**Security Guard Management System- Normalization:**located(city\_name, location\_id, postal\_code, cname, street\_name, road\_no, city\_id, city\_name)  
1nf: No multivalued attribute.  
2nf: city\_name, location\_id, postal\_code, cname, street\_name, road\_no, city\_id  
 city\_id, city\_name  
3nf: location\_id, cname, street\_name, road\_no, city\_id, tid  
 city\_id, city\_name  
 tid, city\_name, postal\_code  
table: location\_id, cname, street\_name, road\_no, city\_id, tid  
 city\_id, city\_name  
 tid, city\_name, postal\_code

record(gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, hist\_id, hire\_date, prev\_client)  
1nf: prev\_client, phone\_no are the multivalued attributes  
2nf: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, hist\_id  
 hist\_id, hire\_date, prev\_client  
3nf: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, hist\_id  
 hist\_id, hire\_date, prev\_client

table: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, hist\_id  
 hist\_id, hire\_date, prev\_client

own(name, establish\_date, ow\_id, ow\_name, phone\_no)  
1nf: phone\_no is the multivalued attribute  
2nf: name, establish\_date,  
 ow\_id, ow\_name, phone\_no, name  
3nf: name, establish\_date,  
 ow\_id, ow\_name, phone\_no, name  
table: name, establish\_date  
 ow\_id, ow\_name, phone\_no, name

contract: (name, establish\_date, cid, cname, start\_date, end\_date)  
1nf: no multivalued attribute.  
2nf: name, establish\_date  
 cid, cname, start\_date, end\_date, name  
3nf: name, establish\_date  
 cid, cname, start\_date, end\_date, name  
  
table: name, establish\_date  
 cid, cname, start\_date, end\_date, name

recruit(name, establish\_date, gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name)  
1nf: phone\_no is the multivalued attribute  
2nf: name, establish\_date  
 gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, name

3nf: name, establish\_date  
 gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, name  
table: name, establish\_date  
 gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, name

instruct(gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, cid, cname, start\_date, end\_date, grd\_start\_date, grd\_end\_date)  
1nf: phone\_no is the multivalued attribute  
2nf: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, cid   
 cid, cname, start\_date, end\_date  
 gc\_id, cid, gid, grd\_start\_date, grd\_end\_date  
  
3nf: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, cid   
 cid, cname, start\_date, end\_date  
 gc\_id, cid, gid, grd\_start\_date, grd\_end\_date  
table: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, cid  
 cid, cname, start\_date, end\_date  
 gc\_id, cid, gid, grd\_start\_date, grd\_end\_date

post(gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, city\_name, location\_id, postal\_code, cname, street\_name, road\_no)  
1nf: no multivalued attribute  
2nf: gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, location\_id  
 city\_name, location\_id, postal\_code, cname, street\_name, road\_no  
3nf: gid, dob, bonus, hire\_date, salary, phone\_no, location\_id, f\_name, l\_name  
 location\_id, cname, street\_name, road\_no, tid  
 tid, city\_name, postal\_code  
table: gid, dob, bonus, hire\_date, salary, phone\_no, location\_id, f\_name, l\_name  
 location\_id, cname, street\_name, road\_no, tid  
 tid, city\_name, postal\_code

+location\_id, cname, address(street\_name, road\_no), tid  
 +city\_id, city\_name, location\_id  
 +tid, city\_name, postal\_code

+gid, dob, bonus, hire\_date, salary, phone\_no, age, full\_name  
 hist\_id, gid, hire\_date, prev\_client  
 +full\_name, l\_name, f\_name

+name, establish\_date, ow\_id  
 //ow\_id, ow\_name, phone\_no

+name, establish\_date, cid  
 \*cid, cname, contract\_year(start\_date, end\_date)

+name, establish\_date, gid  
 \*gid, dob, bonus, hire\_date, salary, phone\_no, age, full\_name  
 \*full\_name, f\_name, l\_name

