

--- Lecture 12

```
SELECT A.col5, SUM(C.col6) AS col6sum
FROM TableA AS A
INNER JOIN TableB AS B
ON A.col1 = B.col1
INNER JOIN TableC AS C
ON B.col2 = c.col2
WHERE A.col3 = constant1
AND B.col4 = constant2
GROUP BY A.col5;
```

/* linear: $n!=3!=6$ */

/* Parallel: $(2n-2)!/(n-1)=(2*3-2)!/(3-1)=12$ */

---nested loop

---Merge

---Hash

---Star join

/* $4*6=24$ linear */

/* $4*6*2=48$ where */

/* $4*6*2*2=96$ Group */

```
SELECT C.custid, C.companyname,
O.orderid, O.orderdate
FROM Sales.Customers AS C
INNER JOIN Sales.Orders AS O
ON C.custid = O.custid
ORDER BY C.custid, O.orderid;
```

--using set session Options and execution plans

```
SELECT N1.n * 100000 + O.orderid AS norderid,
O.*
INTO dbo.NewOrders
FROM Sales.Orders AS O
CROSS JOIN (VALUES(1),(2),(3),(4),(5),(6),(7),(8),(9),
(10),(11),(12),(13),(14),(15),(16),
(17),(18),(19),(20),(21),(22),(23),
(24),(25),(26),(27),(28),(29),(30)) AS N1(n);
```

```
CREATE NONCLUSTERED INDEX idx_nc_orderid  
ON dbo.NewOrders(orderid);
```

```
SET STATISTICS IO ON;  
SET STATISTICS TIME ON;
```

```
SELECT norderid  
FROM dbo.NewOrders  
WHERE norderid = 110248  
ORDER BY norderid;
```

```
SET STATISTICS IO OFF;  
SET STATISTICS TIME OFF;
```

```
SELECT norderid  
FROM dbo.NewOrders  
WHERE norderid = 110248  
ORDER BY norderid;
```

```
CREATE NONCLUSTERED INDEX idx_nc_norderid  
ON dbo.NewOrders(norderid);
```

```
--Dynamic Management Objects  
--SQL server Operating system (SQLOS)–related DMOs  
--execution-related DMOs  
--index-related DMOs
```

```
--get basic information about instance  
SELECT cpu_count AS logical_cpu_count,  
cpu_count / hyperthread_ratio AS physical_cpu_count,  
CAST(physical_memory_kb / 1024. AS int) AS physical_memory__mb,  
sqlserver_start_time  
FROM sys.dm_os_sys_info;
```

```
--DMO to filter out system sessions  
SELECT S.login_name, S.host_name, S.program_name,  
WT.session_id, WT.wait_duration_ms, WT.wait_type,  
WT.blocking_session_id, WT.resource_description  
FROM sys.dm_os_waiting_tasks AS WT  
INNER JOIN sys.dm_exec_sessions AS S  
ON WT.session_id = S.session_id  
WHERE s.is_user_process = 1;
```

```
--Find nonclustered indexes
SELECT OBJECT_NAME(I.object_id) AS objectname,
I.name AS indexname,
I.index_id AS indexid
FROM sys.indexes AS I
INNER JOIN sys.objects AS O
ON O.object_id = I.object_id
WHERE I.object_id > 100
AND I.type_desc = 'NONCLUSTERED'
AND I.index_id NOT IN
(SELECT S.index_id
FROM sys.dm_db_index_usage_stats AS S
WHERE S.object_id=I.object_id
AND I.index_id=S.index_id
AND database_id = DB_ID('TSQL2012'))
ORDER BY objectname, indexname;
```