Database Technologies – UE20CS343

Assignment – 2

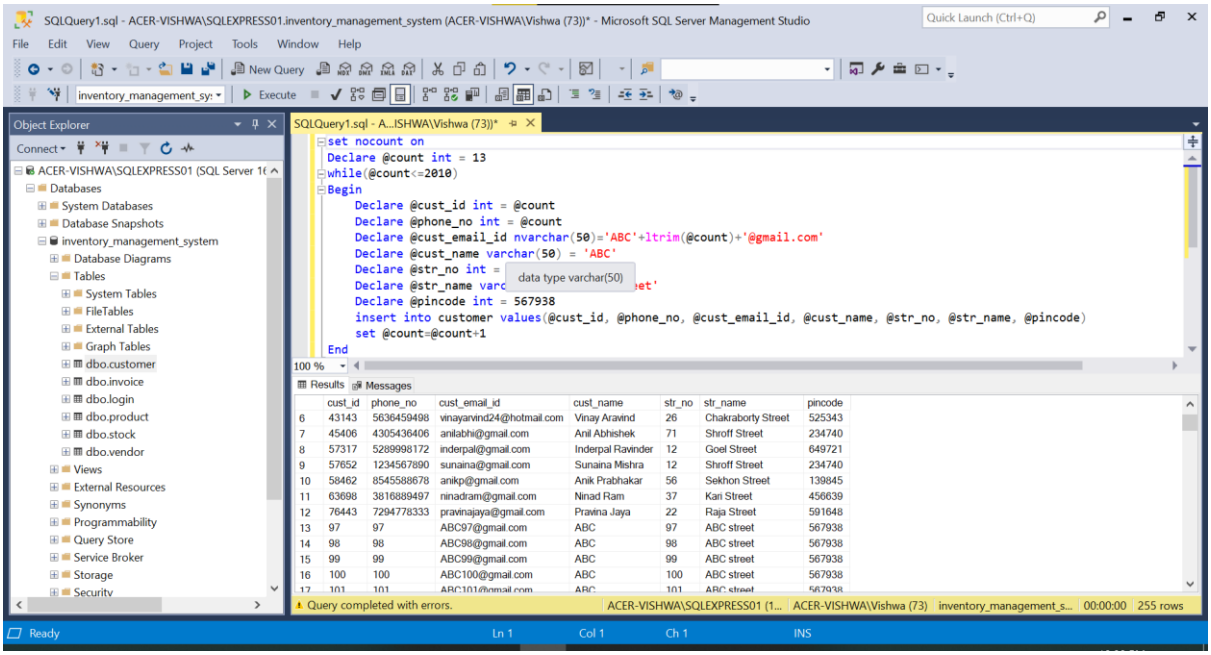
Name: Vishwa Mehul Mehta

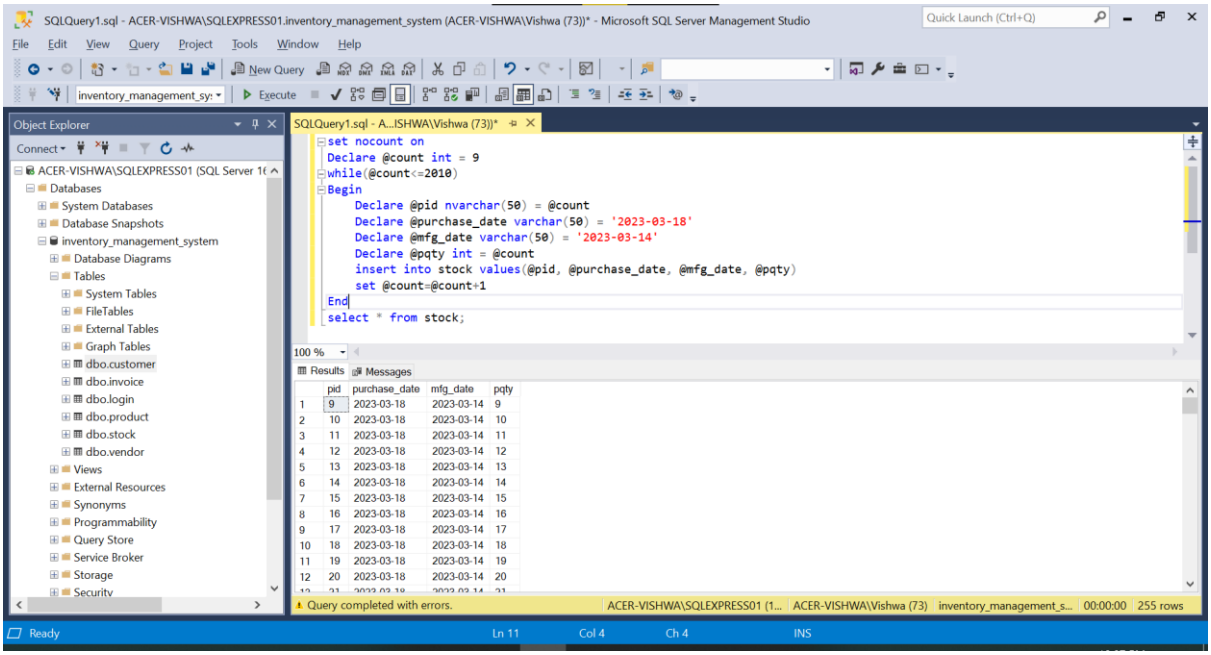
SRN: PES2UG20CS389

Sec: F

Date: 19-03-2023

Random Value Insertions:




