INDEX

SPECIFICATION

CONTEXT
Small database which reflects the ownership of cars and insurance-packages per customer, with some side-information about insurance company, car and customer.

ENTITIES
Car: car_id PK, brand, model
Customer: customer_id PK, first_name, last_name, zip_code
Insurance Company: company_id PK, company_name, company_street, zip_code
Owned Cars: owned_car_id PK, mileage, car_colour_id, package_id, customer;id, car_index_id
Colour: colour_id PK, colour
Insurance Package: package_id PK, package_name, package_cost, company_id
City: city_zip PK, city_name

RELATIONSHIPS

1:N
LocatedCustomerinCity, city to customer 1:N, Customer has to have a city
LocatedCompanyinCity, city to insurance_company 1:N, insurance_company has to have a city
HasCarOwner, customer to owned_cars 1:N, owned_cars has to have a customer
HasColour, car_colour to owned_cars 1:N, owned_cars has to have a colour
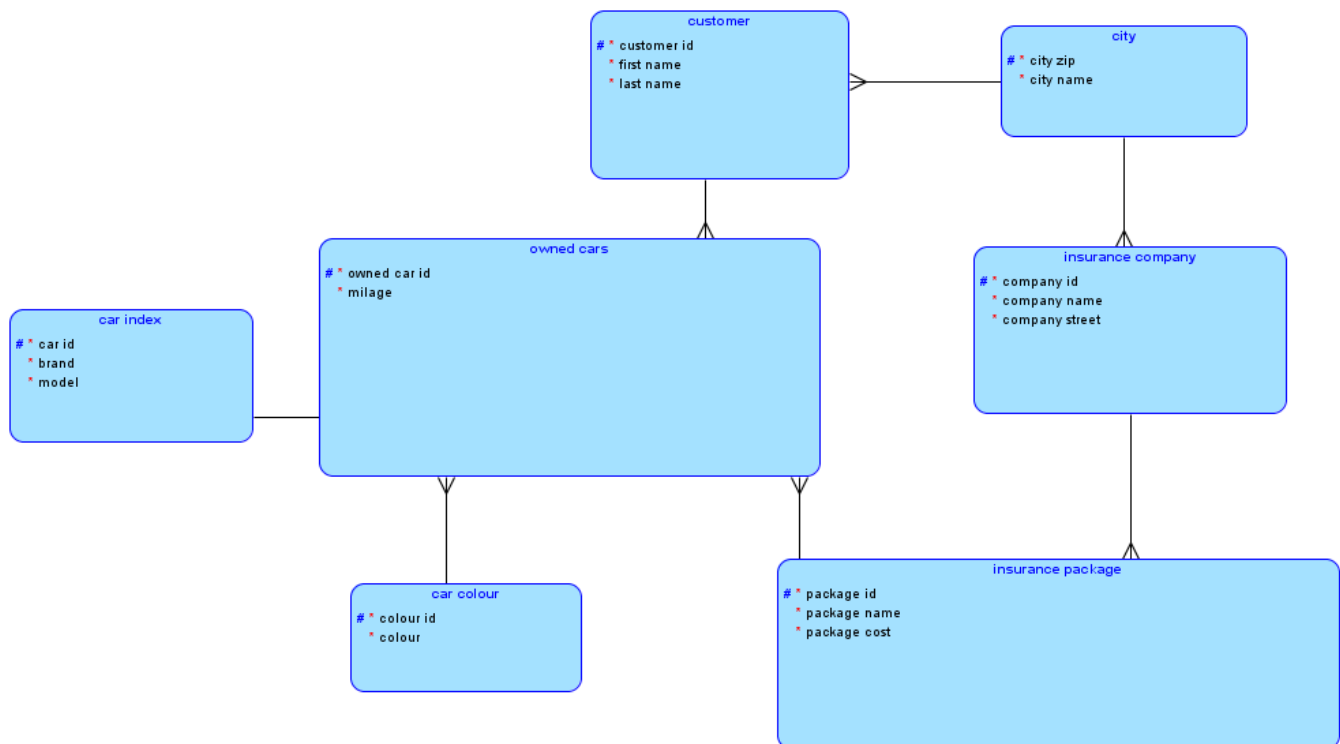IsCar, car_index to owned_cars 1:N, owned_cars has to have a car_index
HasPackage, insurance_package to owned_cars 1:N, owned_cars has to have a insurance_package
FromInsuranceCompany, insurance_company to insurance_package 1:N, insurance_package has to have a insurance_company
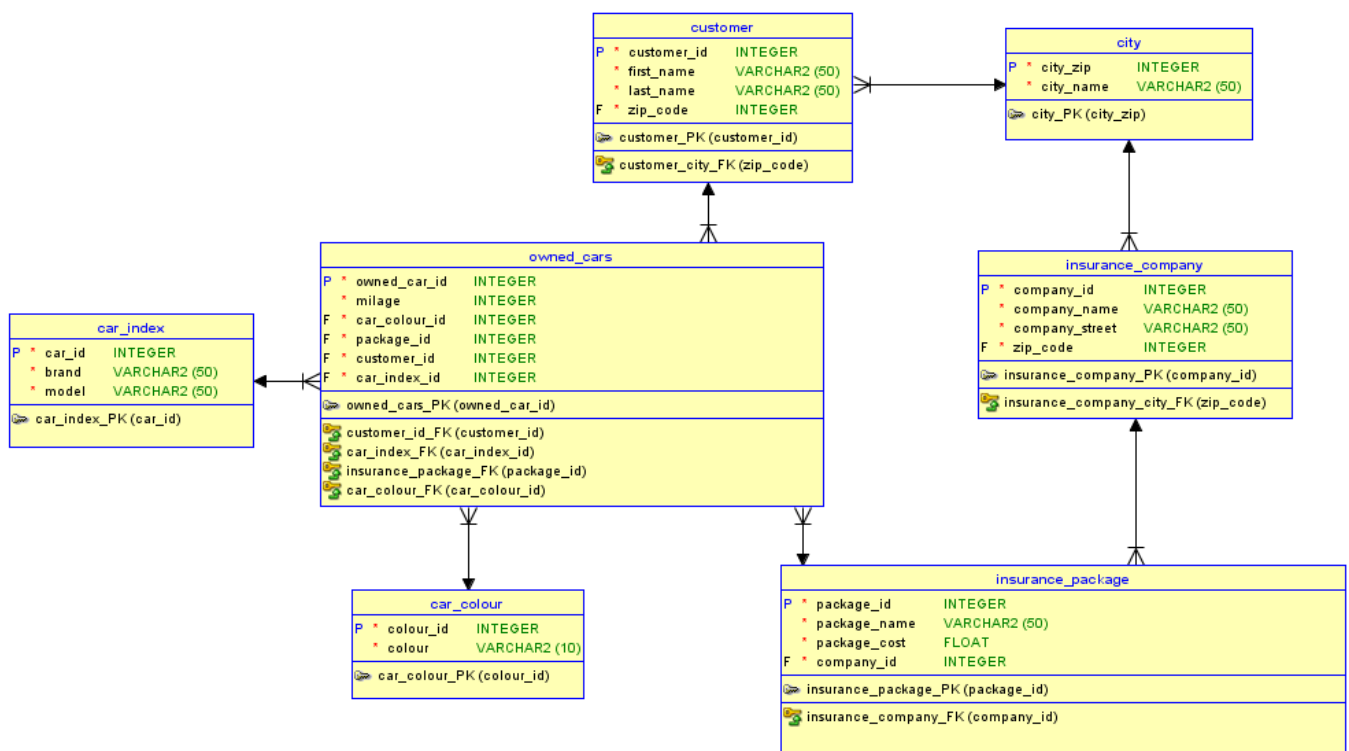
DOMAINS

