COMP 3005 – Assignment 3

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PART 1:

1. { BN | (exists S#, B#) Sailer (S#, 'Zutkovic', _) and Reservation (S#, B#, _) and Boat (B#, BN, _)};

2. { SN | (exists S#, B#) Boat (B#, 'Paradise', _) and Reservation (S#, B#, _) and Sailer (S#, SN, _)};

3. { SN | (exists S#) Sailer (S#, SN, _) and not Reservation (S#, _, _)};

4. {SN1, SN2 | (exists S#1, S#2) (Sailer (S#1, SN1, _) and Sailer (S#, SN2, _) and Reservation (S#1, _, _) and Reservation (S#2, _, _) and SN1 != SN2)};

5. {SN | (exists S#) Sailer (S#, SN, _) and (forall B#) Boat (B#,_,_) and Reservation (S#, B#, _)};

6. {SN | (exists S#) (Sailer (S#, SN, _) and (forall B#) (exists BN) (Boat (B#, BN, _) and (BN = 'Splendor' and not Reservation (S#, B#, _)) or (BN != 'Splendor' and Reservation (S#, B#, _))))};

7. {SN | (exists S#, S'#) (Sailer (S#, SN, _) and SN != 'Zutkovic' and Sailer (S'#, 'Zutkovic', _) and (forall B#) (Boat (B#, _, _) and Reservation (S#, B#, _) and Reservation (S'#, B#, _) or not Reservation (S'#, B#, _)))};

8. {SN | (exists S#, S'#) (Sailer (S#, SN, _) and SN != 'Zutkovic' and Sailer (S'#, 'Zutkovic', _) and (forall B#) (Reservation (S#, B#, _) and Reservation (S'#, B#,_) or not Reservation (S#, B#, _) and not Reservation (S'#, B#, _)))};

9. {SN, COUNT (B#) | exists (S#) (Sailer (S#, SN, _) and Reservation (S#, B#, _)};

10. T(SN, S) := {SN, COUNT(*) | (exists S) (Sailer (S, SN, _) and Reservation (S, _, _)};
              {SN | T(SN, S) and S > 2};

PART 2:

1.

```
SQL> select Name from Boat
  2  where B# in (select B# from Reservation
  3  where S# in (select S# from Sailer
  4  where Name='Zutkovic'));

NAME
-------
Freedom
```

2.

```
SQL> select Name from Sailer S
  2    where exists (select * from Reservation R
  3    where S.S#=R.S#
  4    and exists (select * from Boat B
  5    where R.B#=B.B# and B.Name='Paradise'));

NAME
--------
Smith
Jones
Blake
```

3.

```
SQL> select Name from Sailer
  2    where S# in (select S# from Reservation
  3    where B# in (select B# from Boat
  4    where Name = 'Paradise'));

NAME
--------
Smith
Jones
Blake
```

4.

```
SQL> select S.Name
  2    from Sailer S, Reservation R, Boat B
  3    where S.S# = R.S#
  4    and B.B# = R.B#
  5    and B.Name = 'Paradise';

NAME
--------
Smith
Jones
Blake
```

5.

```
SQL> select Name from Sailer S
  2   where not exists (select * from Reservation R
  3   where S.S#=R.S#);


NAME
--------
Adams
```

6.

```
SQL> select B.Name
  2   from Sailer S, Reservation R, Boat B
  3   where S.S#=R.S# and B.B#=R.B# and S.Name='Jones'
  4   MINUS
  5   select B.Name
  6   from Sailer S, Reservation R, Boat B
  7   where S.S#=R.S# and B.B#=R.B# and S.Name='Zutkovic';


NAME
--------
Miracle
Paradise
```

7.

```
SQL> select S1.Name, S2.Name
  2   from Sailer S1, Sailer S2 where exists
  3   (select * from Reservation R1 where R1.S#=S1.S# and exists
  4   (select * from Reservation R2 where R2.S#=S2.S#)) and
  5   S1.Name!=S2.Name;

NAME        NAME
--------    --------
Smith       Jones
Smith       Blake
Smith       Zutkovic
Jones       Smith
Jones       Blake
Jones       Zutkovic
Blake       Smith
Blake       Jones
Blake       Zutkovic
Zutkovic    Smith
Zutkovic    Jones

NAME        NAME
--------    --------
Zutkovic    Blake

12 rows selected.
```

