

# Insurance System Database

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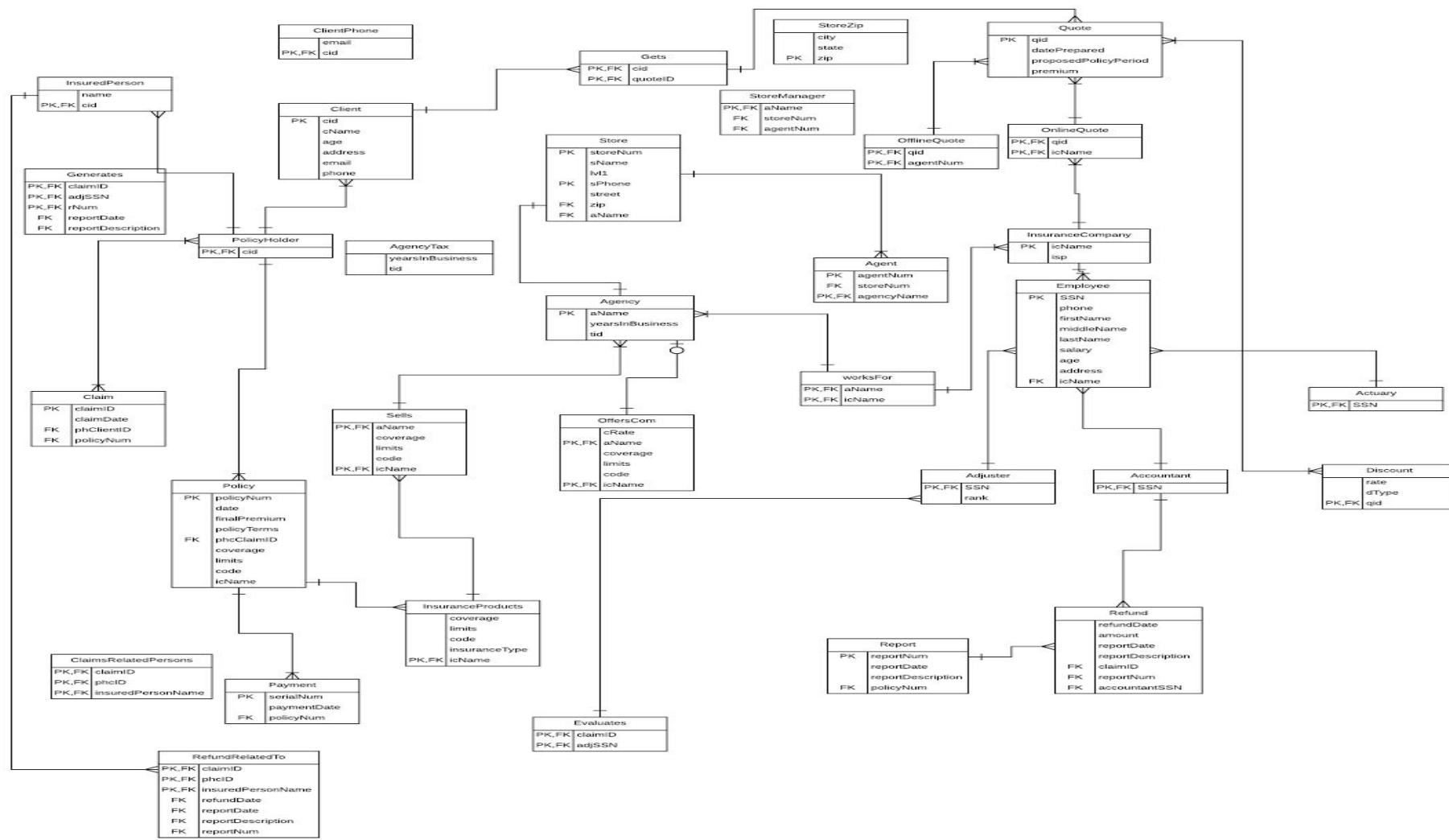
# Problem Description (part 1)

The premises of my proposal is to implement a database that consists of an insurance management system that will provide services to clients, insurance companies and agents. We will design, develop, and test the Insurance Management System in order to expand my knowledge and experience with designing relational databases.

-A client can get insurance quotes and file claims more than once. Each client contains a Client ID, Name, Age, Address, Phone Number, and an Email address that is recorded into the database system.

Provides 2 ways for clients to get quotes on their insurance plans. These ways are online with insurance companies and more physical with the insurance agents. Each quote contains the attributes Quote ID, Date Prepared, Proposed Policy Period, and Premium. This all pertains to an individual client. Some of these quotes have discounts which are directly related to discount name and the quote itself. Each individual quote can contain more than one discount within it.