Car_index	
car_id	Integers: 1000-9999
Brand	String (varchar 35)
model	String (varchar 35)
Customer	
Customer_id	Integer: 0-999999
First_name	String (varchar 50)
Last_name	String (varchar 50)
Zip_code	Integer: 1000-9999
City	
City_zip	Integer: 1000-9999
City_name	String (varchar 50)
Insurance_company	
Company_id	Integer: 0-9999
Company_name	String (varchar 50)
Company_street	String (varchar 50)
Zip_code	Integer: 1000-9999
Insurance_package	
Package_id	Integer: 0-9999
Package_name	String (varchar 50)
Package_cost	Float: max. 99999.99
Company_id	Integer: 0-9999
Car_colour	
Colour_id	Integer: 0-999
colour	String (varchar 10)
Owned_car	
Owned_car_id	Integers: 0-9999
Mileage	Integer: 0-9999999
Car_colour_id	Integer: 0-999
Package_id	Integer: 0-9999
Customer_id	Integer: 0-999999
Car_index_id	Integers: 1000-9999

LOGICAL DESIGN

customer
- # * customer id
- * first name
- * last name

city
- # * city zip
- * city name

owned cars
- # * owned car id
- * milage

car index
- # * car id
- * brand
- * model

insurance company
- # * company id
- * company name
- * company street

car colour
- # * colour id
- * colour

insurance package
- # * package id
- * package name
- * package cost

RELATIONAL DESIGN

customer

P	* customer_id	INTEGER
	* first_name	VARCHAR2 (50)
	* last_name	VARCHAR2 (50)
F	* zip_code	INTEGER

customer_PK (customer_id)
customer_city_FK (zip_code)

city

P	* city_zip	INTEGER
	* city_name	VARCHAR2 (50)

city_PK (city_zip)

owned_cars

P	* owned_car_id	INTEGER
	* milage	INTEGER
F	* car_colour_id	INTEGER
F	* package_id	INTEGER
F	* customer_id	INTEGER
F	* car_index_id	INTEGER

owned_cars_PK (owned_car_id)
customer_id_FK (customer_id)
car_index_FK (car_index_id)
insurance_package_FK (package_id)
car_colour_FK (car_colour_id)

insurance_company

P	* company_id	INTEGER
	* company_name	VARCHAR2 (50)
	* company_street	VARCHAR2 (50)
F	* zip_code	INTEGER

insurance_company_PK (company_id)
insurance_company_city_FK (zip_code)

car_index

P	* car_id	INTEGER
	* brand	VARCHAR2 (50)
	* model	VARCHAR2 (50)

car_index_PK (car_id)

car_colour

P	* colour_id	INTEGER
	* colour	VARCHAR2 (10)

car_colour_PK (colour_id)

insurance_package

P	* package_id	INTEGER
	* package_name	VARCHAR2 (50)
	* package_cost	FLOAT
F	* company_id	INTEGER

insurance_package_PK (package_id)
insurance_company_FK (company_id)

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```
-- Generated by Oracle SQL Developer Data Modeler 21.4.2.059.0838
--   at:        2022-05-30 16:07:14 BST
--   site:      Oracle Database 21c
--   type:      Oracle Database 21c



-- predefined type, no DDL - MDSYS.SDO_GEOMETRY

-- predefined type, no DDL - XMLTYPE

CREATE TABLE car_colour (
    colour_id INTEGER NOT NULL,
    colour    VARCHAR2(10) NOT NULL
);

ALTER TABLE car_colour ADD CONSTRAINT car_colour_pk PRIMARY KEY ( colour_id );

CREATE TABLE car_index (
    car_id INTEGER NOT NULL,
    brand  VARCHAR2(50) NOT NULL,
    model  VARCHAR2(50) NOT NULL
);

ALTER TABLE car_index ADD CONSTRAINT car_index_pk PRIMARY KEY ( car_id );

CREATE TABLE city (
    city_zip  INTEGER NOT NULL,
    city_name VARCHAR2(50) NOT NULL
);

ALTER TABLE city ADD CONSTRAINT city_pk PRIMARY KEY ( city_zip );

CREATE TABLE customer (
    customer_id INTEGER NOT NULL,
    first_name  VARCHAR2(50) NOT NULL,
    last_name   VARCHAR2(50) NOT NULL,
    zip_code    INTEGER NOT NULL
);

ALTER TABLE customer ADD CONSTRAINT customer_pk PRIMARY KEY ( customer_id );

CREATE TABLE insurance_company (
    company_id     INTEGER NOT NULL,
    company_name   VARCHAR2(50) NOT NULL,
    company_street VARCHAR2(50) NOT NULL,
    zip_code       INTEGER NOT NULL
);

ALTER TABLE insurance_company ADD CONSTRAINT insurance_company_pk PRIMARY KEY (
company_id );