\*gid, dob, bonus, salary, hire\_date, phone\_no, age  
 +cid, cname, contract\_year(start\_date, end\_date), gid  
 \*full\_name, f\_name, l\_name \*gid, dob, bonus, hire\_date, salary, phone\_no, age

+city\_name, location\_id, postal\_code, cname, address(street\_name, road\_no), gid

//\*full\_name, l\_name, f\_name

1. client\_location  
   2.guard\_city  
   3.guard\_office  
   4.guard\_history  
   5. best\_security\_establish  
   6. best\_security\_contract  
   7. client\_contract  
   8. guard\_location

**Total\_table:**

+location\_id, cname, street\_name, road\_no, city\_id, tid  
 +city\_id, city\_name  
 \*tid, city\_name, postal\_code

+gid, dob, bonus, hire\_date, salary, phone\_no, hist\_id, f\_name, l\_name   
 +hist\_id, hire\_date, prev\_client

+name, establish\_date  
 +ow\_id, ow\_name, phone\_no, name

\*name, establish\_date  
 +cid, cname, start\_date, end\_date, name

\*name, establish\_date   
+gid, dob, bonus, hire\_date, salary, phone\_no, f\_name, l\_name, name

+gid, dob, bonus, l\_name, hire\_date, salary, phone\_no, f\_name, cid  
\*cid, cname, start\_date, end\_date  
 +gc\_id, cid, gid, grd\_start\_date, grd\_end\_date

+gid, dob, bonus, hire\_date, salary, phone\_no, location\_id, f\_name, l\_name  
 \*location\_id, cname, street\_name, road\_no, tid   
+tid, city\_name, postal\_code,

Total Table:

1. location\_id, cname, address(street\_name, road\_no), city\_id, tid  
 2. city\_id, city\_name

3.gid, dob, bonus, hire\_date, salary, phone\_no, age, hist\_id, f\_name, l\_name  
 4. hist\_id, hire\_date, prev\_client  
 5.

6.name, establish\_date  
7.ow\_id, ow\_name, phone\_no, name

8.cid, cname, contract\_year(start\_date, end\_date), name

9.gid, dob, bonus, hire\_date, salary, phone\_no, age, f\_name, l\_name, name

10. gid, dob, bonus, hire\_date, salary, phone\_no, age, f\_name, l\_name, cid

11.gid, dob, bonus, hire\_date, salary, phone\_no, age, location\_id, f\_name, l\_name   
 12.   
 13.

14. tid, city\_name, postal\_code

15. gc\_id, cid, gid, grd\_start\_date, grd\_end\_date

1.client\_location  
2.city  
3.guard\_info  
4.guard\_history  
5. guard\_name  
6.best\_security  
7.owner\_info  
8.client\_contract  
9.guard\_recruit  
10.guard\_instruct  
11. guard\_post  
12.guard\_city  
13. guard\_name\_located

14.client\_city

15. instruct

Final Table:

location\_id, cname, street\_name, road\_no, city\_id, tid  
 city\_id, city\_name

gid, dob, bonus, hire\_date, salary, phone\_no, hist\_id, f\_name, l\_name  
 hist\_id, hire\_date, prev\_client

name, establish\_date  
ow\_id, ow\_name, phone\_no, name

cid, cname, start\_date, end\_date, name

gid, dob, bonus, hire\_date, salary, phone\_no, f\_name, l\_name, name

gid, dob, bonus, hire\_date, salary, phone\_no, f\_name, l\_name, cid  
gc\_id, cid, gid, grd\_start\_date, grd\_end\_date

gid, dob, bonus, hire\_date, salary, phone\_no, location\_id, f\_name, l\_name   
 tid, city\_name, postal\_code

**Final Table:**

client\_location  
city  
guard\_info  
guard\_history  
best\_security  
owner\_info  
client\_contract  
guard\_recruit  
\*\*10.guard\_instruct  
11. guard\_post

14.client\_city

15. instruct