# ER Diagram



# Create Table Statements

```
create table Client (
cid      char(6),
cName    char(30),
Age      numeric,
Addr     char(40),
Email    char(20),
primary key(cid)
);
```

```
create table ClientPhone (
cid        char(6) references Client(cid),
Phone      char(12),
primary key(cid, phone)
);
```

```
create table PolicyHolder (
    cid char(6) references Client(cid),
    primary key(cid)
);
```

```
create table InsuredPerson (
    name char(12),
    cid  char(6) references Client(cid),
    primary key(name, cid)
);
```

```
create table AgencyTaxID (
tid          char(10),
yearInBusiness    numeric,
primary key(tid)
);
```

```
create table Agency (
aName      char(20),
taxID      char(10) references AgencyTaxID(tid),
primary key(aName)
);
```

```
create table StoreZip (
city      char(20),
State     char(20),
zip numeric(5,0),
primary key(zip)
);
```

```
create table Store (
storeNum      numeric,
storeName     char(20),
lvl1         integer,
sPhone        char(12),
zip           numeric(5,0) references StoreZip(zip),
aName          char(20) references Agency(aName),
street         numeric,
primary key(storeNum, aName)
);
```

```
create table Agent (
agentNum       numeric,
storeNum       integer references Store(storeNum, aName),
agencyName     char(20) references Agency(aName),
primary key(agentNum)
);
```

```
create table InsuranceCompany (
    icName          char(20),
    Isp             char(20),
    Website         char(40),
    Address         char(40),
    Email           char(20),
    Phone           char(12),
    primary key(icName)
);
```

```
create table OfflineQuote (
    qid            char(7) references Quote(qid),
    agentNum       integer references Agent(agentNum),
    primary key(qid)
);
```

```
create table OnlineQuote (
    qid            char(7) references Quote(qid),
    icName         char(20) references InsuranceCompany(icName),
    primary key(qid)
);
```

```
create table InsuranceProducts (
coverage      char(40),
limits        char(40),
code          char(20),
insuranceType char(10),
icName        char(20) references InsuranceCompany(icName),
primary key(coverage, limits, code, icName)
);
```

```
create table Discount (
rate          float(8),
dType         char(20),
qid          char(7) references Quote(qid),
primary key(dType, qid)
);
```

```
create table Employee (
SSN           char(11),
Phone         char(12),
firstName     char(20),
middleInitial char(20),
lastName      char(20),
salary        float(8),
age           integer,
address       char(40),
icName        char(20) references InsuranceCompany(icName),
primary key(SSN)
);
```

```
create table Accountant (
    SSN char(11) references Employee(SSN),
    primary key(Ssn)
);
create table Aadjuster (
    SSN         char(11) references Employee(SSN),
    rank        integer,
    primary key(SSN)
    --CHECK (Rank>0 and Rank <6)
);
create table Actuary (
    SSN char(11) references Employee(SSN),
    primary key(SSN)
);
CREATE TABLE Policy (
    policyNum      integer,
    pDate         date,
    finalPremium   float(8),
    policyTerms    char(40),
    phClientID    char(12) references PolicyHolder(cid),
    coverage       char(40) references InsuranceProducts(coverage),
    limits         char(40) references InsuranceProducts(limits),
    code           char(20) references InsuranceProducts(code),
    icName         char(20) references InsuranceProducts(icName),
    primary key(policyNum)
);
```

```
CREATE TABLE Claim (
    claimID           char(12),
    claimDate         date,
    phClientID       char(6) references PolicyHolder(cid),
    policyNum        integer references Policy(policyNum),
    primary key(claimID)
);
CREATE TABLE Payment (
    serialNum         integer,
    paymentDate      date,
    policyNum        integer references Policy(policyNum),
    PRIMARY KEY(serialNum, policyNum)
);
CREATE TABLE Gets (
    cid               char(6) references Client(cid),
    Quote_id          char(7) references Quote(qid),
    primary key(cid, qid)
);
CREATE TABLE Report (
    reportNum         integer,
    reportDate        date,
    reportDescription char(40),
    claimID VarChar(12) not null references Claim(claimID),
    primary key(reportNum, reportDate, reportDescription, claimID)
);
```

```
CREATE TABLE WorksFor (
    aName char(20) references Agency(aName),
    icName char(20) references InsuranceCompany(icName),
    primary key(aName,icName)
);
CREATE TABLE Evaluates (
    claimID      char(12) references Claim(claimID),
    adjSSN       char(11) references Adjuster(SSN),
    primary key(ClaimID,adjSSN)
);
CREATE TABLE OffersCom (
    cRate        float(8),
    aName        char(20) references Agency(aName),
    coverage     char(40) references InsuranceProducts(coverage),
    limits       char(40) references InsuranceProducts(limits),
    code         char(20) references InsuranceProducts(code),
    icName       char(20) references InsuranceProducts(icName),
    primary key(cRate, aName, coverage, limits, code, icName)
);
CREATE TABLE Sells (
    aName char(20) references Agency(aName),
    coverage VarChar(40) references InsuranceProducts(coverage),
    limits char(40) references InsuranceProducts(limits),
    code char(20) references InsuranceProducts(code),
    icName char(20) references InsuranceProducts(icName),
    primary key(aName, coverage, limits, code, icName)
);
```

```
CREATE TABLE Refund (
    refundDate          date,
    amount              float(8),
    reportDate         date references Report(reportDate),
    reportDescription  char(40) references Report(reportDescription),
    claimID             char(12) references Report(claimID),
    reportNum           integer references Report(reportNum),
    accountantSSN      char(7) references Accountant(accountantSSN),
    primary key(refundDate, reportDate, reportDescription, claimID, reportNum)
);
```

```
CREATE TABLE Generates (
    claimID             char(12) references Report(claimID),
    adjSSN              char(11) references Adjuster(adjSSN),
    reportNum           integer references Report(reportNum),
    reportDate          date references Report(reportDate),
    reportDescription   char(40) references Report(reportDescription),
    primary key(claimID, adjSSN, reportNum, reportDate, reportDescription)
);
```

```
CREATE TABLE RefundRelatedTo (
    claimID          char(12) references Refund(claimID),
    phcID           char(6) references InsuredPerson(cid),
    insuredPersonName char(12) references InsuredPerson(name),
    refundDate       date references Refund(refundDate),
    reportDate       date references Refund(reportDate),
    reportDescription char(40) references Refund(reportDescription),
    reportNum         integer references Refund(reportNum),
primary key(phcID, insuredPersonName, refundDate, claimID , reportNum, reportDate, reportDescription)
);
```

```
CREATE TABLE ClaimRelatedPersons (
    claimID          char(12) references Claim(claimID),
    phcID           char(6) references InsuredPerson(phcID),
    insuredPersonName char(12) references InsuredPerson(name),
primary key(claimID, phcID, insuredPersonName)
);
```

```
CREATE TABLE StoreManager (
    aName            char(20) not null references Store(aName),
    storeNum        integer references Store(storeNum),
    agentNum        integer references Agent(agentNum),
primary key(aName, storeNum, agentNum)
);
```