8.

```
SQL> select S.Name from Sailer S
  2    where not exists
  3    (select * from Boat B where not exists
  4    (select * from Reservation R
  5    where R.B#=B.B# and R.S#=S.S#));

NAME
--------
Smith
```

9.

```
SQL> select S.Name from Sailer S
  2    where not exists
  3    (select * from Boat B
  4    where (B.Name !='Splendor' or exists
  5    (select * from Reservation R
  6    where S.S#=R.S# and R.B#=B.B#))
  7    and
  8    (B.Name='Splendor' or not exists
  9    (select * from Reservation R
 10    where S.S#=R.S# and R.B#=B.B#)));

NAME
--------
Jones
```

10.

```
SQL> select S1.Name from Sailer S1
  2    where S1.Name != 'Zutkovic' and not exists
  3    (select B.B# from Boat B, Sailer S2, Reservation R
  4    where S2.Name = 'Zutkovic' and S2.S# = R.S# and R.B#=B.B#
  5    minus
  6    select B.B# from Boat B, Reservation R
  7    where S1.S# = R.S# and R.B# = B.B#);

NAME
--------
Smith
Jones
Blake
```

11.
```
SQL> select S1.Name from Sailer S1, Sailer S2
  2   where S1.Name != 'Zutkovic' and S2.Name = 'Zutkovic'
  3   and not exists
  4   (select * from Boat B where not exists
  5   (select * from Reservation R, Reservation R1
  6   where S2.S#=R.S# and B.B#=R.B# and S1.S#=R.S# and B.B#=R1.B#)
  7   and exists
  8   (select * from Reservation R
  9   where (S2.S#=R.S# and B.B#=R.B#) or (S1.S#=R.S# and B.B#=R.B#)));

no rows selected
```

12.
```
SQL> select Name, count(*)
  2   from Sailer natural join Reservation group by Name;

NAME            COUNT(*)
--------        ----------
Blake                  2
Zutkovic               1
Jones                  3
Smith                  4
```

13.
```
SQL> select S.Name from Sailer S
  2   where exists(
  3   select * from Reservation R1, Reservation R2, Reservation R3
  4   where S.S#=R1.S# and S.S#=R2.S# and S.S#=R3.S# and
  5   R1.B#!=R2.B# and R1.B#!=R3.B# and R2.B#!=R3.B#);

NAME
--------
Smith
Jones
```

14.
```
SQL> select S.Name from Sailer S
  2   inner join Reservation R on
  3   S.S# = R.S# group by S.Name HAVING count(*) > 2;

NAME
--------
Jones
Smith
```

15.
```
SQL> select S#, S.Name as SNAME, AGE
  2   B#, B.Name as BNAME, COLOR, DAY
  3   from Sailer S left outer join Reservation using (S#)
  4   left outer join Boat B using (B#);

S# SNAME               B# BNAME      COLOR   DAY
-- --------   ---------- -------- ------- --------------------
S4 Zutkovic            20 Freedom    Blue    10-SEP-17
S3 Blake               25 Freedom    Blue    08-MAY-17
S2 Jones               30 Freedom    Blue    05-MAR-16
S1 Smith               20 Freedom    Blue    01-JAN-15
S3 Blake               25 Paradise   Green   09-JUL-17
S2 Jones               30 Paradise   Green   06-MAR-17
S1 Smith               20 Paradise   Green   02-JAN-16
S2 Jones               30 Miracle    Red     07-APR-18
S1 Smith               20 Miracle    Red     03-FEB-17
S1 Smith               20 Splendor Yellow  04-FEB-18
S5 Adams               30

11 rows selected.
```

16.
```
SQL> select Name, count(B#)
  2   from Sailer left outer join Reservation using (S#)
  3   group by Name;

NAME         COUNT(B#)
-------- ----------
Adams            0
Blake            2
Zutkovic         1
Jones            3
Smith            4
```