SQLQuery1.sql - ACER-VISHWA\SQLEXPRESS01.inventory_management_system (ACER-VISHWA\Vishwa (73))* - Microsoft SQL Server Management Studio
Quick Launch (Ctrl+Q)
File Edit View Query Project Tools Window Help
New Query
Execute
Object Explorer
Connect
ACER-VISHWA\SQLEXPRESS01 (SQL Server 1
Databases
System Databases
Database Snapshots
inventory_management_system
Database Diagrams
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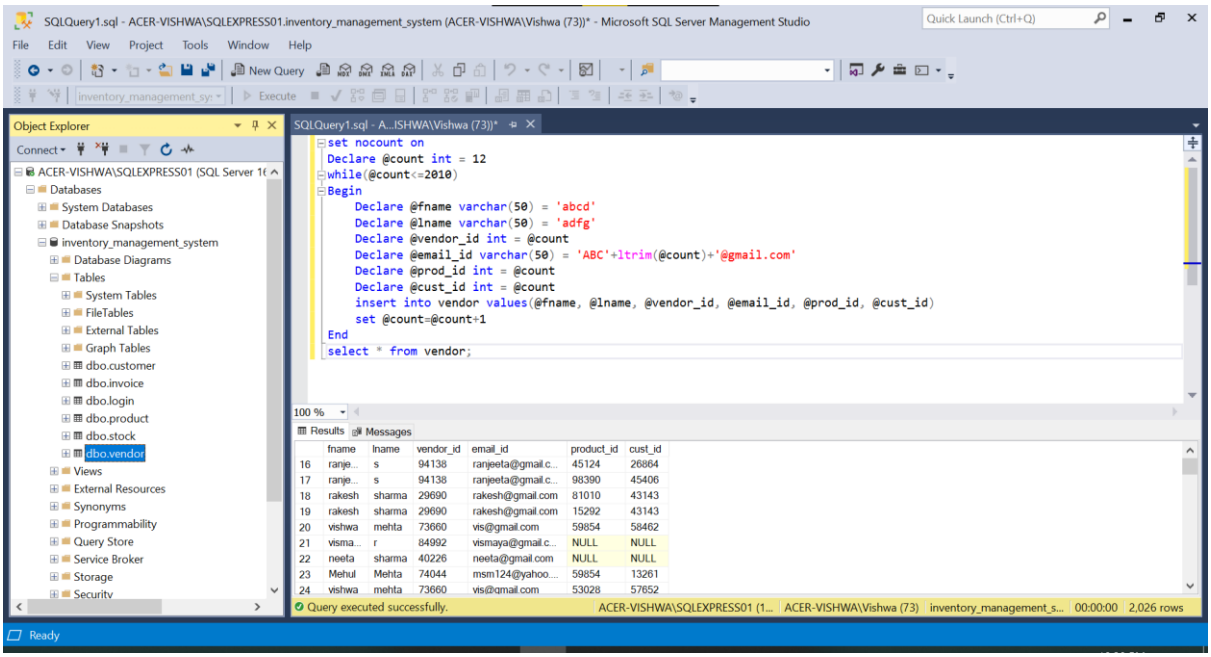
System Tables
FileTables
External Tables
Graph Tables
dbo.customer
dbo.invoice
dbo.login
dbo.product
dbo.stock
dbo.vendor
Views
External Resources
Synonyms
Programmability
Query Store
Service Broker
Storage
Security
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
set nocount on
Declare @count int = 9
while(@count<=2010)
Begin
Declare @pid nvarchar(50) = @count
Declare @purchase_date varchar(50) = '2023-03-18'
Declare @mfg_date varchar(50) = '2023-03-14'
Declare @pqty int = @count
insert into stock values(@pid, @purchase_date, @mfg_date, @pqty)
set @count=@count+1
End
select * from stock;
100 %
Results
Messages
pid purchase_date mfg_date pqty
1 9 2023-03-18 2023-03-14 9
2 10 2023-03-18 2023-03-14 10
3 11 2023-03-18 2023-03-14 11
4 12 2023-03-18 2023-03-14 12
5 13 2023-03-18 2023-03-14 13
6 14 2023-03-18 2023-03-14 14
7 15 2023-03-18 2023-03-14 15
8 16 2023-03-18 2023-03-14 16
9 17 2023-03-18 2023-03-14 17
10 18 2023-03-18 2023-03-14 18
11 19 2023-03-18 2023-03-14 19
12 20 2023-03-18 2023-03-14 20
Query completed with errors.
ACER-VISHWA\SQLEXPRESS01 (1...
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:00
255 rows
Ready
Ln 11
Col 4
Ch 4
INS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Query Store
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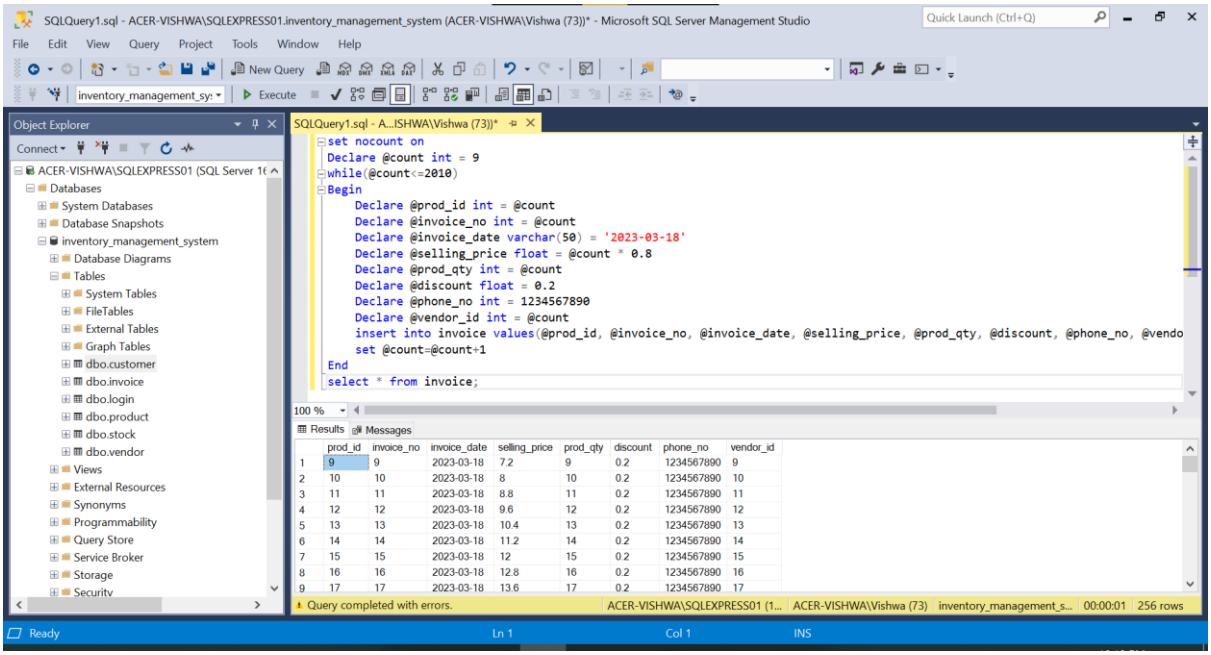
Storage
Security
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
set nocount on
Declare @count int = 12
while(@count<=2010)
Begin
Declare @fname varchar(50) = 'abcd'
Declare @lname varchar(50) = 'adfg'
Declare @vendor_id int = @count
Declare @email_id varchar(50) = 'ABC'+ltrim(@count)+'@gmail.com'
Declare @prod_id int = @count
Declare @cust_id int = @count
insert into vendor values(@fname, @lname, @vendor_id, @email_id, @prod_id, @cust_id)
set @count=@count+1
End
select * from vendor;
100 %
Results
Messages
fname lname vendor_id email_id product_id cust_id
16 ranje... s 94138 ranjeeta@gmail.c... 45124 26864
17 ranje... s 94138 ranjeeta@gmail.c... 98390 45406
18 rakesh sharma 29690 rakesh@gmail.com 81010 43143
19 rakesh sharma 29690 rakesh@gmail.com 15292 43143
20 vishwa mehta 73660 vis@gmail.com 59854 58462
21 visma... r 84992 vismaya@gmail.c... NULL NULL
22 neeta sharma 40226 neeta@gmail.com NULL NULL
23 Mehul Mehta 74044 msm124@yahoo.... 59854 13261
24 vishwa mehta 73660 vis@gmail.com 53028 57652
Query executed successfully.
ACER-VISHWA\SQLEXPRESS01 (1...
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:00
2,026 rows
Ready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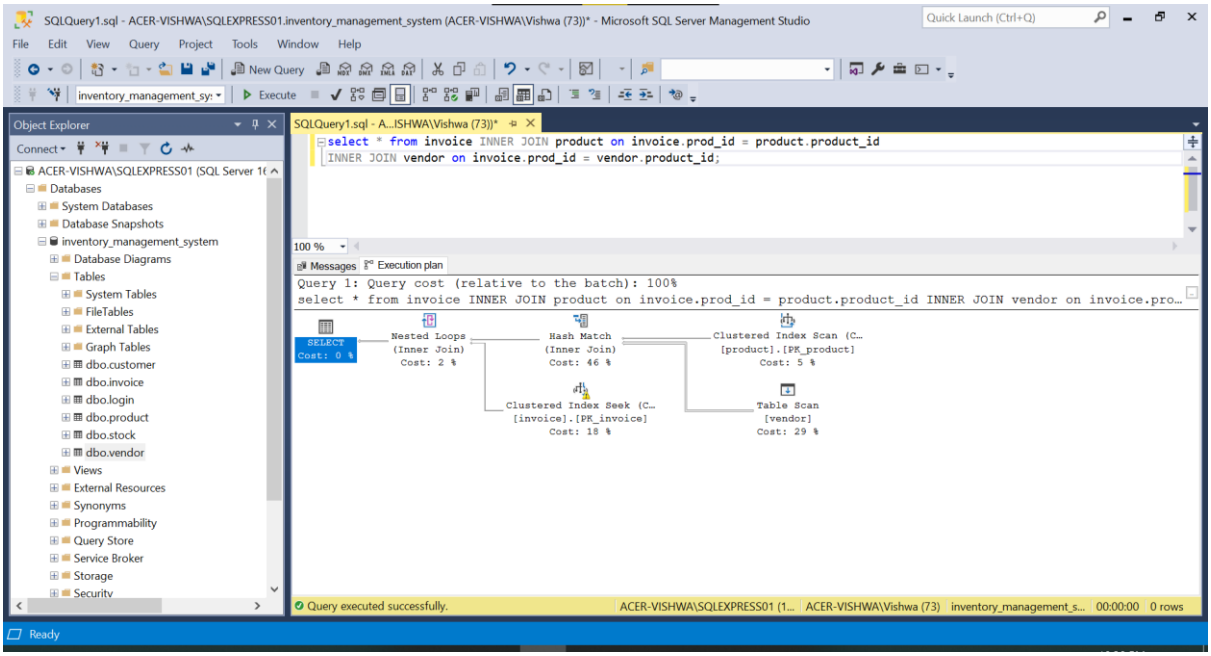
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
set nocount on
Declare @count int = 9
while(@count<=2010)
Begin
Declare @prod_id int = @count
Declare @invoice_no int = @count
Declare @invoice_date varchar(50) = '2023-03-18'
Declare @selling_price float = @count * 0.8
Declare @prod_qty int = @count
Declare @discount float = 0.2
Declare @phone_no int = 1234567890
Declare @vendor_id int = @count
insert into invoice values(@prod_id, @invoice_no, @invoice_date, @selling_price, @prod_qty, @discount, @phone_no, @vendo
set @count=@count+1
End
select * from invoice;
100 %
Results
Messages
prod_id invoice_no invoice_date selling_price prod_qty discount phone_no vendor_id
1 9 9 2023-03-18 7.2 9 0.2 1234567890 9
2 10 10 2023-03-18 8 10 0.2 1234567890 10
3 11 11 2023-03-18 8.8 11 0.2 1234567890 11
4 12 12 2023-03-18 9.6 12 0.2 1234567890 12
5 13 13 2023-03-18 10.4 13 0.2 1234567890 13
6 14 14 2023-03-18 11.2 14 0.2 1234567890 14
7 15 15 2023-03-18 12 15 0.2 1234567890 15
8 16 16 2023-03-18 12.8 16 0.2 1234567890 16
9 17 17 2023-03-18 13.6 17 0.2 1234567890 17
Query completed with errors.
ACER-VISHWA\SQLEXPRESS01 (1...
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:01
256 rows
Ready
Ln 1
Col 1
INS

(a) Task 1:

1.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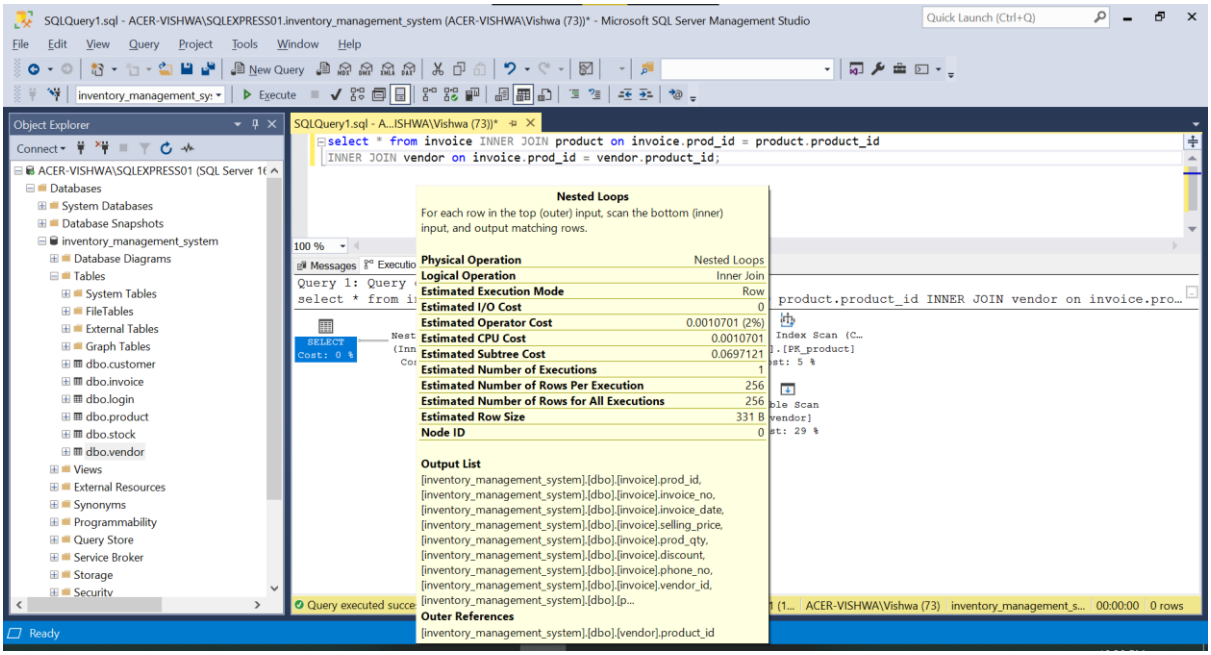
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
select * from invoice INNER JOIN product on invoice.prod_id = product.product_id
INNER JOIN vendor on invoice.prod_id = vendor.product_id;
100 %
Messages
Execution plan
Query 1: Query cost (relative to the batch): 100%
select * from invoice INNER JOIN product on invoice.prod_id = product.product_id INNER JOIN vendor on invoice.pro...
SELECT
Cost: 0 %
Nested Loops
(Inner Join)
Cost: 2 %
Hash Match
(Inner Join)
Cost: 46 %
Clustered Index Scan (C...
[product].[PK_product]
Cost: 5 %
Clustered Index Seek (C...
[invoice].[PK_invoice]
Cost: 18 %
Table Scan
[vendor]
Cost: 29 %
Query executed successfully.
ACER-VISHWA\SQLEXPRESS01 (1...
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:00
0 rows
Ready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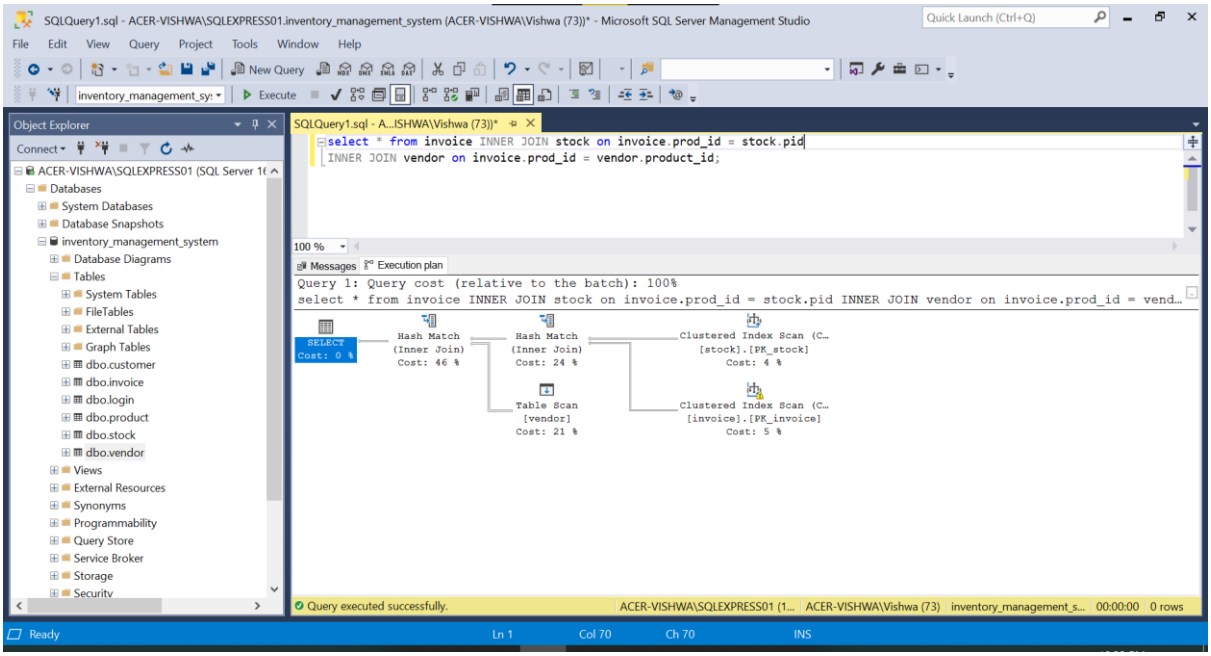
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
select * from invoice INNER JOIN product on invoice.prod_id = product.product_id
INNER JOIN vendor on invoice.prod_id = vendor.product_id;
Nested Loops
For each row in the top (outer) input, scan the bottom (inner) input, and output matching rows.
Physical Operation Nested Loops
Logical Operation Inner Join
Estimated Execution Mode Row
Estimated I/O Cost 0
Estimated Operator Cost 0.0010701 (2%)
Estimated CPU Cost 0.0010701
Estimated Subtree Cost 0.0697121
Estimated Number of Executions 1
Estimated Number of Rows Per Execution 256
Estimated Number of Rows for All Executions 256
Estimated Row Size 331 B
Node ID 0
Output List
[inventory_management_system].[dbo].[invoice].prod_id,
[inventory_management_system].[dbo].[invoice].invoice_no,
[inventory_management_system].[dbo].[invoice].invoice_date,
[inventory_management_system].[dbo].[invoice].selling_price,
[inventory_management_system].[dbo].[invoice].prod_qty,
[inventory_management_system].[dbo].[invoice].discount,
[inventory_management_system].[dbo].[invoice].phone_no,
[inventory_management_system].[dbo].[invoice].vendor_id,
[inventory_management_system].[dbo].[p...
Outer References
[inventory_management_system].[dbo].[vendor].product_id
Query executed succe
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:00
0 rows
Ready