# Sample Data

# Accountant

```
SELECT * FROM Accountant;
```

201-20-0101
201-20-0202
201-20-0303
201-20-0404
201-20-0505
201-20-0606
201-20-0707
201-20-0808
201-20-0909
201-20-1010
201-20-1111
201-20-1212
201-20-1213
201-20-1214
201-20-1215
201-20-1216

# Actuary

```
SELECT *
```

```
FROM Actuary;
```

201-20-0101
201-20-0202
201-20-0303
201-20-0404
201-20-0505
201-20-0606
201-20-0707
201-20-0808
201-20-0909
201-20-1010
201-20-1111
201-20-1212
201-20-1213
201-20-1214
201-20-1215
201-20-1216

# Adjuster

SELECT SSN, Rank FROM Adjuster;

Or

SELECT \* FROM Adjuster;

201-20-0101	1
201-20-0202	2
201-20-0303	3
201-20-0404	4
201-20-0505	5
201-20-0606	1
201-20-0707	2
201-20-0808	3
201-20-0909	4
201-20-1010	5
201-20-1111	1
201-20-1212	2
201-20-1213	3
201-20-1214	4
201-20-1215	5
201-20-1216	1

# Agency

```
SELECT aName, taxID  
FROM Agency;
```

Agency-6000	TAX-000
Agency-6001	TAX-001
Agency-6002	TAX-002
Agency-6003	TAX-003
Agency-6004	TAX-004
Agency-6005	TAX-005
Agency-6006	TAX-006
Agency-6007	TAX-007
Agency-6008	TAX-008
Agency-6009	TAX-009
Agency-6010	TAX-010
Agency-6011	TAX-011
Agency-6012	TAX-012
Agency-6013	TAX-013
Agency-6014	TAX-014
Agency-6015	TAX-015
Agency-6016	TAX-016

# AgencyTaxID

```
SELECT taxID, yearsInBusiness  
FROM AgencyTaxID;
```

TAX-000	1
TAX-001	2
TAX-002	3
TAX-003	4
TAX-004	5
TAX-005	6
TAX-006	7
TAX-007	8
TAX-008	9
TAX-009	10
TAX-010	11
TAX-011	12
TAX-012	13
TAX-013	14
TAX-014	15
TAX-015	16
TAX-016	17

# Agent

```
SELECT agentNum, storeNum, agencyName  
FROM Agent;
```

5000	6000 Agency-6000
5001	6001 Agency-6001
5002	6002 Agency-6002
5003	6003 Agency-6003
5004	6004 Agency-6004
5005	6005 Agency-6005
5006	6006 Agency-6006
5007	6007 Agency-6007
5008	6008 Agency-6008
5009	6009 Agency-6009
5010	6010 Agency-6010
5011	6011 Agency-6011
5012	6012 Agency-6012
5013	6013 Agency-6013
5014	6014 Agency-6014
5015	6015 Agency-6015

# Claim

```
SELECT claimID, claimDate, phClientID, policyNum, FROM Claim;
```

C-2011110101	10-APR-12	A12341	1
C-2011110202	10-APR-13	A12342	2
C-2011110303	10-APR-14	A12343	3
C-2011110404	10-APR-15	A12344	4
C-2011110505	10-APR-16	A12345	5
C-2011110606	10-APR-17	A12346	6
C-2011110707	10-APR-18	A12347	7
C-2011110808	10-APR-12	A12348	8
C-2011110909	10-APR-13	A12349	9
C-2011111010	10-APR-14	A12350	10
C-2011111111	10-APR-15	A12351	11
C-2011111212	10-APR-16	A12352	12
C-2011111213	10-APR-17	A12353	13
C-2011111214	10-APR-18	A12354	14
C-2011111215	10-APR-19	A12355	15

# ClaimRelatedPersons

```
SELECT * FROM ClaimRelatedPersons;
```

C-2011110101	A12341	InsuredP50
C-2011110202	A12342	InsuredP51
C-2011110303	A12343	InsuredP52
C-2011110404	A12344	InsuredP53
C-2011110505	A12345	InsuredP54
C-2011110606	A12346	InsuredP55
C-2011110707	A12347	InsuredP56
C-2011110808	A12348	InsuredP57
C-2011110909	A12349	InsuredP58
C-2011111010	A12350	InsuredP59
C-2011111111	A12351	InsuredP60
C-2011111212	A12352	InsuredP61
C-2011111213	A12353	InsuredP62
C-2011111214	A12354	InsuredP63

