SON Analyst Programmer Technical Quiz (.NET)

SON Information Technology Services

1 Instructions

Thank you for your interest in working at the School of Nursing. This quiz offers some challenges that demonstrate ability in skills that are fundamental in the analyst/programmer position, but they are not necessarily representative of day–to–day activities. Please refer to the position description for more specific information about the requirements of the job.

Just like on the job, you are allowed to use Google, Stack Overflow, or other resources to help you with any issues that you may have.

2 Write a Small Solution (Meliora.sln)

Write a program that counts from 1 to 50. When the number is a multiple of 3, print "Nursing". When the number is a multiple of 7, print "Meliora". If the number is a multiple of both 3 and 7, print "Nursing Meliora". If the number is not a multiple of either 3 or 7, just print the number.

Use a separate project to provide the output. You may use any type of project / display / interface you feel would be interesting.

3 Create a Business Layer

Create a business-layer project to address the following situation.

Kristen is an entrepreneurial college student. She is currently able to use an oven that is in her dorm room to bake, but it will only let her bake a dozen cookies at a time, and she wants to track information that will help her figure out when she should scale up to a larger baking space. Part of her gimmick is that she will let people order cookies that are baked to order, with a huge topping selection like at Cold Stone

Creamery (lots of different mix–ins).Orders consist of a minimum of a dozen cookies with the same mix–in (or combination of many mix–ins). At this point, she cannot offer partial dozens of cookies. Kristen's customers will order their cookies by sending an email to Kristen. They will come to her dorm room to pick up the cookies; she does not deliver or plan to offer delivery services. She's interested in tracking the following things for her business planning:

• Who ordered

• Order history

Be thoughtful and capture information so that Kristen can plan and so that she can promote specials in the future, but also keep a balance between customer privacy and Kristen's time in doing data entry. Please include comments or help text in your code if you want to explain any decisions you make.

4 Create a report page

Help Kristen with her planning by writing a Reports.aspx file for her site that provides the following views:

• ensure that only Kristen can access this information

• show the number of orders for the current week

• rank the most popular mix–ins for her business

• show the most popular hours of the week for business

5 SQL Query

5.1 Example Tables

5.1.1 People

id	first_name	last_name	age
1	Barack	Obama	52
2	Charlie	Brown	6
3	Jon	Arbuckle	63
4	Phil	Winslow	30
5	George	Bush	67
6	Cathy	Hillman	38

5.1.2 Pets

id	name	breed	age	dead
1	Marmaduke	Great Dane	4	0
2	Barney	Scottish Terrier	12	1
3	Bo	Portuguese Water Dog	5	0
4	Snoopy	Beagle	5	0
5	Electra	Mixed Breed	2	0
6	Odie	Beagle	3	0
7	Sunny	Portuguese Water Dog	1	0

5.1.3 Person Pet

person_id	pet_id
1	3
1	7
2	4
6	5
3	6
4	1
5	3

5.2 Write a query.

Write a SQL statement that will return the name, breed, and age (sorted by age in decreasing order) of any living dogs owned by a person older than 50.

Assume MS SQL Server / t-SQL.

5.3 Perform a query.

Perform this query and include the results in your SQL submission document.

```sql
SELECT breed, COUNT(breed) AS cnt
FROM pets
GROUP BY breed
ORDER BY cnt DESC;
```

6 Version Control

What is your preferred version control system?

Write a short (less than two pages) demonstration that includes examples for another programmer who is not familiar with that version control system that shows how to do the following:

1. Create a new project (of their own)

2. Begin working on a project that you started

3. Commit a change

4. Search the history for a change that introduced a bug

Please assume that the other programmer is comfortable with the operating system you use and is familiar with the basic concepts of other version control systems. In other words, focus on the specifics of these basics for your version control system, and don't worry about OS–specific issues that might happen on other platforms.

Using AdventureWorks2016 database create scripts for the following scenarios.

1. Create a list of salespersons and the quantity of the following items sold by each salesperson:
   a. `Road-650 Red, 60`
   b. `Road-650 Red, 44`
   c. `Road-650 Red, 52`
   Show the list. Include your script.

2. Modify the above query to include a total by salesperson and show the new list. The total should only include the products listed in question number 1. Include your script.

3. Modify your query from question 2 to show the result set with the following columns: (if you haven't figured out number 2 leave the total out).
   a. Fullname (of salesperson)
   b. ` Road-650 Red, 60`
   c. `Road-650 Red, 44`
   d. `Road-650 Red, 52`
   e. Total

   The rows for the above columns should contain the detail for each salesperson, like this:

Fullname	Road-650 Red, 60	road-650 Red, 44	Road-650 Red, 52	total
Amy Alberts	5	3	1	9

   Include your script.

4. Show the orderdate, TotalDue, Firstname and Lastname of the first order of each month for Jillian Carson. Include your script.

7 Submission Instructions

Please create a ZIP file that is named for yourself (for instance, Pat-Smith.zip) that contains your solutions, a file containing for your version control document, and a file containing your answers for the SQL work. Submit this by email as directed by the instructions you received.