2.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Programmability
Query Store
Service Broker
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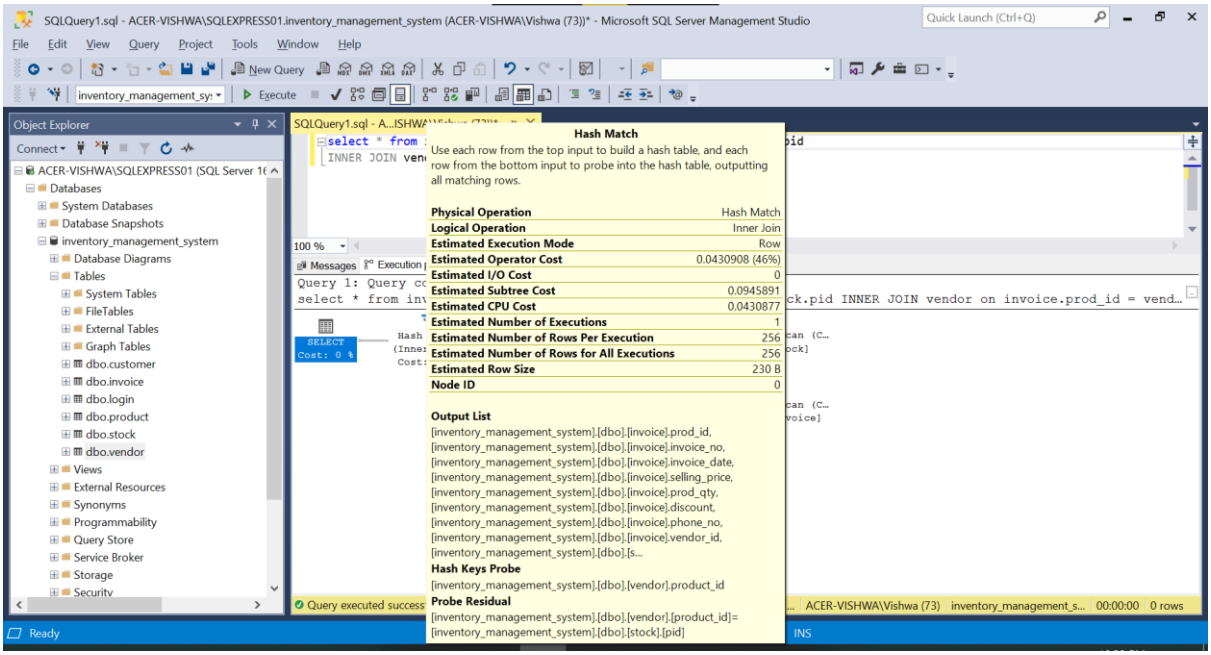
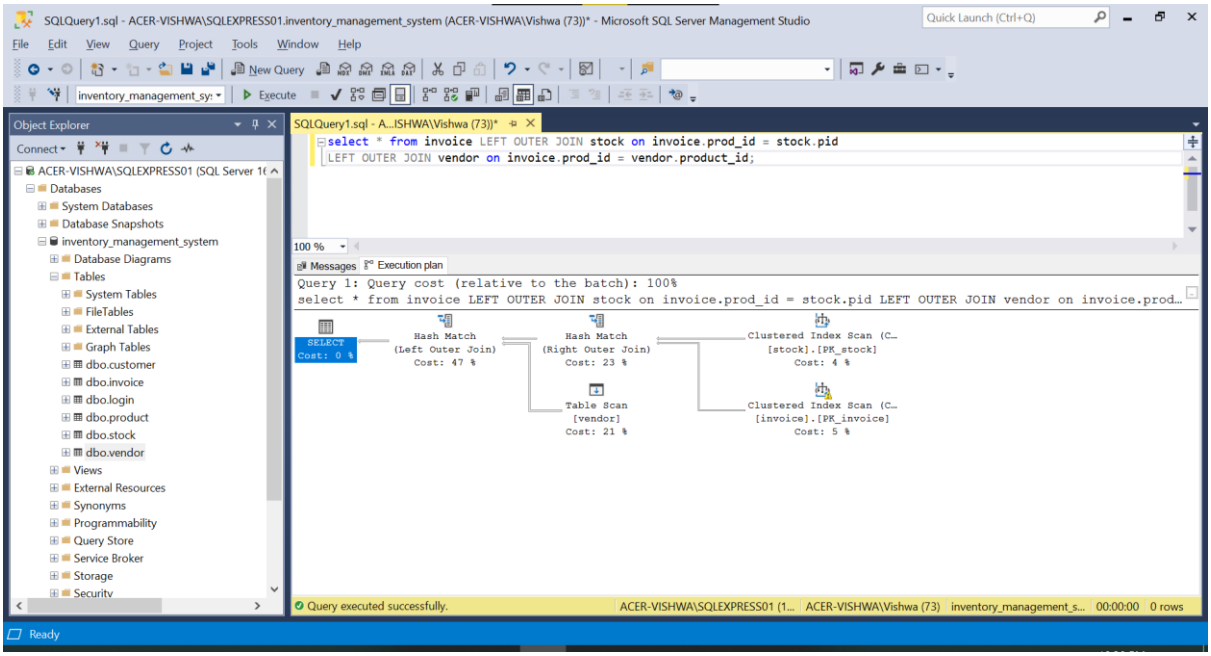
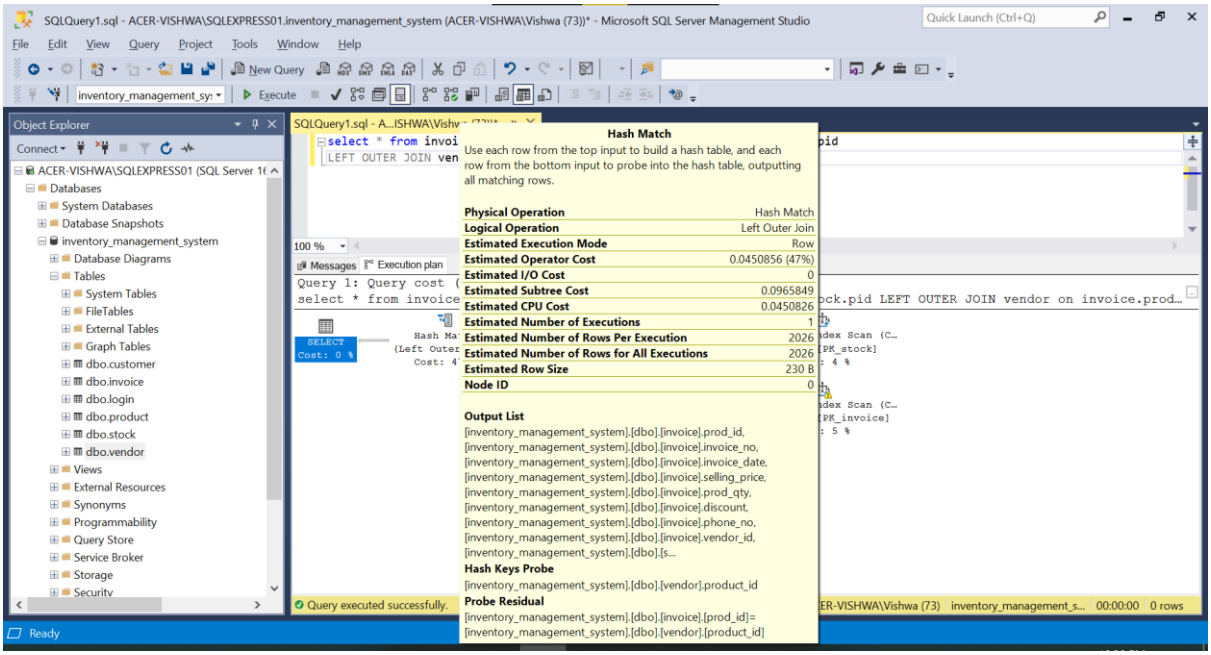
Security
SQLQuery1.sql - A...ISHWA\Vishwa (73))*
select * from invoice INNER JOIN stock on invoice.prod_id = stock.pid
INNER JOIN vendor on invoice.prod_id = vendor.product_id;
100 %
Messages
Execution plan
Query 1: Query cost (relative to the batch): 100%
select * from invoice INNER JOIN stock on invoice.prod_id = stock.pid INNER JOIN vendor on invoice.prod_id = vend...
SELECT
Cost: 0 %
Hash Match
(Inner Join)
Cost: 46 %
Hash Match
(Inner Join)
Cost: 24 %
Clustered Index Scan (C...
[stock].[PK_stock]
Cost: 4 %
Table Scan
[vendor]
Cost: 21 %
Clustered Index Scan (C...
[invoice].[PK_invoice]
Cost: 5 %
Query executed successfully.
ACER-VISHWA\SQLEXPRESS01 (1...
ACER-VISHWA\Vishwa (73)
inventory_management_s...
00:00:00
0 rows
Ready
Ln 1
Col 70
Ch 70
INS