# Client

```
SELECT cid, cName, age, address, email FROM Client;
```

A12341	ClientName100	50 2200 Water view Pkwy Richardson, Dallas	10000@xyz.com
A12342	ClientName101	51 2200 Water view Pkwy Richardson, Dallas	10001@xyz.com
A12343	ClientName102	52 10002	10002@xyz.com
A12344	ClientName103	53 10003	10003@xyz.com
A12345	ClientName104	54 10004	10004@xyz.com
A12346	ClientName105	55 10005	10005@xyz.com
A12347	ClientName106	56 10006	10006@xyz.com
A12348	ClientName107	57 10007	10007@xyz.com
A12349	ClientName108	58 10008	10008@xyz.com
A12350	ClientName109	59 10009	10009@xyz.com
A12351	ClientName110	60 10010	10010@xyz.com
A12352	ClientName111	61 10011	10011@xyz.com
A12353	ClientName112	62 10012	10012@xyz.com
A12354	ClientName113	63 10013	10013@xyz.com
A12355	ClientName114	64 10014	10014@xyz.com
A12356	ClientName115	65 10015	10015@xyz.com

# Employee

SELECT \* FROM Employee;

201-20-0101	201-204-0101	f50	m50	L50	1000	18 D1	IC50
201-20-0202	201-204-0202	f51	m51	L51	1000	19 D2	IC51
201-20-0303	201-204-0303	f52	m52	L52	1000	20 D3	IC52
201-20-0404	201-204-0404	f53	m53	L53	1000	21 D4	IC53
201-20-0505	201-204-0505	f54	m54	L54	1000	22 D5	IC54
201-20-0606	201-204-0606	f55	m55	L55	1010	23 D6	IC55
201-20-0707	201-204-0707	f56	m56	L56	1010	24 D7	IC56
201-20-0808	201-204-0808	f57	m57	L57	1010	25 D8	IC57
201-20-0909	201-204-0909	f58	m58	L58	1010	26 D9	IC58
201-20-1010	201-204-1010	f59	m59	L59	1010	27 D10	IC59
201-20-1111	201-204-1111	f60	m60	L60	1010	28 D11	IC60
201-20-1212	201-204-1212	f61	m61	L61	1010	29 D12	IC61
201-20-1213	201-204-1213	f62	m62	L62	1010	29 D13	IC62
201-20-1214	201-204-1214	f63	m63	L63	1010	29 D14	IC63
201-20-1215	201-204-1215	f64	m64	L64	1010	29 D15	IC64
201-20-1216	201-204-1216	f65	m65	L65	1020	29 D16	IC65

# Evaluates

```
SELECT claimID, adjSSN FROM Evaluates;
```

claimID	adjSSN
C-2011110101	201-20-0101
C-2011110202	201-20-0202
C-2011110303	201-20-0303
C-2011110404	201-20-0404
C-2011110505	201-20-0505
C-2011110606	201-20-0606
C-2011110707	201-20-0707
C-2011110808	201-20-0808
C-2011110909	201-20-0909
C-2011111010	201-20-1010
C-2011111111	201-20-1111
C-2011111212	201-20-1212

# Generates

```
SELECT claimID, adjSSN, reportNum, reportDate, reportDescription FROM  
Generates;
```

C-2011110101	201-20-0101	2000	10-APR-12	asjkjfahkj
C-2011110202	201-20-0202	2001	10-APR-13	asjkjfahkj
C-2011110303	201-20-0303	2002	10-APR-14	asjkjfahkj
C-2011110404	201-20-0404	2003	10-APR-15	asjkjfahkj
C-2011110505	201-20-0505	2004	10-APR-16	asjkjfahkj
C-2011110606	201-20-0606	2005	10-APR-17	asjkjfahkj
C-2011110707	201-20-0707	2006	10-APR-18	asjkjfahkj
C-2011110808	201-20-0808	2007	10-APR-12	asjkjfahkj
C-2011110909	201-20-0909	2008	10-APR-13	asjkjfahkj
C-2011111010	201-20-1010	2009	10-APR-14	asjkjfahkj
C-2011111111	201-20-1111	2010	10-APR-15	asjkjfahkj
C-2011111212	201-20-1212	2011	10-APR-16	asjkjfahkj

# Gets

```
SELECT cid, qid FROM Gets;
```

1	A12341	Q-99901
2	A12342	Q-99902
3	A12343	Q-99903
4	A12344	Q-99904
5	A12345	Q-99905
6	A12346	Q-99906
7	A12347	Q-99907
8	A12348	Q-99908
9	A12349	Q-99909
0	A12350	Q-99910
1	A12351	Q-99911
2	A12352	Q-99912
3	A12353	Q-99913
4	A12354	Q-99914
5	A12355	Q-99915
6	A12356	Q-99916

