

SQL SERVER Interview Questions and Answers (Set 3)

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Question - We are going to get 1 lakh records per second in our database like we have in stock market example. So how do you design database for this kind of system.

Key components we need in this kind of requirement are Hardware resources and software resources.

Software Resources are-

1. EMC Xtreme IO
2. VMware vSphere
3. VMware Centre
4. Microsoft SQL Server
5. Microsoft BenchCraft TPC-E Tool kit

EMC's Xtreme storage array is an all flash system based on scale out architecture. The system uses building blocks, called X-Bricks, which can be clustered together to grow performance and capacity as required. (Xtreme IO all flash storage) Xtreme IO all flash array resolves DB storage solutions by below-

-Automatically employing all storage system resources Solid State Drives(SSDs) and controllers all the time.

- One can easily create a volume and enable the entire DB to put in there. No planning, provisioning or any tuning steps are required.
- Xtreme IO snapshots to manage multiple instances & copies of database.
- We can increase performance using Xtreme IO Brick if requirement exceeds.

For more details please visit – <http://xtremio.com/>

VMware vSphere is a complete and robust virtualization platform. It transforms the physical resources of a computer by virtualizing the CPU, RAM, HardDisk and network controller. This transformation creates fully functional virtual machines that run isolated and encapsulated Operating Systems and applications. One of the major points here is vSphere can support 62TB virtual machine datafile(VMDK) and Microsoft cluster services(MCS)

For more details please visit –

<http://www.vmware.com/in/products/vsphere>

vMware Centre is used to manage of vSphere

Microsoft SQL Server 2012 – Enterprise Edition

-Here consider partitioning since you are getting large number of rows

-Also consider archiving old data, Keep 15 days data only

Microsoft BenchCraft TPC-E Tool Kit – is used for OLTP benchmark workload

Hardware Resources are- (Here quantity you can decide based on your requirement)

Storage Array – Xtreme IO X-Bricks

Servers – E.g. 20 Cores, 512GB RAM, 2.9GHz processors

LAN Switches – 32 port non-blocking

SAN Switches – FC Director class switches with 6 blades

Question - Suppose you are inserting data in a table and the table has an identity column. How you do get that latest identity value from that table.

You can use Max(ID) from the column and easily find out. One more method is there IDENT_CURRENT('TableName').

Question - How do you check the table definition in SQL Server?

Alt + F1

Question - Let's says we have a table with 3 columns say column a, column b and column c. Now we create Non Clustered index on b,c & a,b. Now there a query like select name from table WHERE b LIKE 'Pawan' , so which index it will use.

Answer – It will use index (b,c). For details please visit – <http://msbiskills.com/2015/08/10/sql-server-interview-question-which-index-will-be-used/>

Question - There is a sentence and you have find out first word from that, how do you do that?

```
DECLARE @F AS NVARCHAR(22) = N'abd cc sdsa'  
DECLARE @F1 AS NVARCHAR(6) = N'abd'  
  
SELECT SUBSTRING(@F,0,CHARINDEX(' ',@F))  
SELECT CASE WHEN CHARINDEX(' ',@F1) = 0 THEN @F1 ELSE  
SUBSTRING(@F1,0,CHARINDEX(' ',@F1)) END
```