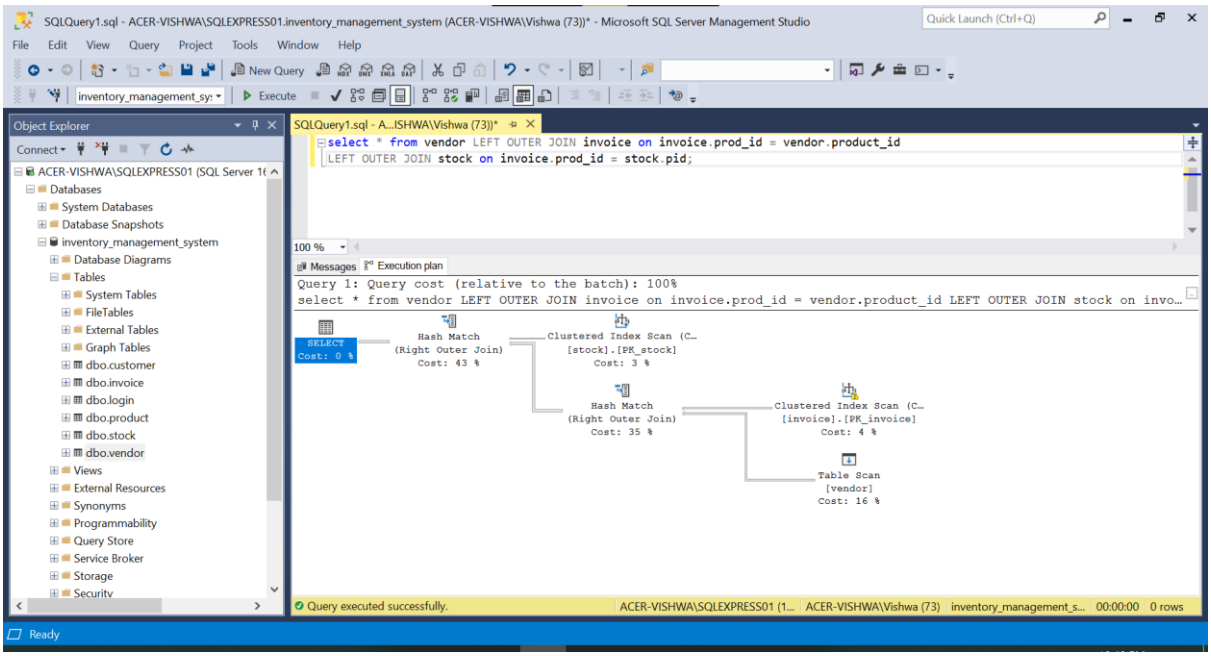
(b) Task 2:

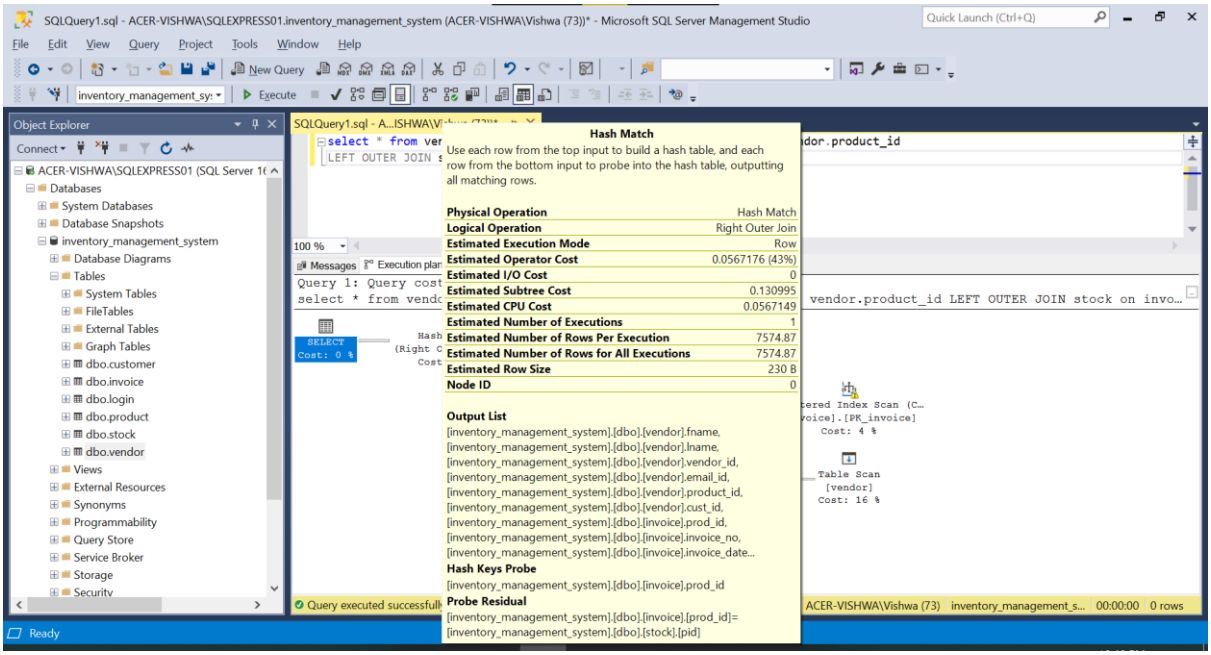
1. LEFT OUTER JOIN – invoice, stock, vendor



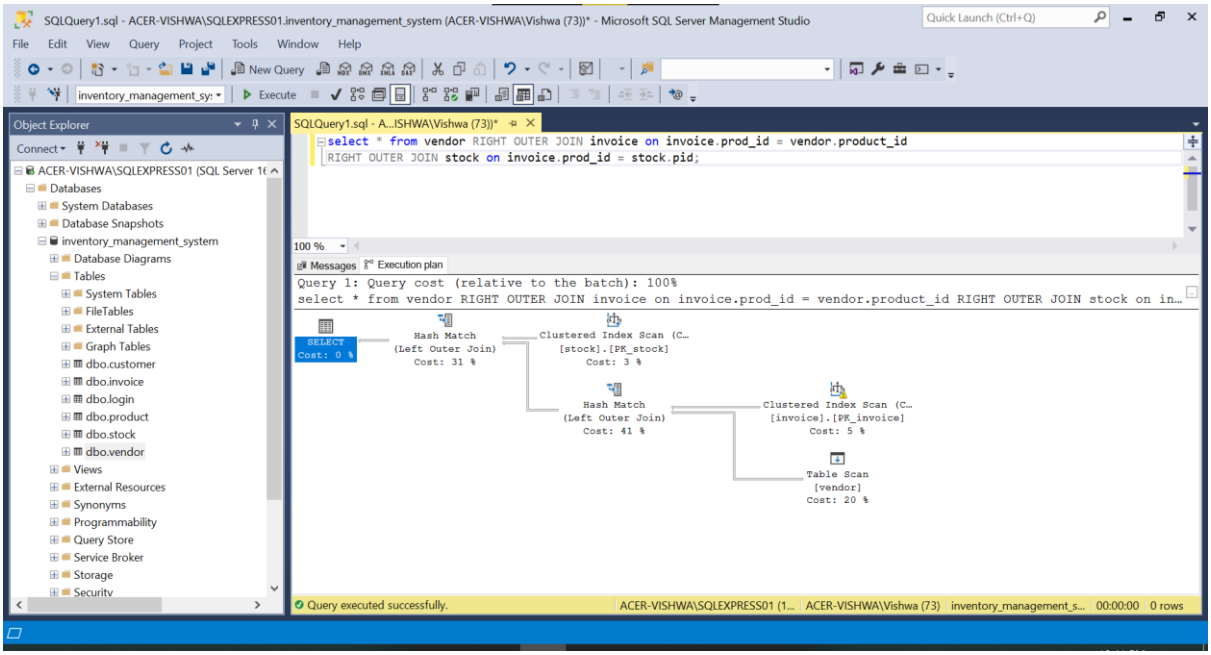


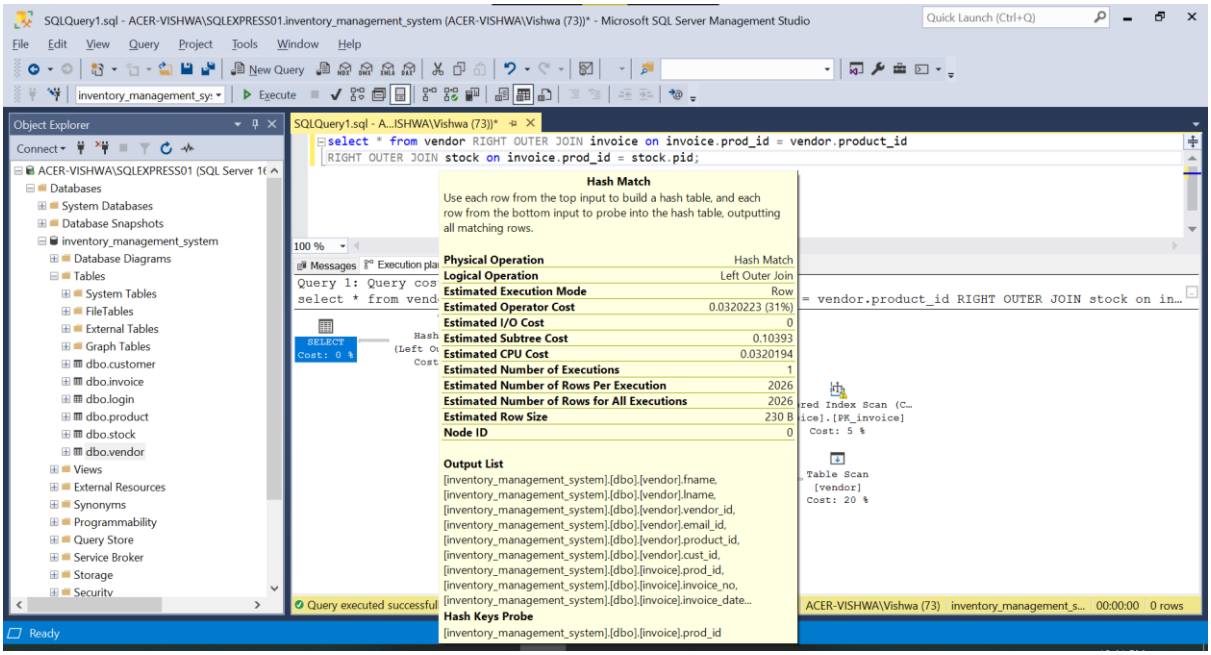
2. LEFT OUTER JOIN – vendor, invoice, stock