# InsuranceCompany

```
SELECT icName, ISP, website, address, email, phone FROM  
InsuranceCompany;
```

IC50	ISP-0101	ISP-0101.com	ISP-0101-addr	ISP-0101@isp.com	201-204-0101
IC51	ISP-0202	ISP-0202.com	ISP-0202-addr	ISP-0202@isp.com	201-204-0202
IC52	ISP-0303	ISP-0303.com	ISP-0303-addr	ISP-0303@isp.com	201-204-0303
IC53	ISP-0404	ISP-0404.com	ISP-0404-addr	ISP-0404@isp.com	201-204-0404
IC54	ISP-0505	ISP-0505.com	ISP-0505-addr	ISP-0505@isp.com	201-204-0505
IC55	ISP-0606	ISP-0606.com	ISP-0606-addr	ISP-0606@isp.com	201-204-0606
IC56	ISP-0707	ISP-0707.com	ISP-0707-addr	ISP-0707@isp.com	201-204-0707
IC57	ISP-0808	ISP-0808.com	ISP-0808-addr	ISP-0808@isp.com	201-204-0808
IC58	ISP-0909	ISP-0909.com	ISP-0909-addr	ISP-0909@isp.com	201-204-0909
IC59	ISP-1010	ISP-1010.com	ISP-1010-addr	ISP-1010@isp.com	201-204-1010
IC60	ISP-1111	ISP-1111.com	ISP-1111-addr	ISP-1111@isp.com	201-204-1111
IC61	ISP-1212	ISP-1212.com	ISP-1212-addr	ISP-1212@isp.com	201-204-1212
IC62	ISP-1213	ISP-1212.com	ISP-1212-addr	ISP-1212@isp.com	201-204-1213
IC63	ISP-1214	ISP-1212.com	ISP-1212-addr	ISP-1212@isp.com	201-204-1214
IC64	ISP-1215	ISP-1212.com	ISP-1212-addr	ISP-1212@isp.com	201-204-1215
IC65	ISP-1216	ISP-1212.com	ISP-1212-addr	ISP-1212@isp.com	201-204-1216

# InsuranceProducts

SELECT \* FROM InsuranceProducts;

COV-50	LIM-50	code-50	auto	IC50
COV-51	LIM-51	code-51	auto	IC51
COV-52	LIM-52	code-52	auto	IC52
COV-53	LIM-53	code-53	auto	IC53
COV-54	LIM-54	code-54	auto	IC54
COV-55	LIM-55	code-55	life	IC55
COV-56	LIM-56	code-56	life	IC56
COV-57	LIM-57	code-57	life	IC57
COV-58	LIM-58	code-58	life	IC58
COV-59	LIM-59	code-59	life	IC59
COV-60	LIM-60	code-60	life	IC60
COV-61	LIM-61	code-61	home	IC61
COV-62	LIM-62	code-62	home	IC62
COV-63	LIM-63	code-63	home	IC63
COV-64	LIM-64	code-64	home	IC64
COV-65	LIM-65	code-65	home	IC65
COV-55	LIM-55	code-55	life	IC50
COV-56	LIM-56	code-56	life	IC51
COV-61	LIM-61	code-61	home	IC50
COV-62	LIM-62	code-62	home	IC51

# InsuredPerson

```
SELECT * FROM InsuredPerson;
```

InsuredP50	A12341
InsuredP51	A12342
InsuredP52	A12343
InsuredP53	A12344
InsuredP54	A12345
InsuredP55	A12346
InsuredP56	A12347
InsuredP57	A12348
InsuredP58	A12349
InsuredP59	A12350
InsuredP60	A12351
InsuredP61	A12352
InsuredP62	A12353
InsuredP63	A12354
InsuredP64	A12355
InsuredP65	A12356
InsuredP100	A12341

# OffersCom

SELECT \* FROM OffersCom;

Agency-6000	COV-50	LIM-50	code-50	IC50
Agency-6001	COV-51	LIM-51	code-51	IC51
Agency-6002	COV-52	LIM-52	code-52	IC52
Agency-6003	COV-53	LIM-53	code-53	IC53
Agency-6004	COV-54	LIM-54	code-54	IC54
Agency-6005	COV-55	LIM-55	code-55	IC55
Agency-6006	COV-56	LIM-56	code-56	IC56
Agency-6007	COV-57	LIM-57	code-57	IC57
Agency-6008	COV-58	LIM-58	code-58	IC58
Agency-6009	COV-59	LIM-59	code-59	IC59
Agency-6010	COV-60	LIM-60	code-60	IC60
Agency-6011	COV-61	LIM-61	code-61	IC61
Agency-6012	COV-62	LIM-62	code-62	IC62
Agency-6013	COV-63	LIM-63	code-63	IC63
Agency-6014	COV-64	LIM-64	code-64	IC64
Agency-6015	COV-65	LIM-65	code-65	IC65

# OfflineQuote

```
SELECT * FROM OfflineQuote;
```

Q-99901	5000
Q-99902	5001
Q-99903	5002
Q-99904	5003
Q-99905	5004
Q-99906	5005
Q-99907	5006
Q-99908	5007
Q-99909	5008
Q-99910	5009
Q-99911	5010
Q-99912	5011
Q-99913	5012



# OnlineQuote

```
SELECT * FROM OnlineQuote;
```

Q-99915	IC50
Q-99916	IC51
Q-99917	IC52
Q-99918	IC53
Q-99919	IC54
Q-99920	IC55
Q-99921	IC56
Q-99922	IC57
Q-99923	IC58
Q-99924	IC59
Q-99925	IC60
Q-99926	IC61