CREATE TABLE insurance_package (
    package_id   INTEGER NOT NULL,
```

```
    package_name VARCHAR2(50) NOT NULL,
    package_cost FLOAT NOT NULL,
    company_id   INTEGER NOT NULL
);

ALTER TABLE insurance_package ADD CONSTRAINT insurance_package_pk PRIMARY KEY (
package_id );

CREATE TABLE owned_cars (
    owned_car_id  INTEGER NOT NULL,
    milage        INTEGER NOT NULL,
    car_colour_id INTEGER NOT NULL,
    package_id    INTEGER NOT NULL,
    customer_id   INTEGER NOT NULL,
    car_index_id  INTEGER NOT NULL
);

ALTER TABLE owned_cars ADD CONSTRAINT owned_cars_pk PRIMARY KEY ( owned_car_id
);

ALTER TABLE owned_cars
    ADD CONSTRAINT car_colour_fk FOREIGN KEY ( car_colour_id )
        REFERENCES car_colour ( colour_id );

ALTER TABLE owned_cars
    ADD CONSTRAINT car_index_fk FOREIGN KEY ( car_index_id )
        REFERENCES car_index ( car_id );

ALTER TABLE customer
    ADD CONSTRAINT customer_city_fk FOREIGN KEY ( zip_code )
        REFERENCES city ( city_zip );

ALTER TABLE owned_cars
    ADD CONSTRAINT customer_id_fk FOREIGN KEY ( customer_id )
        REFERENCES customer ( customer_id );

ALTER TABLE insurance_company
    ADD CONSTRAINT insurance_company_city_fk FOREIGN KEY ( zip_code )
        REFERENCES city ( city_zip );

ALTER TABLE insurance_package
    ADD CONSTRAINT insurance_company_fk FOREIGN KEY ( company_id )
        REFERENCES insurance_company ( company_id );

ALTER TABLE owned_cars
    ADD CONSTRAINT insurance_package_fk FOREIGN KEY ( package_id )
        REFERENCES insurance_package ( package_id );




-- Oracle SQL Developer Data Modeler Summary Report:
--
-- CREATE TABLE                          7
-- CREATE INDEX                          0
```

```
-- ALTER TABLE                              14
-- CREATE VIEW                               0
-- ALTER VIEW                                0
-- CREATE PACKAGE                            0
-- CREATE PACKAGE BODY                       0
-- CREATE PROCEDURE                          0
-- CREATE FUNCTION                           0
-- CREATE TRIGGER                            0
-- ALTER TRIGGER                             0
-- CREATE COLLECTION TYPE                    0
-- CREATE STRUCTURED TYPE                    0
-- CREATE STRUCTURED TYPE BODY               0
-- CREATE CLUSTER                            0
-- CREATE CONTEXT                            0
-- CREATE DATABASE                           0
-- CREATE DIMENSION                          0