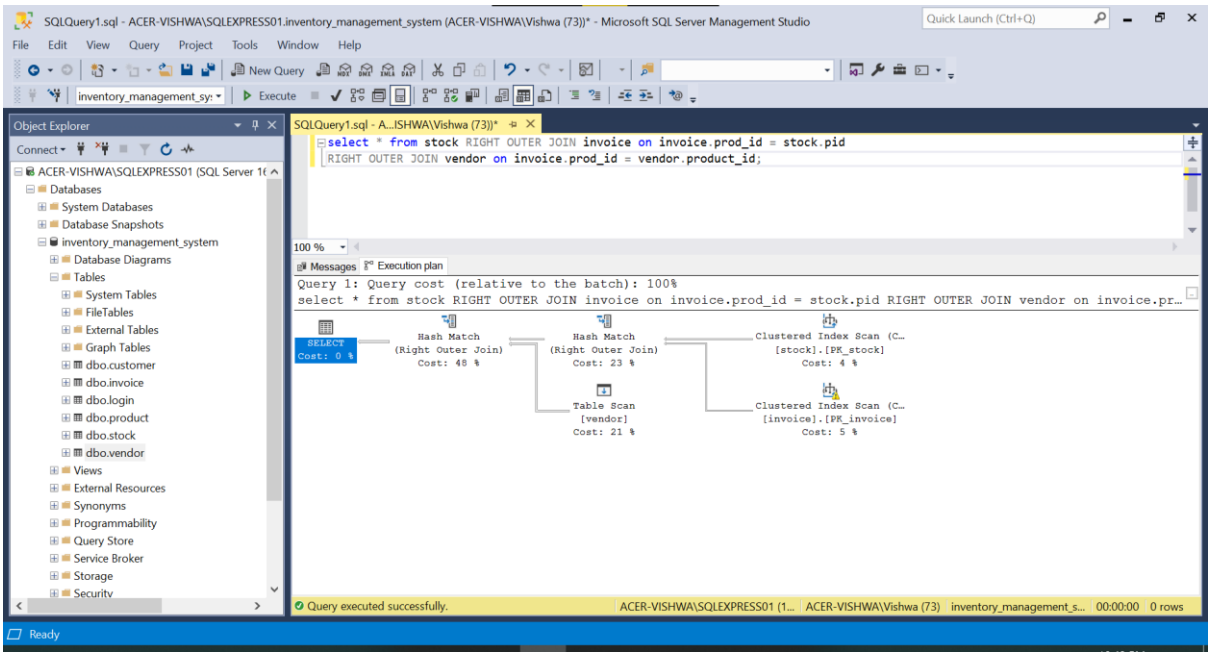


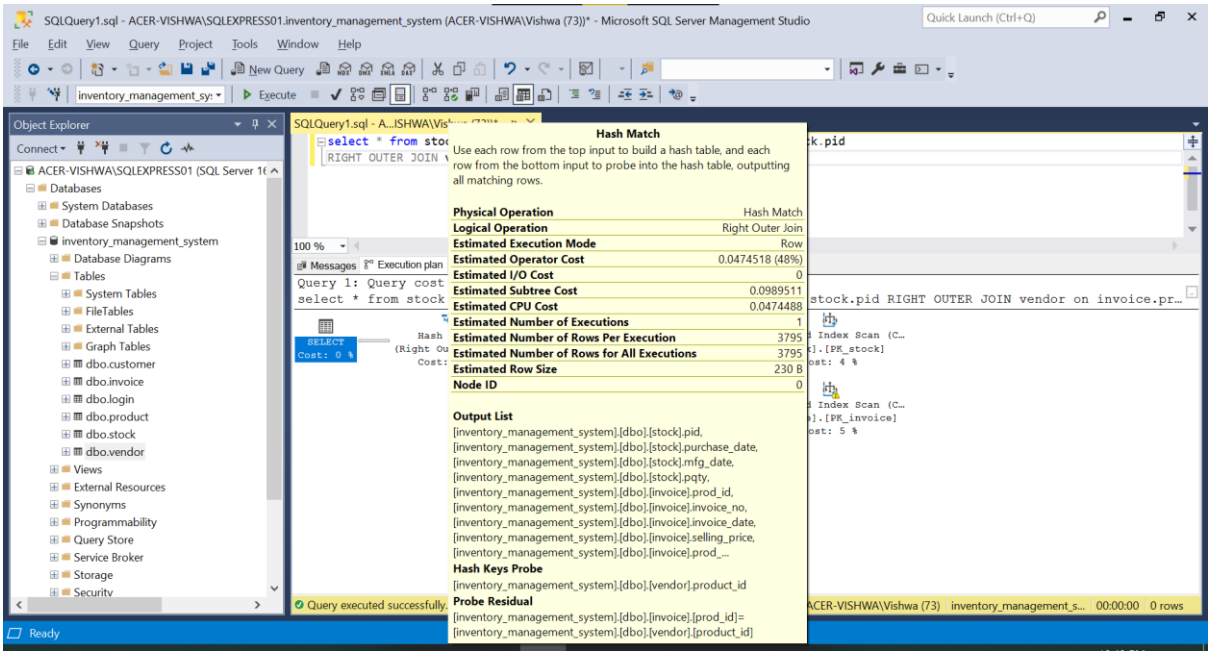
3. RIGHT OUTER JOIN – vendor, invoice, stock



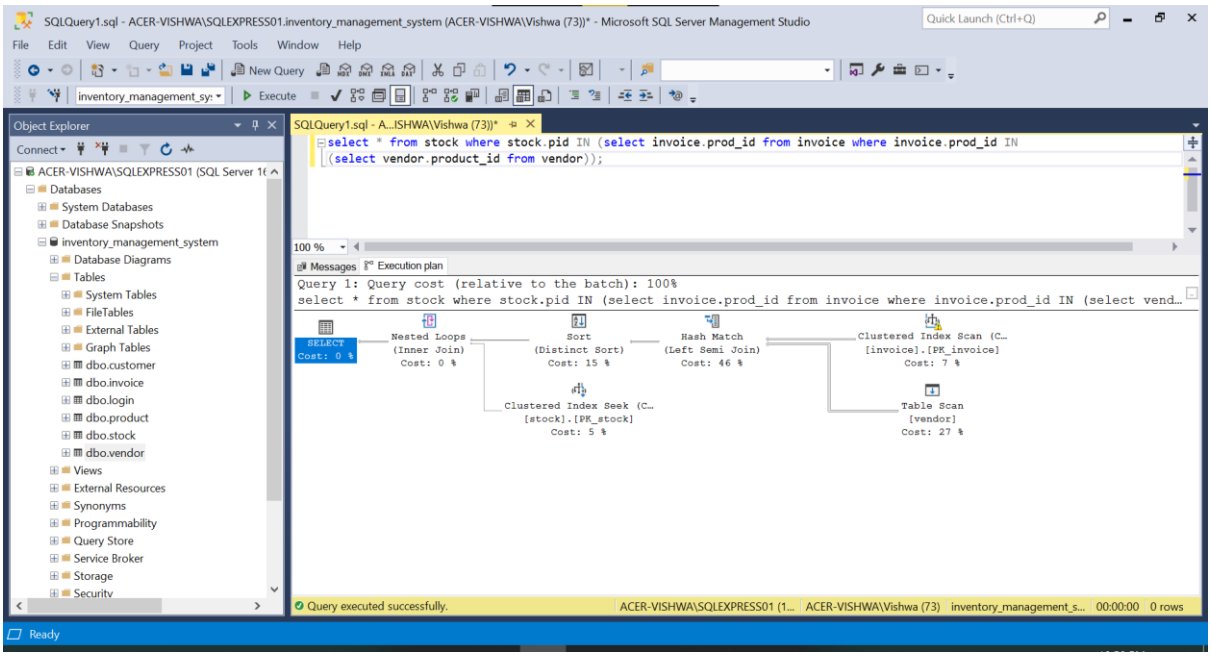


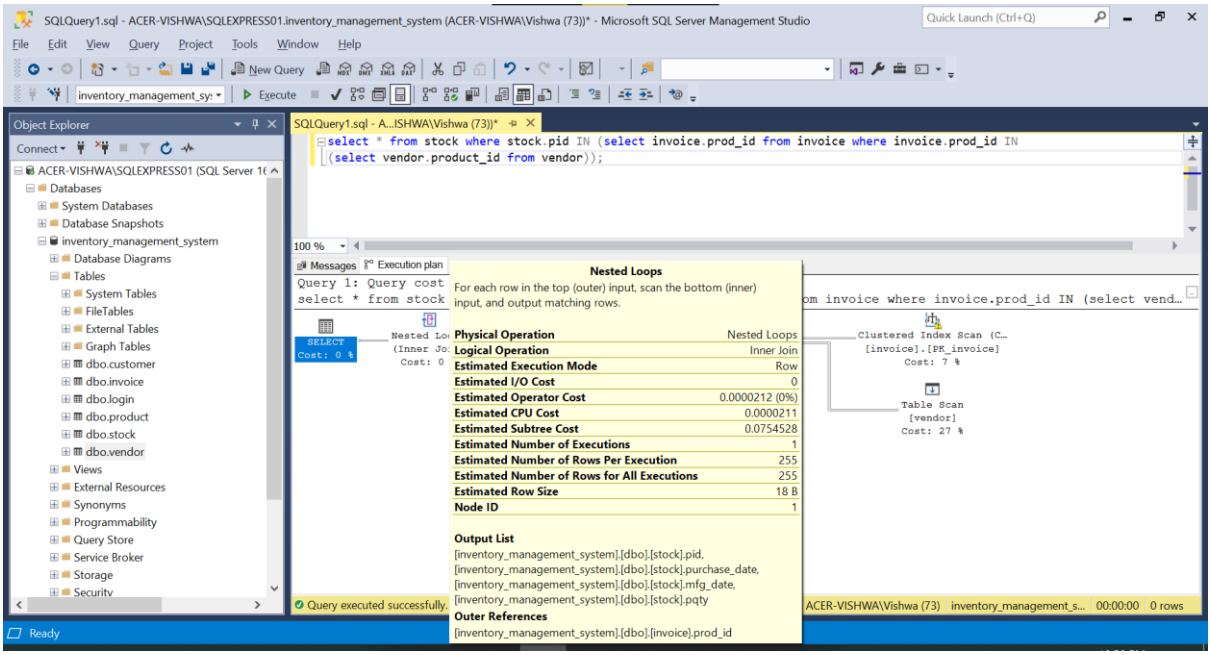
4. RIGHT OUTER JOIN – invoice, stock, vendor



