**Step 8: Dynamic Data Masking**

**Part A**

**DDL changes to protect data:**

alter table Project alter column EstimatedCost add masked with (function= 'default()')

alter table Employee alter column HireDate add masked with (function= 'default()')

alter table Employee alter column Name add masked with (function='partial(1,"xxxx",0)')

Commands completed successfully.

**Create user1**

GO

create user user1 without login;

grant select on object::Project to user1;

grant select on object::Employee to user1;

Commands completed successfully.

**Working of DDL security:**

**Executing as dbo:**

use PI60;

Select \* from Project;

select Emp#,Name,HireDate,JobTitle from Employee;

Project# ProjectDescription EstimatedCost

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22 Roundabout Design 30000.00

24 Street Lights 120000.00

35 Rehab City Hall 500000.00

42 Replace gas lines 1500000.00

55 Roundabout Design 45000.00

100 Flood Control 25000000.00

(6 rows affected)

Emp# Name HireDate JobTitle

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60 Prem Chand 2008-04-03 Mechanical Engineer

111 Joe Cool 2013-11-23 Mechanical Engineer

122 Bill Builder 2011-01-01 Civil Engineer

143 John Dough 2013-11-23 Urban Engineer

234 Mary Smith 2011-04-03 Mechanical Engineer

333 Sam Supervisor 1999-09-03 Admin B

444 Mary Manager 2000-03-03 Admin A

445 Mark Black 1998-08-22 Admin B

456 Matt Lite 1999-07-26 Admin A

555 Fred Sparks 2007-03-03 Electrical Engineer

(10 rows affected)

**Executing as user1:**

GO

execute as user='user1';

Select \* from Project;

select Emp#,Name,HireDate,JobTitle from Employee;

revert;

Project# ProjectDescription EstimatedCost

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22 Roundabout Design 0.00

24 Street Lights 0.00

35 Rehab City Hall 0.00

42 Replace gas lines 0.00

55 Roundabout Design 0.00

100 Flood Control 0.00

(6 rows affected)

Emp# Name HireDate JobTitle

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60 Pxxxx 1900-01-01 Mechanical Engineer

111 Jxxxx 1900-01-01 Mechanical Engineer

122 Bxxxx 1900-01-01 Civil Engineer

143 Jxxxx 1900-01-01 Urban Engineer

234 Mxxxx 1900-01-01 Mechanical Engineer

333 Sxxxx 1900-01-01 Admin B

444 Mxxxx 1900-01-01 Admin A

445 Mxxxx 1900-01-01 Admin B

456 Mxxxx 1900-01-01 Admin A

555 Fxxxx 1900-01-01 Electrical Engineer

(10 rows affected)

**Part B**

There is a one disadvantage of DDM in SQL server, we can able to filter the rows in table by using masked data.

so, I created a table with large range of numbers, and joined with project table by comparing the values in masked EstimatedCost column.

So, when ever masked estimatedcost value equals the random number in number\_table( containg series of numbers as rows ), we can return it as real value,

Code:

execute as user='user1';

Declare @Projectno int = 24

;With MyCTE as (

SELECT TOP 99999999 ROW\_NUMBER() OVER (ORDER BY (select NULL)) AS Number

FROM sys.all\_objects s1

CROSS JOIN sys.all\_objects s2

)

select p.Project#, p.EstimatedCost,p.ProjectDescription

, Nf.Number as Exposed\_EstimatedCost

from Project as p

JOIN MyCTE as Nf on Nf.Number = p.EstimatedCost where Project#=@Projectno

revert;

Project# EstimatedCost ProjectDescription Exposed\_EstimatedCost

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24 0.00 Street Lights 120000

(1 row affected)