-- CREATE DIRECTORY                          0
-- CREATE DISK GROUP                         0
-- CREATE ROLE                               0
-- CREATE ROLLBACK SEGMENT                   0
-- CREATE SEQUENCE                           0
-- CREATE MATERIALIZED VIEW                  0
-- CREATE MATERIALIZED VIEW LOG              0
-- CREATE SYNONYM                            0
-- CREATE TABLESPACE                         0
-- CREATE USER                               0
--
-- DROP TABLESPACE                           0
-- DROP DATABASE                             0
--
-- REDACTION POLICY                          0
--
-- ORDS DROP SCHEMA                          0
-- ORDS ENABLE SCHEMA                        0
-- ORDS ENABLE OBJECT                        0
--
-- ERRORS                                    0
-- WARNINGS                                  0
```

DATA

	COLOUR_ID	COLOUR
1	0	Unknown
2	1	Black
3	2	Blue
4	3	Red
5	4	Green

	COMPANY_ID	COMPANY_NAME	COMPANY_STREET	ZIP_CODE
1	1	How Bizarre Versicherungen	Smallland 34	4000
2	2	Ooops Insurance	Next Corner Left 46	4000
3	3	I did it again Insurance Inc.	Wordstreet 11	2000
4	4	Crash test dummies Inc.	Death Star 1	3000
5	5	Would I lie to you	Spotify 111	9000

	CUSTOMER_ID	FIRST_NAME	LAST_NAME	ZIP_CODE
1	1	Michael	Knight	4000
2	2	The	Batman	4000
3	3	Till	Schweiger	1000
4	4	Stephan	King	401
5	5	Queen	Elisabeth	5000
6	6	Ashanti	Ashley	7000
7	7	Shelton	Hubert	6000
8	8	Tom	Piper	8000
9	9	Jill	Morission	5000
10	10	Michael	Ford	2000

	CAR_ID	BRAND	MODEL
1	1000	Tesla	Model Y
2	2000	Ford	Focus
3	4000	DeLorean	DMC-12
4	5000	Batmobile	Tumbler
5	6000	Opel	Manta
6	7000	GMC	Vandura
7	8000	BMW	i3
8	1001	Tesla	Model 3
9	9000	Cadilac	ETCO-1
10	0	Unknown	Unknown

	PACKAGE_ID	PACKAGE_NAME	PACKAGE_COST	COMPANY_ID
1	20	Ooops- Nothing Included	100	2
2	21	Ooops- only wheels Included	200	2
3	22	Ooops- we will pay all	300	2
4	23	Ooops- we will pay all and more	1000	2
5	31	Basic	99	3
6	32	Medium	199	3
7	34	Medium Rare	299	3
8	41	one	101	4
9	43	two	202	4
10	42	three	202	4
11	666	you get nothing	0	1

	CITY_ZIP	CITY_NAME
1	4000	Basel
2	1000	Brussel
3	2000	Nevada
4	3000	Gotham City
5	5000	Dooville
6	6000	New Town
7	7000	Qoqassic World
8	8000	Bern
9	9000	Zurich
10	401	HTTP

	OWNED_CAR_ID	MILAGE	CAR_COLOUR_ID	PACKAGE_ID	CUSTOMER_ID	CAR_INDEX_ID
1	1	1111	1	22	9	1000
2	2	10	2	21	8	6000
3	4	454545	4	41	6	7000
4	5	4523	4	32	5	5000
5	7	23654	2	41	4	4000
6	8	1452	3	666	3	2000
7	10	1524	2	41	1	1001

JOIN

