Development Test

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Experience: \_20 yrs+\_\_\_\_\_\_\_\_\_ year’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ months

Microsoft SQL Practical Questions:

1. Name 3 commands that can be used to manipulate text in T-SQL code. For example, a command that obtains only a portion of the text or replace a text string, etc.

Left, Right, Substring:

SELECT LEFT('My Name is Andri', 5); /\* My Na \*/

SELECT RIGHT('My Name is Andri', 5); /\* Andri \*/

SELECT SUBSTRING('My Name is Andri ',3,8) /\* Name is \*/

1. What are the three ways that Dynamic SQL can be executed?

Using query parameters, EXEC and sp\_executesql

1. How can you delete duplicate records in a table with no primary key?

Use the TOP(1) statement. You may need to do a bit of magic using row\_number()

1. Is it possible to import data directly from T-SQL commands without using SQL Server Integration Services? If so, name and explain 2 commands?

BULK INSERT:

BULK INSERT dbo.Employee FROM 'C:\Employee.csv' WITH (FORMAT = 'CSV');

In the above example I am importing data into the Employee table from a csv file located in my C: drive root

OPENROWSET:

INSERT INTO dbo.Employee SELECT \* FROM OPENROWSET('Microsoft.Jet.OLEDB.4.0', 'Excel 8.0;Database=C:\Employee.xls', [Sheet1$])

This time I am using the Jet driver to connect to Excel and fetching the data from a sheet named Sheet1 in the Employee.xls file on my C: drive root. I am combining the INSERT INTO statement here to select the Employee table as the destination

1. What is the SQL CASE statement used for? Explain with a SQL Statement as example?

It is used to dynamically make decisions on a field almost like an if

SELECT ItemName, CategoryName =

CASE

WHEN CategoryID = 0 THEN 'Tops'

WHEN CategoryID = 1 THEN 'Jeans'

WHEN CategoryID = 2 THEN 'Shoes'

ELSE 'Other'

END

FROM Items

This will replace the CategoryID field in the Items table with a meaningful value to the user

1. How to find second highest salary of an Employee? Explain with a SQL Statement as example?

WITH

cteEmployees (EmployeeName, Salary, RowNum)

AS

(

SELECT

EmployeeName,

Salary,

ROW\_NUMBER() OVER (ORDER BY Salary DESC) AS RowNum

FROM

Employees

)

SELECT \*

FROM

cteEmployees

WHERE

RowNum = 2

Here I am selecting records from the Employee table and ordering the records by Salary field descending. At the same time I am adding a column dynamically called RowNum numbering the records. This gets stored in a CTE (temp storage space just like a view) called cteEmployees. Now it is easy to select from the cteEmployees CTE and filtering for the record where RowNum = 2.

1. What is the recommended Microsoft way to store a pdf file in SQL Server?

Any custom files like pictures (including pdf) should be converted to a byte array and stored in a varbinary(max) field type

1. What is lock escalation?

When MSSQL is busy with a transaction, it lock the row, table, index etc. so that users cant write to the same record at the same exact moment. SQL handles this automatically, but you can modify these flags.

Microsoft C# Practical questions

1. **Given an array of ints, write a C# method to total all the values that are even numbers.**

static void Main(string[] args)

{

Console.WriteLine(TotEven(10).ToString());

Console.ReadLine();

}

static int TotEven(int intCount)

{

int TotEven = 0;

int[] x = new int[intCount];

for (int i = 1; i <= x.Length; i++)

{

x[i - 1] = i;

}

foreach (int i in x)

{

if (i % 2 == 0)

{

TotEven = TotEven + i;

}

}

return TotEven;

}

1. What is the output of the short program below? Explain your answer**.**

**class Program {**

**static String location;**

**static DateTime time;**

**static void Main() {**

**Console.WriteLine(location == null ? "location is null" : location);**

**Console.WriteLine(time == null ? "time is null" : time.ToString());**

**}**

**}**

**The output will be:**

location is null

0001/01/01 12:00:00 AM

location variable is not initialized with a value, thus when it is compared to null with an ? statement the output is the true part. On the second comparison, the time variable which is of type DateTime is by default not nullable, thus the false statement is returned, which is formatted according to your system defaults.

