Question 1

```sql
SELECT * FROM data
WHERE donor = yes
AND ((joined in last 6 months) OR (NOT(Joined in last 6 months) AND (opened in the last 6 months)))
```

Question 2

All segments concern only ALS Full List customers and customers who opened an email at least once 90 days prior to 11/01/2018. We assume that Donor and Ad status are binary.
In this case, we can note each of the events as:

- ALS - Full List: *FL*
- Non Opener Suppression: *NS*
- ALS - Ad Names: *AD*
- Donor = yes: *DN*

Following these notations:

- Segment 1: `FL AND NOT(NS) AND AD AND DN`
- Segment 2: `FL AND NOT(NS) AND AD AND NOT(DN)`
- Segment 3: `FL AND NOT(NS) AND NOT(AD) AND DN`
- Segment 4: `FL AND NOT(NS) AND NOT(DN)`

Hence, we can see that these segments are not exclusive and Segment 2 and 4 have overlapping. We can solve that by defining Segment 4 as `FL AND NOT(NS) AND NOT(AD) AND NOT(DN)`

Question 3

In each of the following days, we have:

- *Violated - Day1* Version I will be sent to Group A and Group B. Since there are members of group C in group B, some general public members would receive the same version of email as the VIPs and board members. Hence, a constraint is violated
- *Respected - Day2* Version I will be sent to Group A and Group C, excluding members of those groups that are in group B to respect general public constraint. Version II will be sent to Group B members that are not in Group A and Group C to avoid having a constituent receiving more than one version of an email. Hence, all constraints are respected
- *Violated - Day3* Version I will be sent to group A and B and version II to group C. Since some constituents are in three groups, they would receive more than one version of an e-mail. Hence, a constraint is violated.