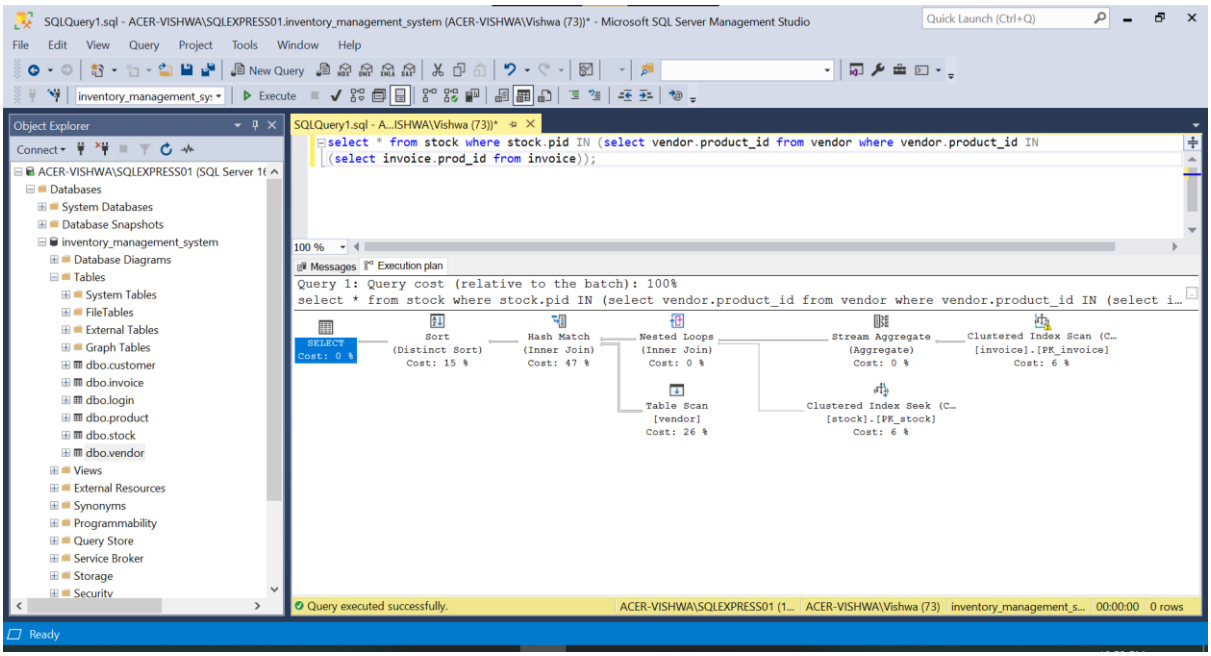


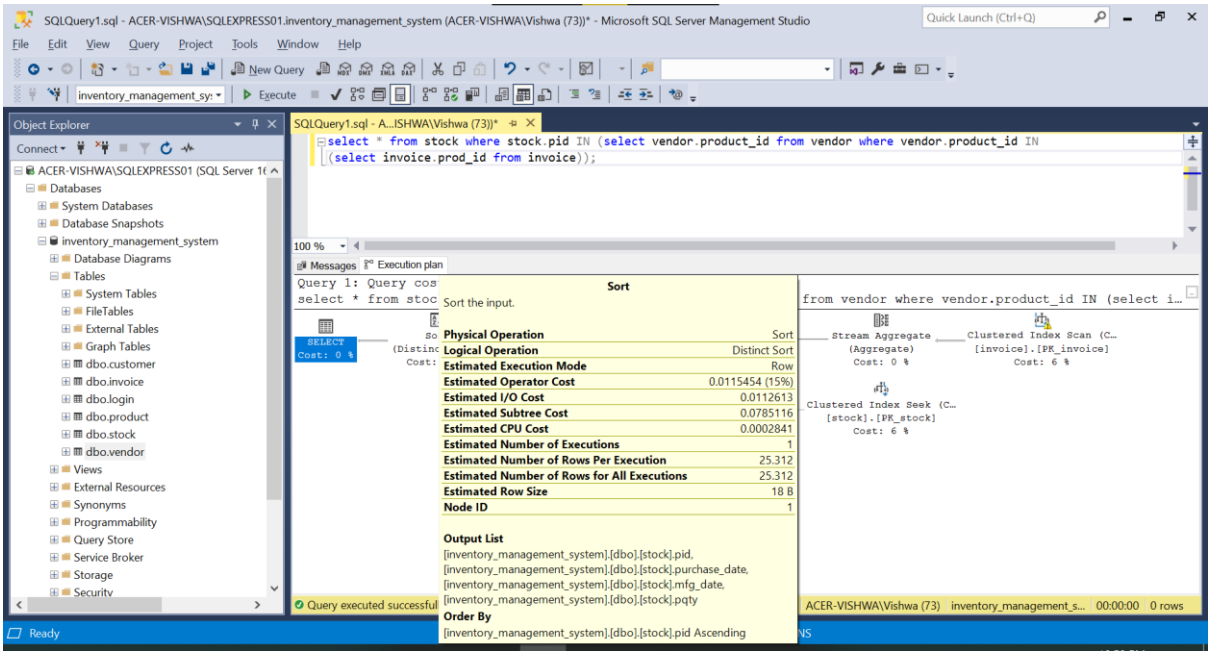
5. SUB QUERIES – stock, invoice, vendor



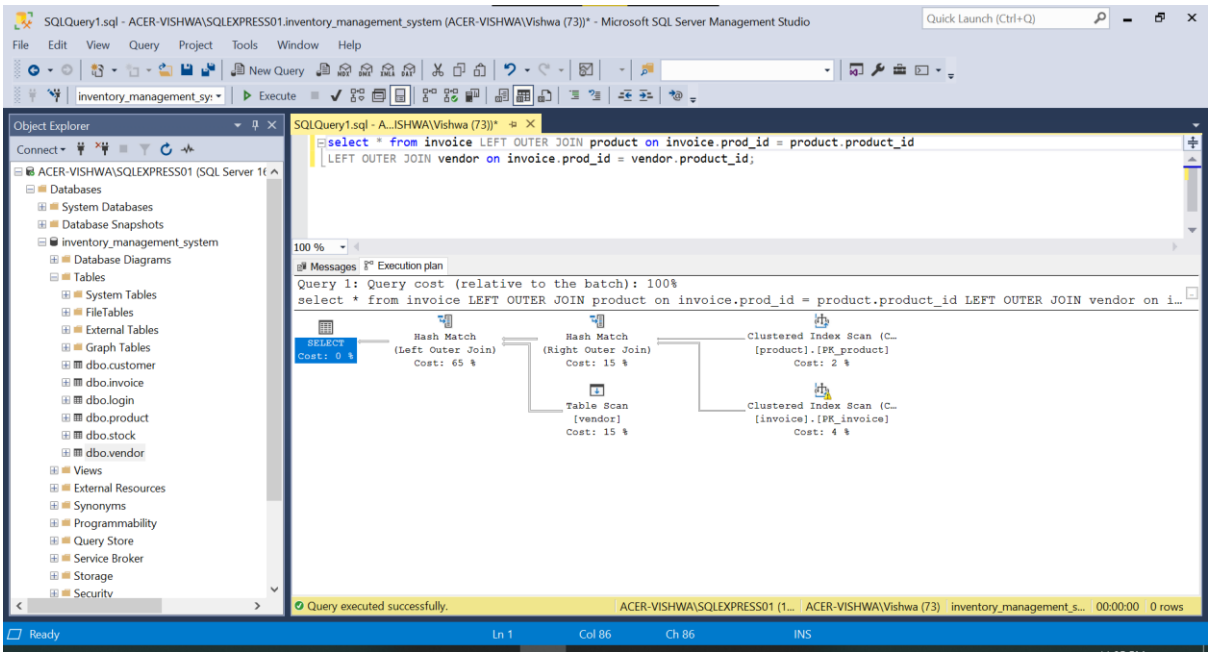


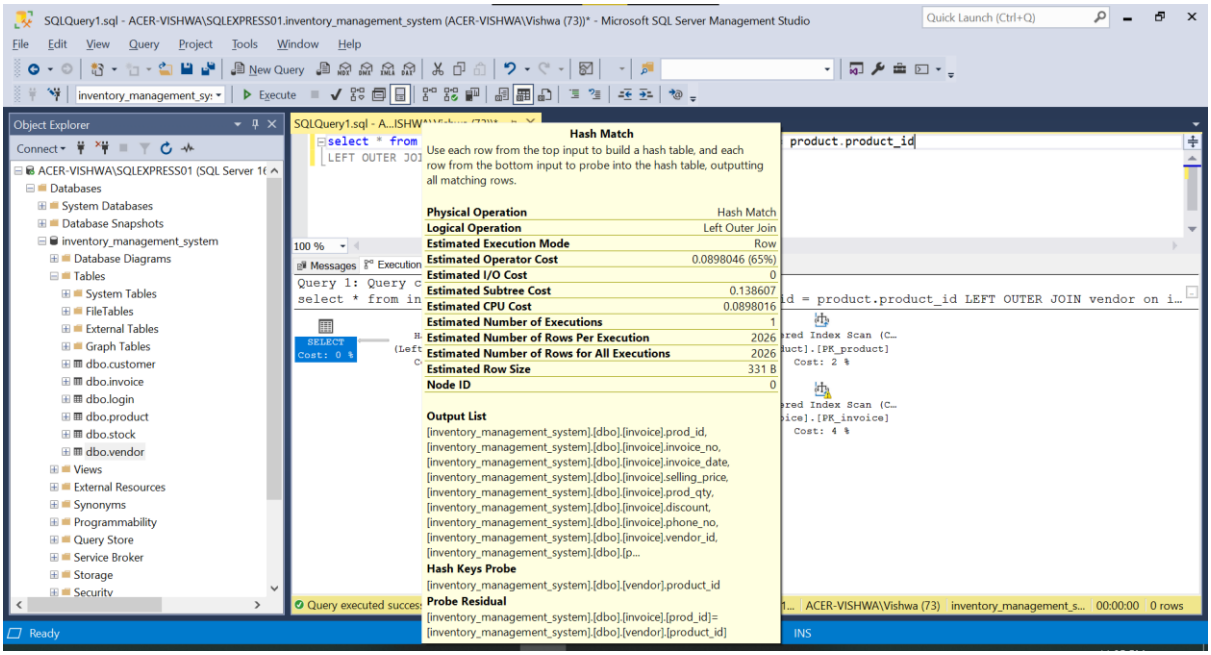
6. SUB QUERIES – stock, vendor, invoice



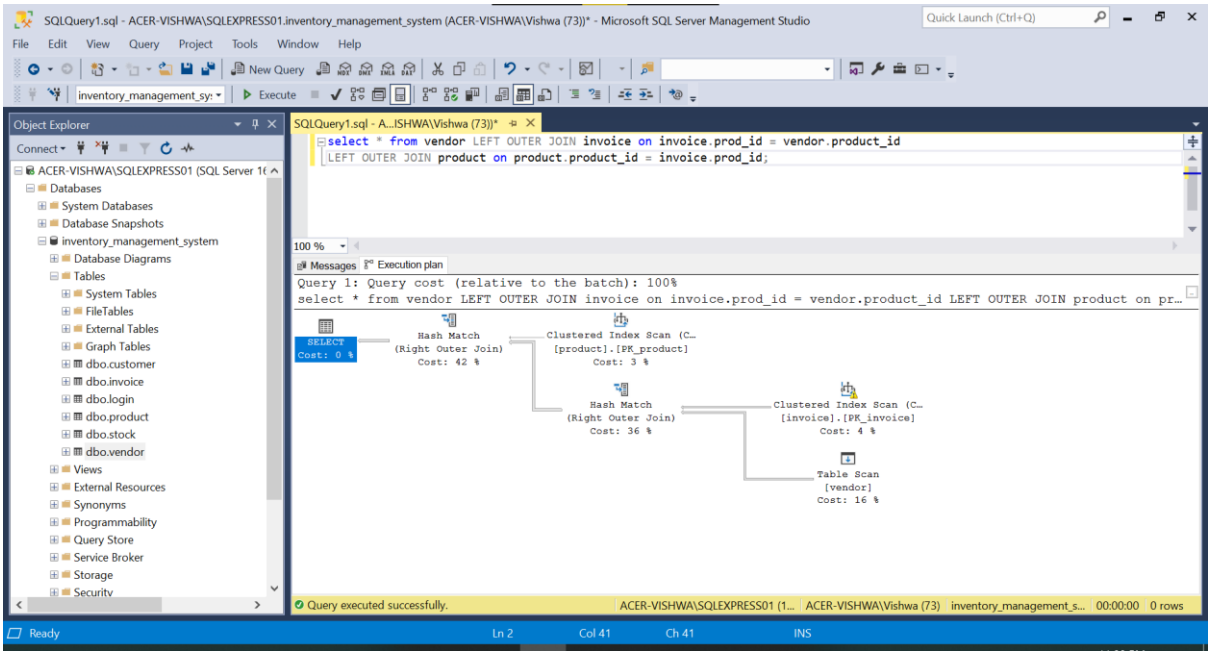


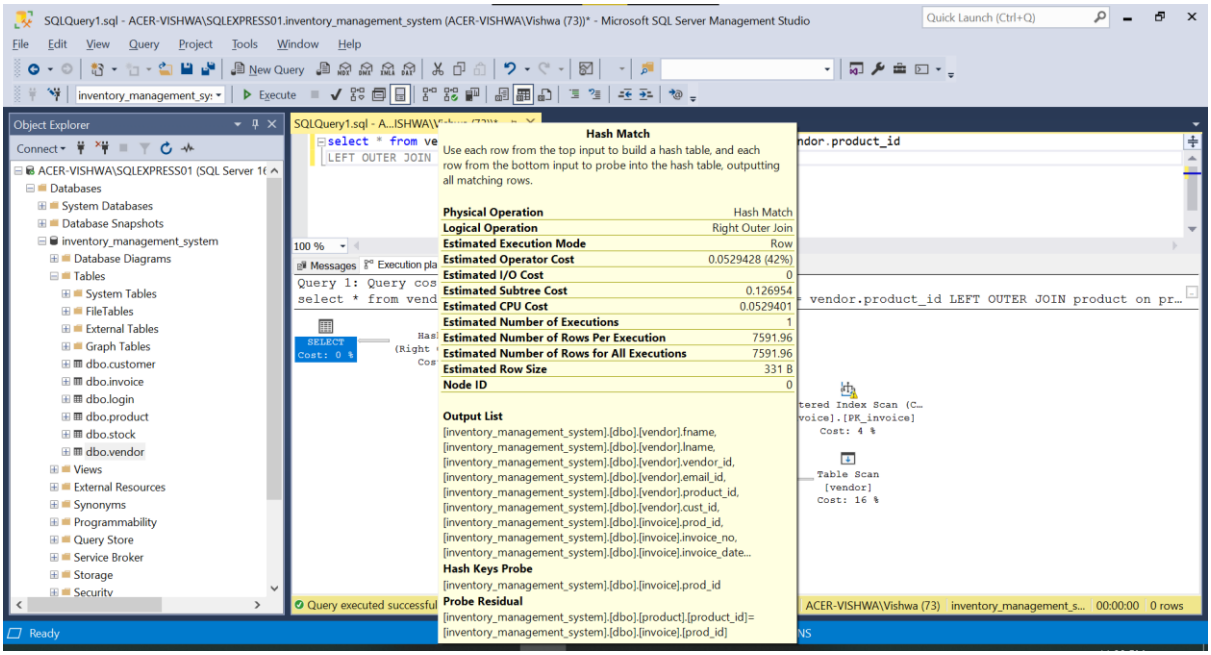
7. LEFT OUTER JOIN – invoice, product, vendor