1. **Is the comparison of time and null in the if statement below valid or not? Why or why not?**

**static DateTime time;**

**/\* ... \*/**

**if (time == null)**

**{**

**/\* do something \*/**

**}**

It is not valid, for DateTime is not nullable by default and is a struct, plus must be initialized with a value. You can fix this by assigning it as:

DateTime? time = null;

Or

static DateTime? time = null;

(As a property in a class)

1. **Given an instance circle of the following class:**

**public sealed class Circle {**

**private double radius;**

**public double Calculate(Func<double, double> op) {**

**return op(radius);**

**}**

**}**

**Write code to calculate the circumference of the circle, without modifying the Circleclass itself.**

I could only get my answer to return zero, using lambda, because of the private double radius line in the sealed Circle class. I did look it up afterwards, and there is a way to do it after all, using Binding (of coarse), didn’t think of it at the time… I looked it up after the test. My answer is stated below. I used Math.PI and multiplied Radius with 2.

Console.WriteLine(new Circle().Calculate(Radius => 2 \* Radius \* Math.PI));

1. **What is the output of the program below? Explain your answer.**

**class Program {**

**private static string result;**

**static void Main() {**

**SaySomething();**

**Console.WriteLine(result);**

**}**

**static async Task<string> SaySomething() {**

**await Task.Delay(5);**

**result = "Hello world!";**

**return “Something”;**

**}**

**}**

**Also, would the answer change if we were to replace await Task.Delay(5); with Thread.Sleep(5)? Why or why not?**

Both results will return an error, the funny “ (on line **return “Something”;**) is invalid. And Thread.Sleep(5) is missing a semi-colon. If you fix the “ first, then it would cause the app to set the result variable and causes a deadlock never displaying the output. If you add the ; then you get the output written to the screen because the Thread.Sleep(5); line causes the main (GUI) thread to wait before updating the screen output.

1. **What is the output of the program below? Explain your answer.**

**delegate void Printer();**

**static void Main()**

**{**

**List<Printer> printers = new List<Printer>();**

**int i=0;**

**for(; i < 10; i++)**

**{**

**printers.Add(delegate { Console.WriteLine(i); });**

**}**

**foreach (var printer in printers)**

**{**

**printer();**

**}**

**}**

I had to test this in C# to be honest, but after running it I got the output below:

10

10

10

10

10

10

10

10

10

10

My reasoning is that the display only gets updated in the call to -> printer(); in the second for loop. At that moment in time the i variable was kept in memory for the delegates to complete and was now the value of 10, thus 10 is printed ten times, and then destroyed after the delegates could complete

1. **Compare structs and classes in C#. What do they have in common? How do they differ?**

Structs are mainly used for simple less complex related data and is a value type, and a new complete copy of the object is copied into memory every time it is created. A class is a reference type and is copied into memory once and the variables are pointed to. They are both declared the same except for the keyword that creates the object. When you want to assign values to a struct variable each struct would have its own copy of values, where if you create a class variable and change the values, both variables will be changed. Classes can also inherit from other classes, where struct can not. You should use a struct for pure data eg. DateTime and a class for more complex operations, where a user can modify it’s properties and call complex methods.

**You’re given a word string containing one or many $ symbols, e.g.:**

**“foo bar foo $ bar $ foo bar $**

**Question: How do you remove the second and third occurrences of $ from a given string?**

Start from the end of the string like this:

static void Main(string[] args)

{

string x = "foo bar foo $ bar $ foo bar $";

do

{

x = x.Substring(0, x.LastIndexOf("$"));

} while (x.IndexOf("$") != x.LastIndexOf("$"));

}

1. **Write a C# program that accepts a distance in kilometers, converts it into meters, and then displays the result.**

static void Main(string[] args)

{

double Km = 1.12345;

Console.WriteLine((String.Format("{0:0.00000}", Km)) + " kilometeres is " + (String.Format("{0:0.00}", KmToMeter(Km))) + " meteres");

Console.ReadKey();

}

static double KmToMeter(double Km)

{

return (Km \* 1000);

}

Output:

1,12345 kilometeres is 1123,45 meteres