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605.741.31
Module 5 Quiz

1. Simplify the following query:

```
SELECT    ENAME
FROM      EMP, PROJ, ASG
WHERE     EMP.ENO = ASG.ENO        AND
          ASG.PNO = PROJ.PNO       AND
          (DAY == 'Wednesday'      OR
           NOT (DAY != 'Wednesday' AND
                ENAME == 'Fred'))  AND
          NOT ((DAY != 'Wednesday' AND
                PNAME == 'Billing')OR
               NOT(DAY == 'Wednesday'   OR
                   ENAME != 'Fred))
```

p => Day = 'Wednesday'
q => ENAME = 'Fred'
r => PANME = 'Billing'

predicate = $(p \vee \neg(\neg p \wedge r)) \wedge \neg((\neg p \wedge r) \vee \neg (p \vee \neg q))$
//Restatement of constraint

$=(p \vee (p \vee \neg r)) \wedge (\neg (\neg p \wedge r) \wedge (p \vee \neg q))$

$=(p \vee (p \vee \neg r)) \wedge ((p \vee \neg r) \wedge (p \vee \neg q))$
//DeMorgan's Law

$= (p \vee (p \vee \neg r)) \wedge (p \vee (\neg r \wedge \neg q))$ //Associative Law

$= (p \vee \neg r) \wedge (p \vee (\neg r \wedge \neg q))$ //Redundancy elimination

$= p \vee (\neg r \wedge (\neg r \wedge \neg q))$ //Associative Law

$= p \vee (\neg r \wedge \neg q)$ //Redundancy elimination

Final Query:

```
SELECT    ENAME
FROM      EMP, PROJ, ASG
WHERE     EMP.ENO = ASG.ENO        AND
          ASG.PNO = PROJ.PNO       AND
          (DAY == 'Wednesday'      OR
          (ENAME != 'Fred
          AND PNAME != 'Billing')  )
```

SQL Server Testing

```
create table #temp (
[DAY] varchar(20),
[ENAME] VARCHAR(20),
PNAME VARCHAR(20),
binarycode varchar(3)
)


INSERT INTO #temp values
('Wednesday', 'Fred','Billing','000'), ---000
('Wednesday', 'Fred','NO Billing','001'), --001
('Wednesday', 'Mike','Billing','010'),  --010
('Wednesday', 'Mike','NO Billing','011'), --011
('Monday', 'Fred','Billing','100'),    --100
('Sunday', 'Fred','No Billing','101'),    --101
('Monday', 'Mike','Billing','110'),              --110
('Monday', 'Mike','NO Billing','111')    --111


SELECT *
FROM          #temp
WHERE   (DAY = 'Wednesday'  OR
               NOT (DAY != 'Wednesday' AND
                     ENAME = 'Fred'))     AND
              NOT ((DAY != 'Wednesday' AND
                     PNAME = 'Billing')   OR
                         NOT(DAY = 'Wednesday'   OR
                             ENAME != 'Fred'))
```

```
DAY           ENAME  PNAME         binarycode
Wednesday     Fred   Billing       000
Wednesday     Fred   NO Billing    001
Wednesday     Mike   Billing       010
Wednesday     Mike   NO Billing    011
Monday        Mike   NO Billing    111
```

```
select *
from #temp
where DAY = 'Wednesday' or
(ENAME != 'Fred' and PNAME != 'Billing')
```

```
DAY           ENAME  PNAME         binarycode
Wednesday     Fred   Billing       000
Wednesday     Fred   NO Billing    001
Wednesday     Mike   Billing       010
Wednesday     Mike   NO Billing    011
Monday        Mike   NO Billing    111
```

Results are the same from original query and simplified query