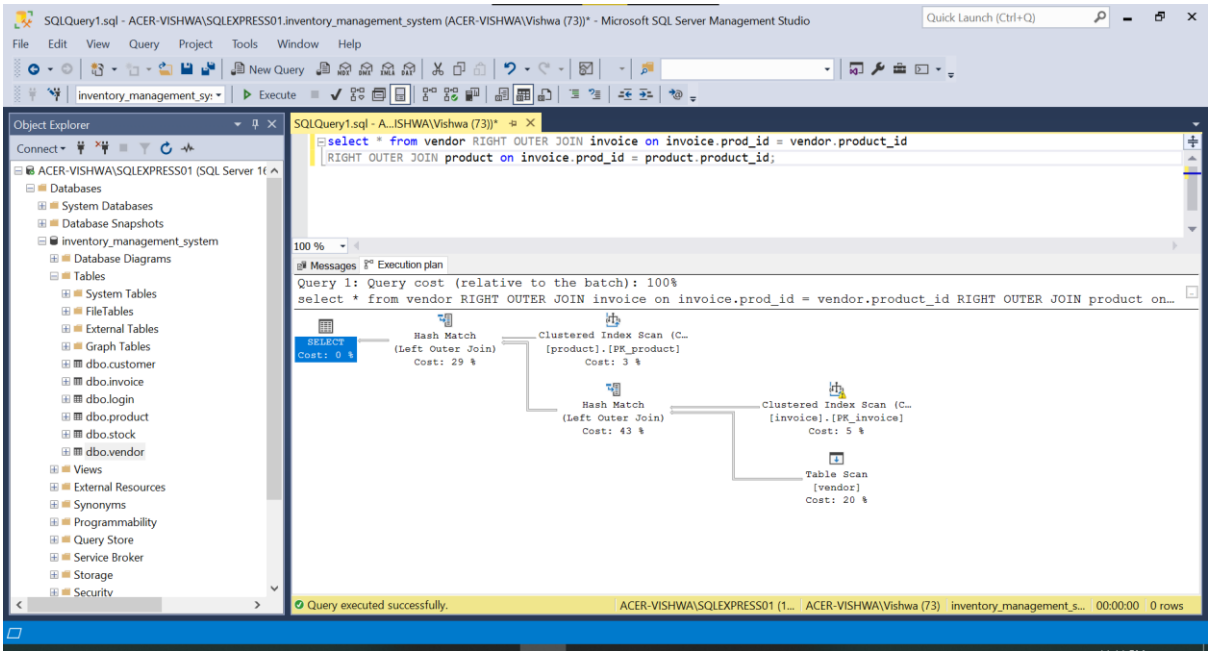


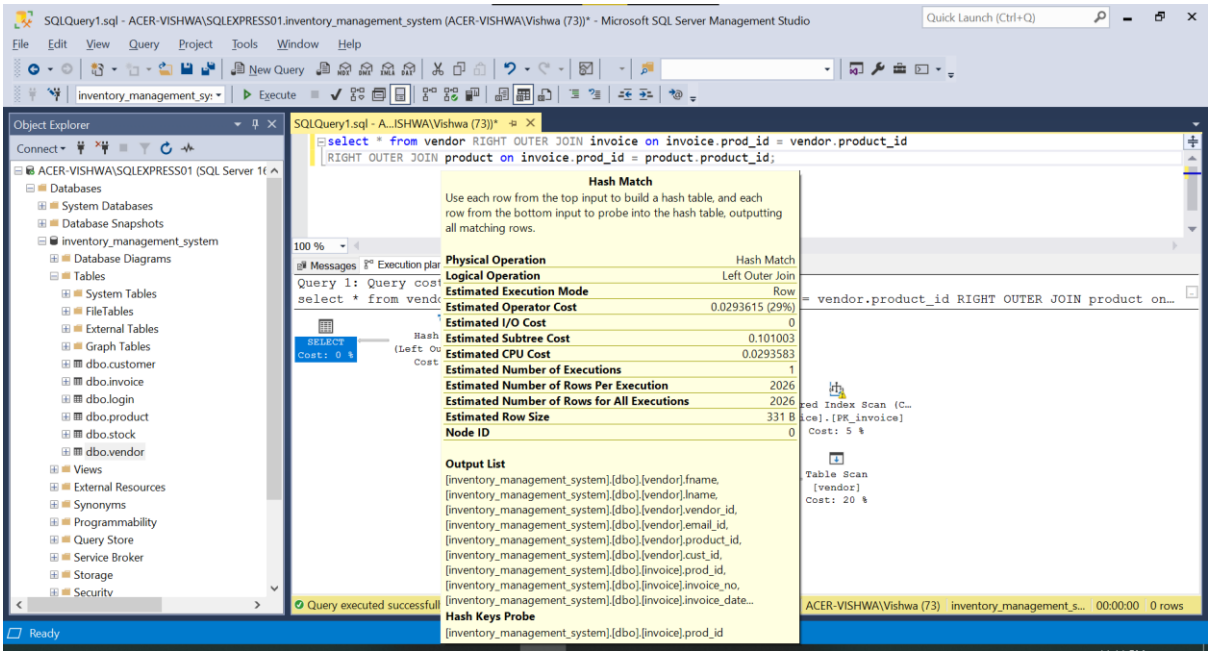
8. LEFT OUTER JOIN – vendor, invoice, product



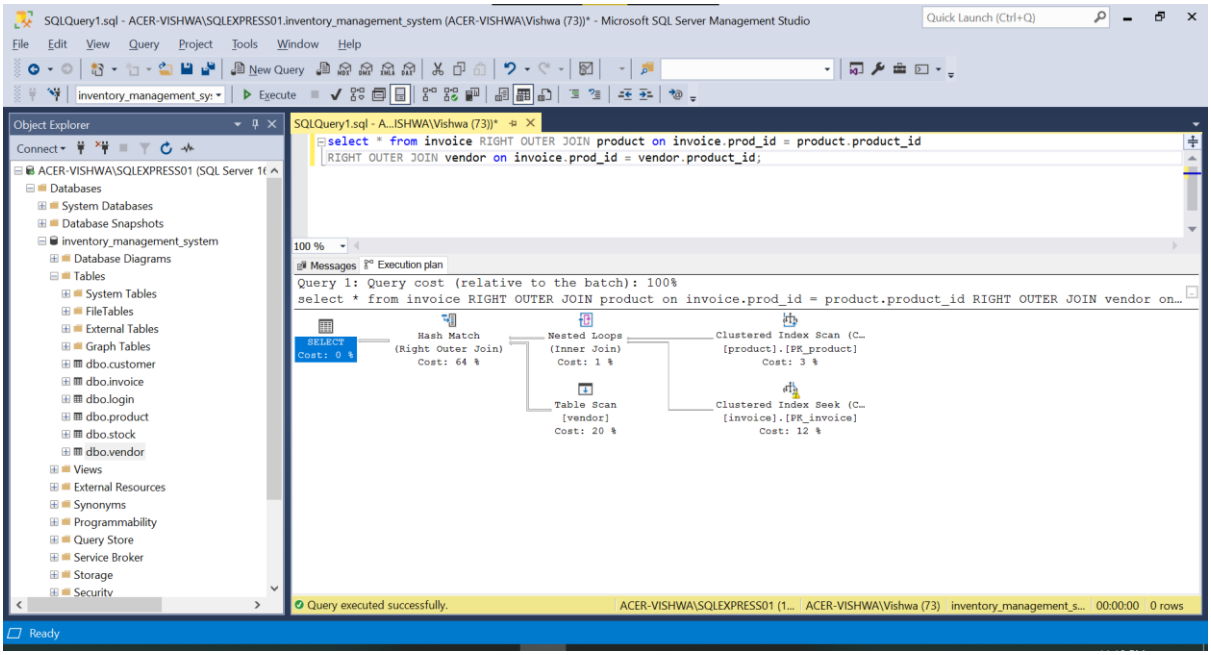


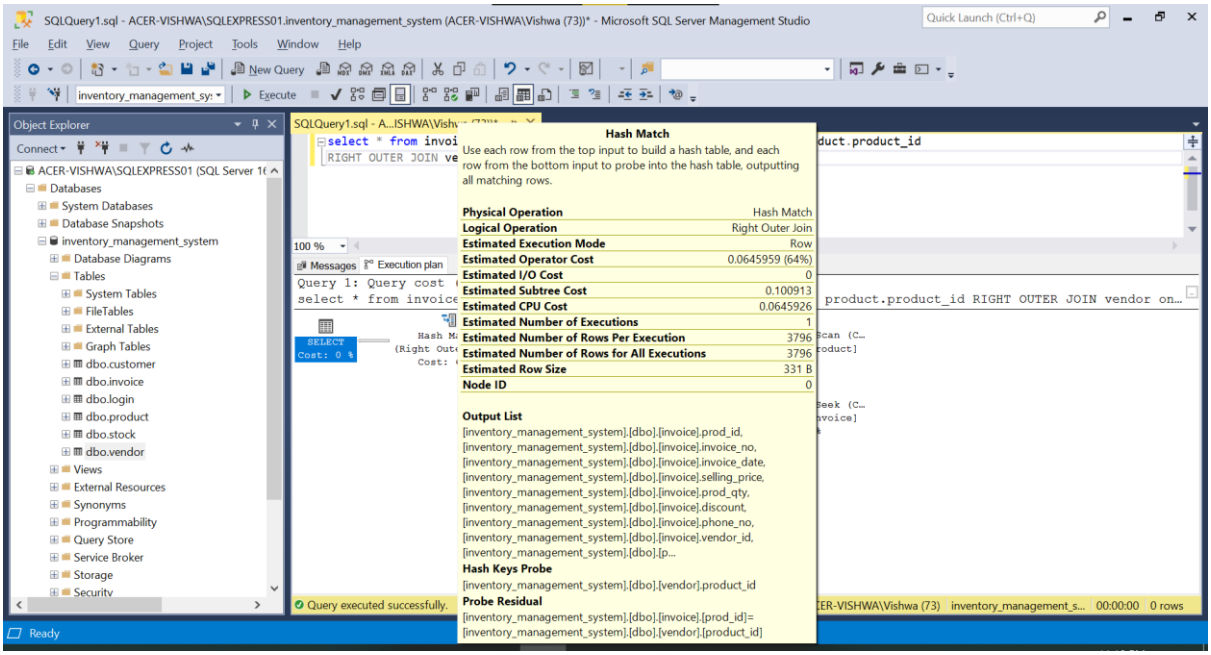
9. RIGHT OUTER JOIN – vendor, invoice, product



