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Midterm 1

Problem 1:

(1). True
(2) True
(3) False
(4) True
(5) False
(6) True
(7). True
(8). False
(9). True
(10). True

Problem 2:

```
Create Table Customer (cust_id   Integer,
                       name      Char(10),
                       address   varchar(n),
                       amount    Integer,
                       Primary Key (cust_id))

Create Table Group ( name   char(10),
                     Primary Key (name))

Create Table Artist ( name   char(10),
                      birthplace  Char(n),
                      age         Integer,
                      style       Char(n),
                      Primary Key (name))
```

```
Create Table Artwork (title   char(n),
                      year    Integer,
                      type    varchar(n),
                      price   Integer,
                      Primary Key (title))

Create Table Like_Group (cust_id  char(n),
                         g_name   char(n),
                         Primary Key (cust_id),
                         Foreign Key (cust_id) References
                                                 Customers,
                         Foreign Key (g_name) References
                                                 Group)

Create Table Classify (g_name  char(n),
                       title   char(n),
                       Primary Key (g_name),
                       Foreign Key (g_name) References Groups,
                       Foreign key (title) References Artwork)

Create Table paints (a_name  char(10),
                     title   char(10),
                     Primary Key (a_name, title,),
                     Foreign key (a_name) References Artist,))

Create Table Like_Artist (cust_id  char(10),
                          a_name   char(10),
                          Primary Key (cust_id),
                          Foreign Key (cust_id) Refer. Customers,
                          Foreign Key (a_name) Refer. Artist)
```

Problem 3:

(1) $\pi_{sid}((\sigma_{color='red'}(Parts)) \bowtie (catalog) \cup$
$s.address='100\ War\ Eagle\ Way, Auburn, Alabama')$

(2) $\pi_{sid}(\rho(C1(catalog) \bowtie \sigma_{color='red'}(Parts)) \bowtie$
$\rho(C2(catalog) \bowtie \sigma_{color='green'}(Parts))$
$(C1 \bowtie C2)))$

3. $\pi_{sid}((\rho(C1(catalog) \bowtie \sigma_{color='red'}(Parts)) \div$
$\rho(C2(Catalog)) \cap (\rho(C2(catalog) \bowtie \sigma_{color}$
$='green'(Parts)) \div \rho(C1(catalog))$

4. $(\pi_{sid}((\sigma_{color='red'}(Parts)) \bowtie (\sigma_{cost<200}(Catalog)$
$\bowtie Suppliers)) \cap (\pi_{sid}((\sigma_{color='green'}$
$(Parts)) \bowtie (\sigma_{cost<100}(Catalog) \bowtie Suppliers))$

Problem 4.

1. Select a.name, a.age
From Artist A join Perform p on p.ssn = a.ssn
join Theater t on t.tno = p.tno
Where t.name = 'AU Theater'

2. Select Avg(age) From Artist A
Where a.ssn IN (
Select ssn
From Theater t, Perform p
Where t.tno = p.tno AND
t.tname = 'AU Theater'
Group By ssn
Having Count(t.tno) >= 3);

3. Select Avg(rating) From Artist
Select name
From Artist
Where Rating > (Select Avg(rating)
From Artist);