# Payment

```
SELECT * FROM Payment;
```

1	10-APR-01	1	(null)
2	10-APR-02	2	(null)
3	10-APR-03	3	(null)
4	10-APR-04	4	(null)
5	10-APR-05	5	(null)
6	10-APR-06	6	(null)
7	10-APR-07	7	(null)
8	10-APR-08	8	(null)
9	10-APR-09	9	(null)
10	10-APR-10	10	(null)
8	10-APR-10	1	100

# Policy

SELECT \* FROM Policy;

1	10-APR-01	100000	TERMS-10000	A12341	COV-50	LIM-50	code-50	IC50
2	10-APR-02	10000	TERMS-10001	A12342	COV-51	LIM-51	code-51	IC51
3	10-APR-03	10000	TERMS-10002	A12343	COV-52	LIM-52	code-52	IC52
4	10-APR-04	10000	TERMS-10003	A12344	COV-53	LIM-53	code-53	IC53
5	10-APR-05	10000	TERMS-10004	A12345	COV-54	LIM-54	code-54	IC54
6	10-APR-06	10000	TERMS-10005	A12346	COV-55	LIM-55	code-55	IC55
7	10-APR-07	10000	TERMS-10006	A12347	COV-56	LIM-56	code-56	IC56
8	10-APR-08	10000	TERMS-10007	A12348	COV-57	LIM-57	code-57	IC57
9	10-APR-09	10000	TERMS-10008	A12349	COV-58	LIM-58	code-58	IC58
10	10-APR-10	10000	TERMS-10009	A12350	COV-59	LIM-59	code-59	IC59
11	10-APR-11	10000	TERMS-10010	A12351	COV-60	LIM-60	code-60	IC60
12	10-APR-12	10000	TERMS-10011	A12352	COV-61	LIM-61	code-61	IC61
13	10-APR-13	10000	TERMS-10012	A12353	COV-62	LIM-62	code-62	IC62
14	10-APR-14	10000	TERMS-10013	A12354	COV-63	LIM-63	code-63	IC63
15	10-APR-15	10000	TERMS-10014	A12355	COV-64	LIM-64	code-64	IC64
16	10-APR-16	10000	TERMS-10015	A12356	COV-65	LIM-65	code-65	IC65

# PolicyHolder

```
SELECT * FROM PolicyHolder;
```

A12341
A12342
A12343
A12344
A12345
A12346
A12347
A12348
A12349
A12350
A12351
A12352
A12353
A12354
A12355
A12356

# Quote

SELECT \* FROM QUOTE;

Q-99901	10-APR-12	5	10000
Q-99902	10-APR-13	6	10001
Q-99903	10-APR-14	7	10002
Q-99904	10-APR-15	8	10003
Q-99905	10-APR-16	9	10004
Q-99906	10-APR-17	10	10005
Q-99907	10-APR-18	11	10006
Q-99908	10-APR-12	12	10007
Q-99909	10-APR-13	13	10008
Q-99910	10-APR-14	14	10009
Q-99911	10-APR-15	15	10010
Q-99912	10-APR-16	16	10011
Q-99913	10-APR-17	17	10012
Q-99914	10-APR-18	18	10013
Q-99915	10-APR-19	19	10014
Q-99916	10-APR-20	20	10015
Q-99917	10-APR-21	21	10016
Q-99918	10-APR-22	22	10017
Q-99919	10-APR-23	23	10018
Q-99920	10-APR-24	24	10019
Q-99921	10-APR-25	25	10020
Q-99922	10-APR-26	26	10021
Q-99923	10-APR-27	27	10022
Q-99924	10-APR-28	28	10023
Q-99925	10-APR-29	29	10024

# Refund

SELECT \* FROM Refund;

10-APR-12	10000	10-APR-12	asjkjfahkj	C-2011110101	2000	201-20-0101
10-APR-13	10000	10-APR-13	asjkjfahkj	C-2011110202	2001	201-20-0202
10-APR-14	10000	10-APR-14	asjkjfahkj	C-2011110303	2002	201-20-0303
10-APR-15	10000	10-APR-15	asjkjfahkj	C-2011110404	2003	201-20-0404
10-APR-16	10000	10-APR-16	asjkjfahkj	C-2011110505	2004	201-20-0505
10-APR-17	10000	10-APR-17	asjkjfahkj	C-2011110606	2005	201-20-0606
10-APR-18	10000	10-APR-18	asjkjfahkj	C-2011110707	2006	201-20-0707
10-APR-12	10000	10-APR-12	asjkjfahkj	C-2011110808	2007	201-20-0808
10-APR-13	10000	10-APR-13	asjkjfahkj	C-2011110909	2008	201-20-0909
10-APR-14	10000	10-APR-14	asjkjfahkj	C-2011111010	2009	201-20-1010
10-APR-15	10000	10-APR-15	asjkjfahkj	C-2011111111	2010	201-20-1111
10-APR-16	10000	10-APR-16	asjkjfahkj	C-2011111212	2011	201-20-1212
10-APR-10	10000	10-APR-13	asjkjfahkj	C-2011110202	2001	201-20-0202
10-APR-10	10000	10-APR-12	asjkjfahkj	C-2011110101	2000	201-20-0101
15-APR-10	10000	10-APR-13	asjkjfahkj	C-2011110202	2001	201-20-0202
15-APR-10	10000	10-APR-12	asjkjfahkj	C-2011110101	2000	201-20-0101

