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# 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’;

Answer: CUST is an alias name . So CUST.Customer is represented by NAME. Basically this alias name connects columns from another table CUST. Where **NAME** is **CUST.CUSTOMER** from that another table.

* 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;

Answer: These query selects orderID and orderdate from Orders table, Customername from Customers table. Since these two tables has the same column of CustomerID, so the query will return **ONLY** those orderID, orderdate, and Customername, where CustomerId’s from Orders and Customers are the same. Intersection of selects.

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;

Answer: These query selects orderID and orderdate from Orders table, Customername from Customers table. Since these two tables has the same column of CustomerID, so this particular query will return **ONLY** those orderID, orderdate, and Customername from Orders, which is **not** included in Customer table.

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

Answers: 1.

a) Creates Entities (Tables of DB) from provided Model Classes and Context Class. It’s like converting code into real DB table.

b) It’s a part DBContext class. Tracks any changes occurred in DB, can drop and create if changed, supply other scenarios.

c) Object entities allows to work with database fairly safely using LINQ and C# (w/o using direct SQL statements). It’s easier for developer to work with only C# and LINQ code and helps to track any issues happened to DB.

# 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?

Answers:

1. OOP is consist of 3 basic concept: Inheritance, Encapsulation, and Polymorphism. OOP helps created really complicated projects using his advantages over modular programming: reusable code, breaking down to self-contain classes, separating interface from implementing, data hiding, Abstract Data Types. With well-developed classes and libraries, developers could save time focusing on real problem, using classes which were already created and tested.

2. I have to type class MyClass followed by brackets. Inside the brackets there can be public/protected/private sections, which might include methods and attributes. To call the methods/attributes from MyClass I have to create and object of this MyClass and then can call them by obj myObj.MyMethod, but only public methods. Protected method can be called inside the inherited classes, and privates are accessible only to methods of MyClass class.

3. The keyword override helps to change the method/function behavior, allowing us to create our own implementation of method/function, which is already included from other classes/libraries. Sometimes standard included methods work not exactly like we want them to work. Sometimes we need to add/change some features of this method. Overriding helps us with that, without changing the code of the original method.

4. We inherit classes (child classes) from others (parents), so child classes can use methods from parents classes. It’s a good technique to breakdown the problem into related pieces (Animal => dog).

5. Abstract classes are pretty much used to be a base class for other classes. It can contain missing or incomplete methods. Classes derived from abstract class have to implement those abstract methods.

# MVC Questions

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

Part II: What HTTP Verb is used?

public class CatalogController : Controller

 {

     public ActionResult Specifications(int id)

     {

         var model = new SpecModel(id);

         return View();

     }

}

Answer:

1. **http://** MVCGuidedLab/Specifications?id=

Or **http://** MVCGuidedLab/Specifications/id

2. It’s HTTP GET

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?
2. Is the model a single object, or a sequence?
3. What properties are on the items in the model?

Answers:

1. It’s IEnumerable Color model. With name and value. I didn’t understand at all.

2. It’s a sequence (“foreach (var item in Model) ”)

3. Id, 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.