```sql
select *
from owned_cars oc
full outer join car_colour cc on oc.car_colour_id = cc.colour_id
full outer join car_index ci on oc.car_index_id = ci.car_id
full outer join customer c on oc.customer_id = c.customer_id
full outer join city cy on c.zip_code = cy.city_zip
full outer join insurance_package ip on oc.package_id = ip.package_id
full outer join insurance_company ic on ip.company_id = ic.company_id;
```

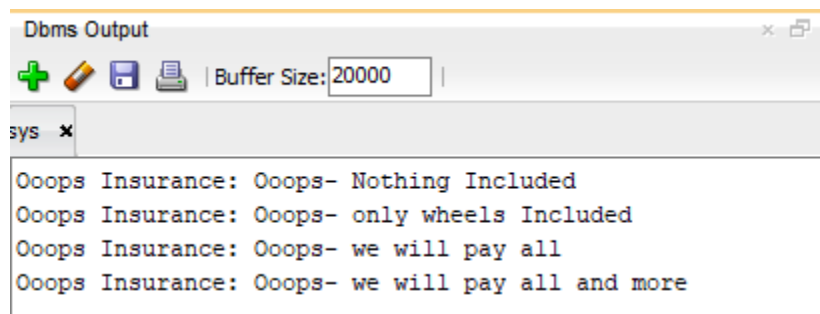| OWNED_CAR_ID	MILAGE	CAR_COLOUR_ID	PACKAGE_ID	CUSTOMER_ID	CAR_INDEX_ID	COLOUR_ID	COLOUR	CAR_ID	BRAND	MODEL	CUSTOMER_ID_1	FIRST_NAME	LAST_NAME
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
2	10	2	21	8	6000	2	Blue	6000	Opel	Manta	8	Tom	Piper
1	1111	1	22	9	1000	1	Black	1000	Tesla	Model Y	9	Jill	Morissi...
6	47896	0	22	4	5000	0	Unknown	5000	Batmobile	Tumbler	4	Stephan	King
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
3	256000	3	31	7	6000	3	Red	6000	Opel	Manta	7	Shelton	Hubert
5	4523	4	32	5	5000	4	Green	5000	Batmobile	Tumbler	5	Queen	Elisabe...
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
10	1524	2	41	1	1001	2	Blue	1001	Tesla	Model 3	1	Michael	Knight
4	454545	4	41	6	7000	4	Green	7000	GMC	Vandura	6	Ashanti	Ashley
7	23654	2	41	4	4000	2	Blue	4000	DeLorean	DMC-12	4	Stephan	King
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
9	2541	2	42	2	1000	2	Blue	1000	Tesla	Model Y	2	The	Batman
8	1452	3	666	3	2000	3	Red	2000	Ford	Focus	3	Till	Schweig...
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	10	Michael	Ford
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	8000	BMW	i3	(null)	(null)	(null)
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	9000	Cadilac	ETCO-1	(null)	(null)	(null)
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	0	Unknown	Unknown	(null)	(null)	(null)
(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)

T_NAME	LAST_NAME	ZIP_CODE	CITY_ZIP	CITY_NAME	PACKAGE_ID_1	PACKAGE_NAME	PACKAGE_COST	COMPANY_ID	COMPANY_ID_1	COMPANY_NAME	COMPANY_STREET	ZIP_CODE_1
)	(null)	(null)	(null)	(null)	20	Ooops- Nothing Included	100	2	2	Ooops Insurance	Next Corner Left 46	4000
	Piper	8000	8000	Bern	21	Ooops- only wheels Included	200	2	2	Ooops Insurance	Next Corner Left 46	4000
	Morission	5000	5000	Dooville	22	Ooops- we will pay all	300	2	2	Ooops Insurance	Next Corner Left 46	4000
an	King	401	401	HTTP	22	Ooops- we will pay all	300	2	2	Ooops Insurance	Next Corner Left 46	4000
)	(null)	(null)	(null)	(null)	23	Ooops- we will pay all and more	1000	2	2	Ooops Insurance	Next Corner Left 46	4000
on	Hubert	6000	6000	New Town	31	Basic	99	3	3	I did it again Insurance Inc.	Wordstreet 11	2000
	Elisabeth	5000	5000	Dooville	32	Medium	199	3	3	I did it again Insurance Inc.	Wordstreet 11	2000
)	(null)	(null)	(null)	(null)	34	Medium Rare	299	3	3	I did it again Insurance Inc.	Wordstreet 11	2000
el	Knight	4000	4000	Basel	41	one	101	4	4	Crash test dummies Inc.	Death Star 1	3000
ti	Ashley	7000	7000	Qoqassic World	41	one	101	4	4	Crash test dummies Inc.	Death Star 1	3000
an	King	401	401	HTTP	41	one	101	4	4	Crash test dummies Inc.	Death Star 1	3000
)	(null)	(null)	(null)	(null)	43	two	202	4	4	Crash test dummies Inc.	Death Star 1	3000
	Batman	4000	4000	Basel	42	three	202	4	4	Crash test dummies Inc.	Death Star 1	3000
	Schweiger	1000	1000	Brussel	666	you get nothing	0	1	1	How Bizarre Versicherungen	Smallland 34	4000
el	Ford	2000	2000	Nevada	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	3000	Gotham City	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	9000	Zurich	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	5	Would I lie to you	Spotify 111	9000

STORED PROCEDURE

```
----Stored Procedure
--Prints company and available packages when the company id is provided
CREATE OR REPLACE PROCEDURE availablePackages(p_company_id NUMBER)
IS
r_package varchar(50);
r_company_name varchar(50);
BEGIN
SELECT company_name INTO r_company_name FROM insurance_company WHERE company_id = p_company_id;
for c in (SELECT package_name INTO r_package FROM insurance_package WHERE company_id = p_company_id)
loop
r_package:=c.package_name;
DBMS_OUTPUT.PUT_LINE(r_company_name || ': ' || r_package);
end loop;
END;
/

EXEC availablePackages(2)
```

```
Dbms Output                                    ×  ⧉
➕  ✏  💾  🖨  | Buffer Size: 20000   |

sys  ✕

Ooops Insurance: Ooops- Nothing Included
Ooops Insurance: Ooops- only wheels Included
Ooops Insurance: Ooops- we will pay all
Ooops Insurance: Ooops- we will pay all and more
```