Question - There are two tables DEPT (DeptID, DeptName) and Emp (EmpID, EmpName, DeptID, MgrID)

```
--Create Table  
CREATE TABLE Employees (EmpID INT, EmpName VARCHAR(20), DeptID  
INT ,ReportsTo INT)  
  
--Insert Data  
INSERT INTO Employees(EmpID, EmpName, ReportsTo, DeptId)  
SELECT 1, 'Jacob', NULL , NULL UNION ALL  
SELECT 2, 'Rui', NULL, NULL UNION ALL  
SELECT 3, 'Jacobson', NULL, NULL UNION ALL  
SELECT 4, 'Jess', 1, 1 UNION ALL  
SELECT 5, 'Steve', 1, 1 UNION ALL  
SELECT 6, 'Bob', 1, 1 UNION ALL  
SELECT 7, 'Smith', 2, 2 UNION ALL  
SELECT 8, 'Bobbey', 2, 2 UNION ALL  
SELECT 9, 'Steffi', 3, 3 UNION ALL  
SELECT 10, 'Bracha', 3, 3 UNION ALL  
SELECT 11, 'John', 5, 5 UNION ALL  
SELECT 12, 'Michael', 6, 2 UNION ALL  
SELECT 13, 'Paul', 6, 2 UNION ALL
```

```

SELECT 14, 'Lana', 7, 3 UNION ALL
SELECT 15, 'Johnson', 7, 2 UNION ALL
SELECT 16, 'Mic', 8, 3 UNION ALL
SELECT 17, 'Stev', 8, 2 UNION ALL
SELECT 18, 'Paulson', 9, 3 UNION ALL
SELECT 19, 'Jessica', 10, 2

```

GO

```

CREATE TABLE DeptEmp
(
    DeptID INT
    ,DeptName VARCHAR(100)
)

```

GO

```

INSERT INTO DeptEmp(DeptID,DeptName)
VALUES (1, 'IT'), (2, 'HR'), (3, 'Finance')

```

GO

Solution

```

;WITH CTE(DeptID, EmpName , EmpID, Level, FullyQualifiedName) AS
(
    Select DeptID , E.EmpName, E.EmpID, 0 Level
    , Cast('.'+E.EmpName+'.' as Varchar(MAX)) FullyQualifiedName
    From Employees E Where E.ReportsTo IS NULL
    UNION ALL
    Select E.DeptID , E.EmpName, E.EmpID, c.Level + 1 ,
    c.FullyQualifiedName+'.'+E.EmpName+'.' FullyQualifiedName
    From Employees E INNER JOIN CTE c on c.EmpID = e.ReportsTo
)
,CTE1 AS
(
    SELECT D.DeptName , SPACE(LEVEL*4) + H.EmpName
    Hierarchy, SPACE(LEVEL*4) + CAST(H.EmpID AS VARCHAR(MAX))
    'Hierarchy/EmpId'
    , EmpName
    FROM CTE H LEFT JOIN DeptEmp D ON H.DeptID = D.DeptID
)
SELECT * FROM CTE1

```

Question - Suppose number of columns are not fixed?

How do you design database for this kind of system?

-One way is to create a single column VARCHAR(MAX) with a separator. It works like below-

```

CREATE TABLE TestMulCols
(
    Data VARCHAR(MAX)
)
GO

INSERT INTO TestMulCols VALUES('a,b,c,d,e')
INSERT INTO TestMulCols VALUES('r,e')
INSERT INTO TestMulCols VALUES('d,q,j,k,o,i,i,i,i,2')

;WITH CTE AS
(
    SELECT ROW_NUMBER() OVER (ORDER BY (SELECT NULL)) Rnk, Data
FROM TestMulCols
)
,CTE1 AS
(
    SELECT tr.ID , tr.VALUE, CTE.Rnk FROM CTE
    CROSS APPLY (SELECT ID,Value from dbo.udf_Split(Data,','))
tr
)
SELECT * FROM CTE1
PIVOT
(MAX([Value]) FOR ID In
([1],[2],[3],[4],[5],[6],[7],[8],[9],[10])) p

```

Output

Rnk	1	2	3	4	5	6	7	8	9	10
1	a	b	c	d	e	NULL	NULL	NULL	NULL	NULL
2	r	e	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
3	d	q	j	k	o	i	i	i	i	2

Question - You are not able to connect to your SQL Server from .Net application? What you will check and how you will rectify the connection problem?

You can start by checking following things-

- First check whether you are able to connect to the server where SQL Server is installed.
- Your SQL Server should be up and running. Check from Services.msc or SQL Server connection manager. Connect using SSMS and check.
- TCP/IP should be enabled in SQL Server Configuration Manager. Default port is 1433.
- Add a port under exception in windows firewall. Port Number should be 1433 (Default One).
- Also allow remote connections from the server. (Server -> Properties -> Connections -> Allow remote connections to this server)

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