks.

# Object Orientation Questions

* What are the basic concepts of OOP?
* How do you program behavior into your C# class?
* Explain method overriding.
* What is Inheritance?
* What is abstract class?

My Answers:

**What are the basic concepts of OOP?** Classes of objects, Instances of classes, Methods which act on the objects, Data Abstraction & Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message passing.

**How do you program behavior into your C# class?** You program behavior into your C# class by defining class members (Fields, properties, methods, and events on a class) into the class body.

**Explain method overriding.** Overriding a method is changing the behavior of the method for the derived class. Overriding is done using inheritance and virtual functions. You can invoke functions (that have the same signatures) that belong to different classes in the same hierarchy of inheritance using the base class reference.

**What is Inheritance?** Inheritance enables you to create new classes that reuse, extend, and modify the behavior that is defined in other classes. The class whose members are inherited is called the base class, and the class that inherits those members is called the derived class. A derived class can have only one direct base class. However, inheritance is transitive. If ClassC is derived from ClassB, and ClassB is derived from ClassA, ClassC inherits the members declared in ClassB and ClassA.

**What is abstract class?** An abstract method has no implementation. Its implementation logic is provided instead by classes that derive from it. We use an abstract class to create a base template for derived classes

# MVC Questions

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

My Answer: @Html.ActionLink("Create", "Index", new { id = SpecModel })

Part II: What HTTP Verb is used? My Answer: **[**HttpPost**]**

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? My Answer: IEnumerable is the model type in the example above
2. Is the model a single object, or a sequence? My Answer: Single object
3. What properties are on the items in the model? My Answer: 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.