# RefundRelatedTo

```
SELECT * FROM RefundRelatedTo;
```

C-2011110101 A12341	InsuredP50	10-APR-12	10-APR-12	asjkjfahkj	2000
C-2011110202 A12342	InsuredP51	10-APR-13	10-APR-13	asjkjfahkj	2001
C-2011110303 A12343	InsuredP52	10-APR-14	10-APR-14	asjkjfahkj	2002
C-2011110404 A12344	InsuredP53	10-APR-15	10-APR-15	asjkjfahkj	2003
C-2011110505 A12345	InsuredP54	10-APR-16	10-APR-16	asjkjfahkj	2004
C-2011110606 A12346	InsuredP55	10-APR-17	10-APR-17	asjkjfahkj	2005
C-2011110707 A12347	InsuredP56	10-APR-18	10-APR-18	asjkjfahkj	2006
C-2011110808 A12348	InsuredP57	10-APR-12	10-APR-12	asjkjfahkj	2007
C-2011110909 A12349	InsuredP58	10-APR-13	10-APR-13	asjkjfahkj	2008
C-2011111010 A12350	InsuredP59	10-APR-14	10-APR-14	asjkjfahkj	2009
C-2011111111 A12351	InsuredP60	10-APR-15	10-APR-15	asjkjfahkj	2010
C-2011111212 A12352	InsuredP61	10-APR-16	10-APR-16	asjkjfahkj	2011

# Report

```
SELECT * FROM REPORT;
```

2000	10-APR-12	asjkjfahkj	C-2011110101
2001	10-APR-13	asjkjfahkj	C-2011110202
2002	10-APR-14	asjkjfahkj	C-2011110303
2003	10-APR-15	asjkjfahkj	C-2011110404
2004	10-APR-16	asjkjfahkj	C-2011110505
2005	10-APR-17	asjkjfahkj	C-2011110606
2006	10-APR-18	asjkjfahkj	C-2011110707
2007	10-APR-12	asjkjfahkj	C-2011110808
2008	10-APR-13	asjkjfahkj	C-2011110909
2009	10-APR-14	asjkjfahkj	C-2011111010
2010	10-APR-15	asjkjfahkj	C-2011111111
2011	10-APR-16	asjkjfahkj	C-2011111212
2048	11-APR-16	asjkjfahkj	C-2011111212

# Sells

```
SELECT * FROM Sells;
```

Agency-6000	COV-50	LIM-50	code-50	IC50
Agency-6001	COV-51	LIM-51	code-51	IC51
Agency-6002	COV-52	LIM-52	code-52	IC52
Agency-6003	COV-53	LIM-53	code-53	IC53
Agency-6004	COV-54	LIM-54	code-54	IC54
Agency-6005	COV-55	LIM-55	code-55	IC55
Agency-6006	COV-56	LIM-56	code-56	IC56
Agency-6007	COV-57	LIM-57	code-57	IC57
Agency-6008	COV-58	LIM-58	code-58	IC58
Agency-6009	COV-59	LIM-59	code-59	IC59
Agency-6010	COV-60	LIM-60	code-60	IC60
Agency-6011	COV-61	LIM-61	code-61	IC61
Agency-6012	COV-62	LIM-62	code-62	IC62
Agency-6013	COV-63	LIM-63	code-63	IC63
Agency-6014	COV-64	LIM-64	code-64	IC64
Agency-6015	COV-65	LIM-65	code-65	IC65

# Store

SELECT \* FROM Store;

6000 s50	1 201-204-0101	1 Agency-6000
6001 s51	2 201-204-0202	2 Agency-6001
6002 s52	3 201-204-0303	3 Agency-6002
6003 s53	4 201-204-0404	4 Agency-6003
6004 s54	5 201-204-0505	5 Agency-6004
6005 s55	1 201-204-0606	1 Agency-6005
6006 s56	2 201-204-0707	2 Agency-6006
6007 s57	3 201-204-0808	3 Agency-6007
6008 s58	4 201-204-0909	4 Agency-6008
6009 s59	5 201-204-1010	5 Agency-6009
6010 s60	1 201-204-1111	1 Agency-6010
6011 s61	2 201-204-1212	2 Agency-6011
6012 s62	3 201-204-1213	3 Agency-6012
6013 s63	4 201-204-1214	4 Agency-6013
6014 s64	5 201-204-1215	5 Agency-6014
6015 s65	1 201-204-1216	1 Agency-6015

# StoreManager

SELECT \* FROM StoreManager;

Agency-6000	6000	5000
Agency-6001	6001	5001
Agency-6002	6002	5002
Agency-6003	6003	5003
Agency-6004	6004	5004
Agency-6005	6005	5005
Agency-6006	6006	5006
Agency-6007	6007	5007
Agency-6008	6008	5008
Agency-6009	6009	5009
Agency-6010	6010	5010
Agency-6011	6011	5011
Agency-6012	6012	5012
Agency-6013	6013	5013
Agency-6014	6014	5014
Agency-6015	6015	5015

# StoreZip

```
SELECT * FROM StoreZip;
```

1	city50	state-50	1
2	city51	state-51	2
3	city52	state-52	3
4	city53	state-53	4
5	city54	state-54	5
6	city55	state-55	6
7	city56	state-56	7
8	city57	state-57	8
9	city58	state-58	9
10	city59	state-59	10
11	city60	state-60	11
12	city61	state-61	12
13	city62	state-62	13
14	city63	state-63	14
15	city64	state-64	15
16	city65	state-65	16