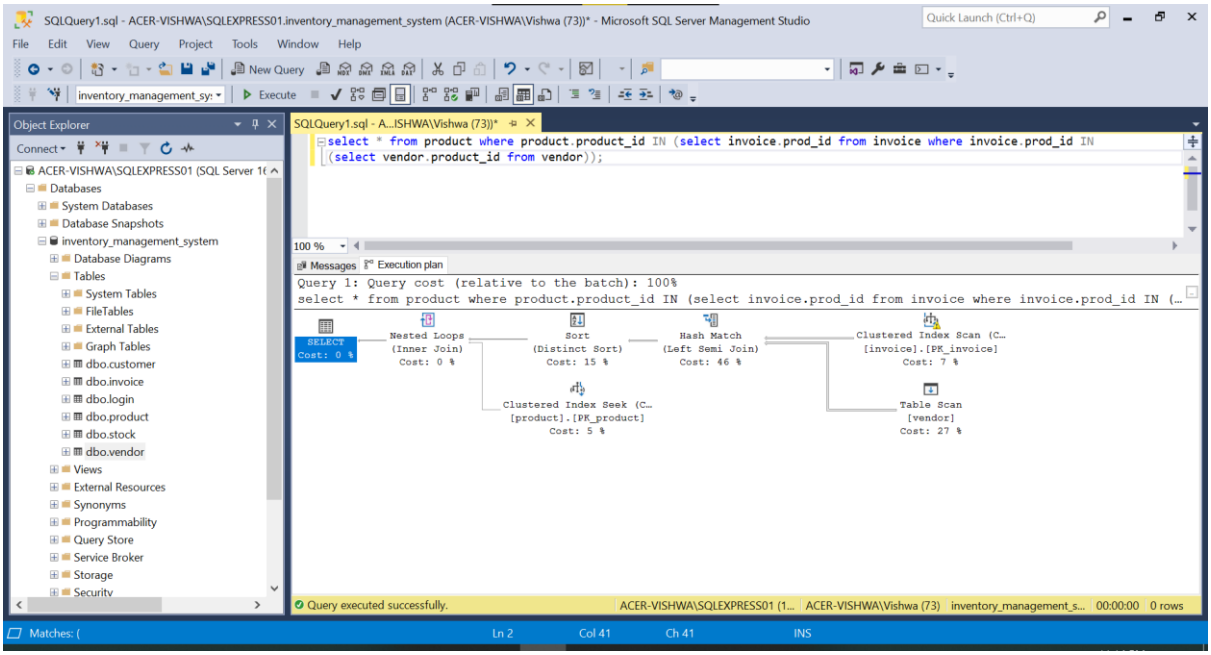


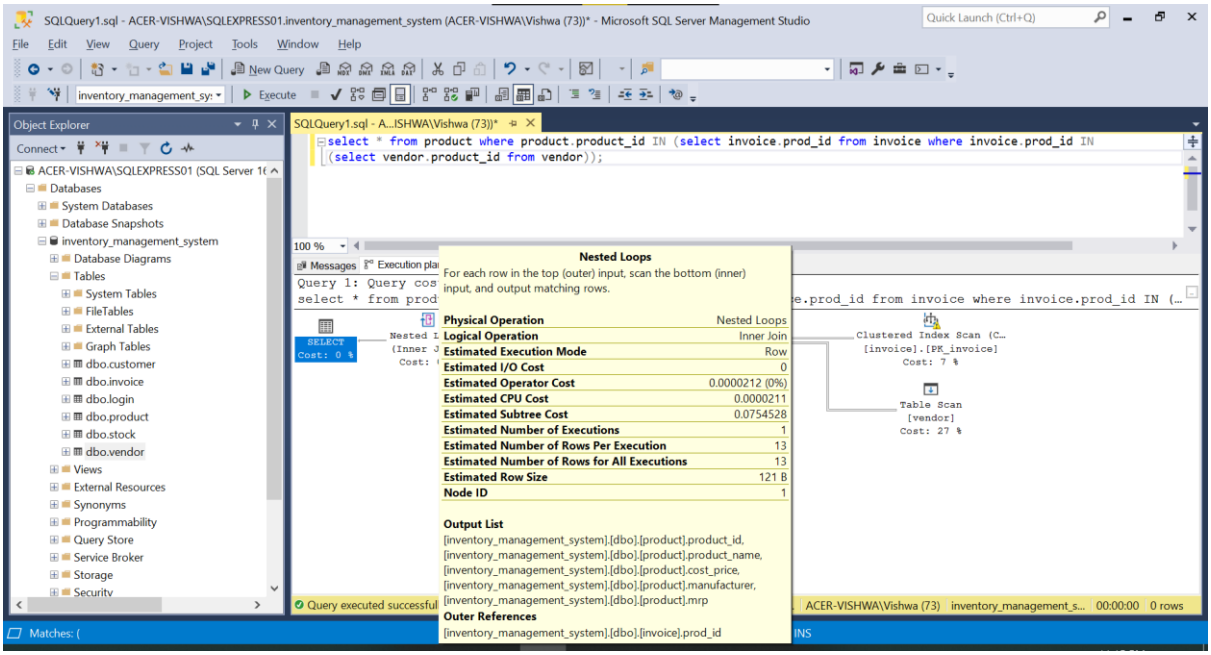
10. RIGHT OUTER JOIN – invoice, product, vendor



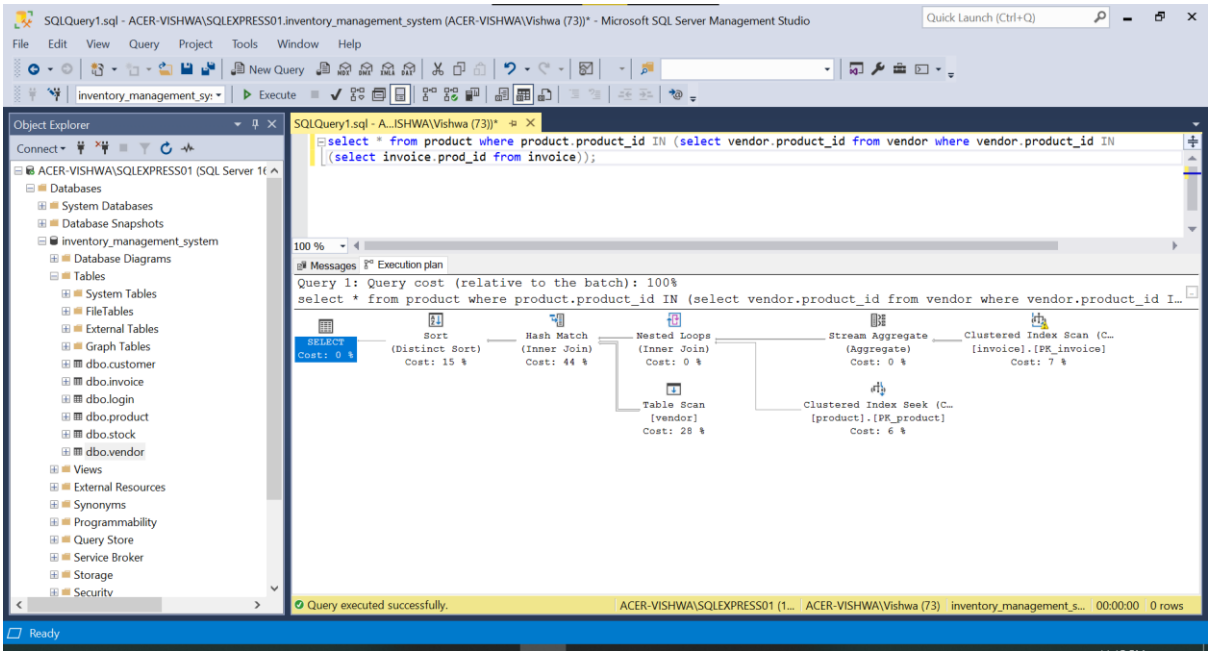


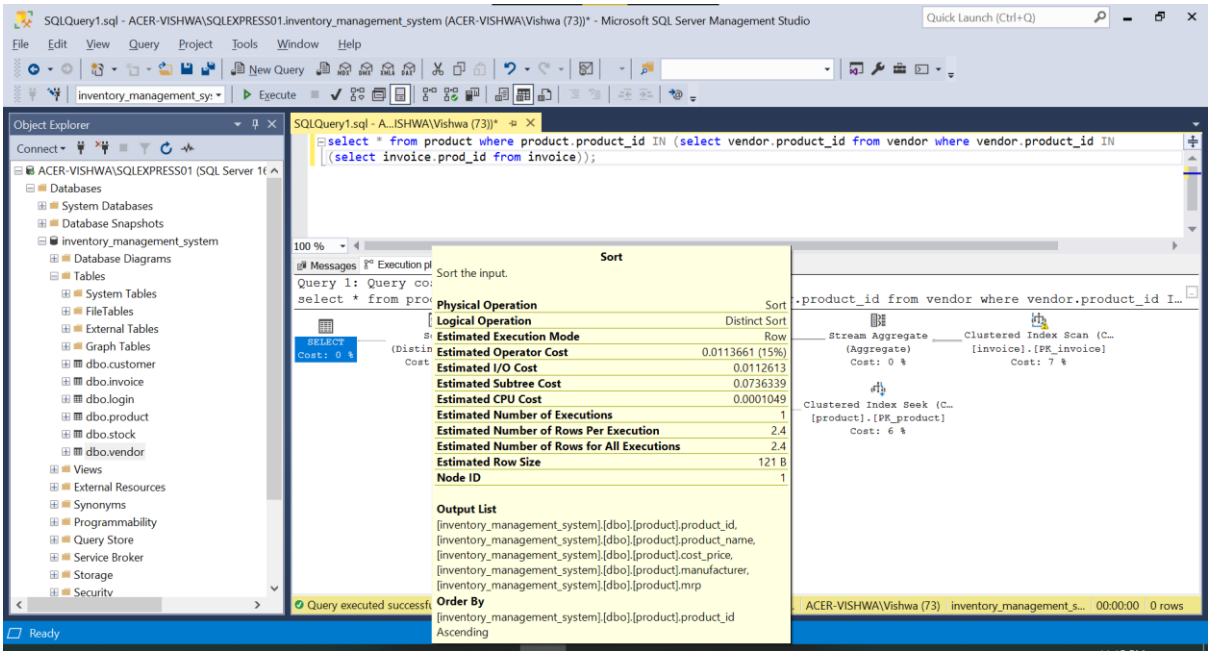
11. SUB QUERIES – product, invoice, vendor





12. SUB QUERIES – product, vendor, invoice





Comparison of estimated subtree costs for different join operations and indexes:

Operation	Estimated Subtree Cost
1. LEFT OUTER - invoice, stock, vendor	0.0965849
2. LEFT OUTER (Order Changed) - vendor, invoice, stock	0.0130995
3. RIGHT OUTER - vendor, invoice, stock	0.10393
4. RIGHT OUTER (Order Changed) - invoice, stock, vendor	0.0989511
5. SUB QUERIES - stock, invoice, vendor	0.0754528
6. SUB QUERIES (Order Changed) - stock, vendor, invoice	0.0785116
7. LEFT OUTER - invoice, product, vendor	0.08988016
8. LEFT OUTER (Order Changed) - vendor, invoice, product	0.0529401
9. RIGHT OUTER - vendor, invoice, product	0.0293583
10. RIGHT OUTER (Order Changed) - invoice, product, vendor	0.06455926
11. SUB QUERIES - product, invoice, vendor	0.0754528
12. SUB QUERIES (Order Changed) - product, vendor, invoice	0.0736339