# WorksFor

SELECT \* FROM WorksFor;

Agency-6000	IC50
Agency-6001	IC51
Agency-6002	IC52
Agency-6003	IC53
Agency-6004	IC54
Agency-6005	IC55
Agency-6006	IC56
Agency-6007	IC57
Agency-6008	IC58
Agency-6009	IC59
Agency-6010	IC60
Agency-6011	IC61
Agency-6012	IC62
Agency-6013	IC63
Agency-6014	IC64
Agency-6015	IC65

# ClientPhone

SELECT cid, phone FROM ClientPhone;

A12341	987-654-3210
A12342	987-654-3211
A12343	987-654-3212
A12344	987-654-3213
A12345	987-654-3214
A12346	987-654-3215
A12347	987-654-3216
A12348	987-654-3217
A12349	987-654-3218
A12350	987-654-3219
A12351	987-654-3220
A12352	987-654-3221
A12353	987-654-3222
A12354	987-654-3223
A12355	987-654-3224
A12356	987-654-3225

# Views

```
Create or replace view QuoteProducts as  
select IP.coverage, IP.limits, IP.code, IP.insuranceType, IP.icName  
from InsuranceProducts IP  
inner join sells S  
    on (IP.coverage = S.coverage  
        and IP.limits = S.limits  
        and IP.code = S.code  
        and IP.icName = S.icName);  
  
-- All products relative to their quotes will be displayed. --
```

# Views

# Views

```
CREATE OR REPLACE Valid_Refunds as
SELECT p.policyNum,
       pDate,
       finalPermium,
       policyTerms,
       p.phClientID,
       coverage,
       limits,
       code,
       icName
FROM Refund r
      INNER JOIN Claim c
          ON c.claimID = r.claimID
              INNER JOIN policy p on p.policyNum = c.policyNum
WHERE
      EXTRACT(year FROM refundDate) = 2011;
```

---

--Valid\_Refunds: This view is designed to return all policies that are relative to any particular refunds issued to clients in the year of 2011.

# Views

# Stored Procedures

# Stored procedure (1)

```
create or replace function Client_in_Policy(cName text, resultset refcursor) returns refcursor
as
$$
declare
    --
begin
    open resultset for select policyNum
        from policy_holder
        where portName = targetPort;
    return resultset;
end;
$$ language plpgsql
```

# Reports

# Reports

Will return the IDs of all clients who live in the city, Dallas.

```
Select cid from Client where upper(address) like upper('%Dallas%');
```

Returns the Tax ID of all the agencies who sell every single product in stock.

```
Select a.aName, tid, count(insuranceType)
From agency a, sells w, insuranceProducts p
Where a.aName = w.aName
And p.icName = w.icName
group by a.aName,tid
having count(insuranceType)=3;
```

# Reports

This query will return information for policy holders that have filed a claim

```
select cl.cName, cl.address, c2.phone  
from Client cl, clientPhone c2  
where cl.cid = c2.cid and  
exists (select 1  
      from claimRelatedPersons c1 inner join claimRelatedPersons c2  
        on c1.insuredPersonName = c2.insuredPersonName  
      where c1.phcID <> c2.phcID and cl.cid = c1.phcID);
```

This query will return employees(distinct) with the largest salary.

```
select distinct SSN from employee EP,  
(select max(salary) as MaxSalary, icName from employee  
group by icName) m  
where EP.salary = m.MaxSalary  
and ep.icName = m.icName;
```

This query will return clients who have a discounted rate higher than that of 5%.

```
select count(cid)  
from  
discount d , gets g, policy p  
where  
p.phClientID = g.cid  
and d.qid=g.qid  
and rate > 5;
```

# Security

# Security(1)

```
CREATE ROLE Admin;
```

```
GRANT SELECT, INSERT, UPDATE ON Policy  
TO Admin;
```

Admins can change the policy details only.

## Security(2)

```
CREATE ROLE Client;  
GRANT SELECT ON Policy  
TO Client;
```

Clients can only view their policies, not change or delete them.

# Conclusion

# Implementation Notes / Conclusion

We have used specialization for Employee, Client and Quote as below.

We adopted option which works for any specialization (total or partial, disjoint or overlapping).

Since all employees can be divided into three parts: Accountant, Actuary, and Adjuster, we have made them as subclasses of Employee and have used the overlapping constraint as they may play more than one role at the same time.

We created separate relations for Accountant, Actuary, and Adjuster.

Since some clients may accept the quote and then become Policy holder so we have made Policy Holder as a sub class of the Client and have used subset notation to show this in the ER diagram.

# Future Enhancements

Some possible future enhancements of this database are...

Clients who have more than 3 insurance are considered as the Priority customers.

Client can not have more than one claim for the same ailment.

Employees can not work as adjuster/accountant claims which belong to themselves or their dependent/s.

Employee's manager's approval is needed in case belongs to any of his/her employee or their dependent/s to avoid conflict of interest.

Policy can not have more than 10 payments.

# Conclusion

We have summarized all the necessary descriptions and solutions for Insurance management system database. This includes the process and result of the ER diagram, relational schemas in third normal form, SQL statements to create database, create view and solve corresponding queries. We have also tested each of the queries in a database environment to check for correctness. We also explained why we use superclass/subclass relationships to build the relational schema.