

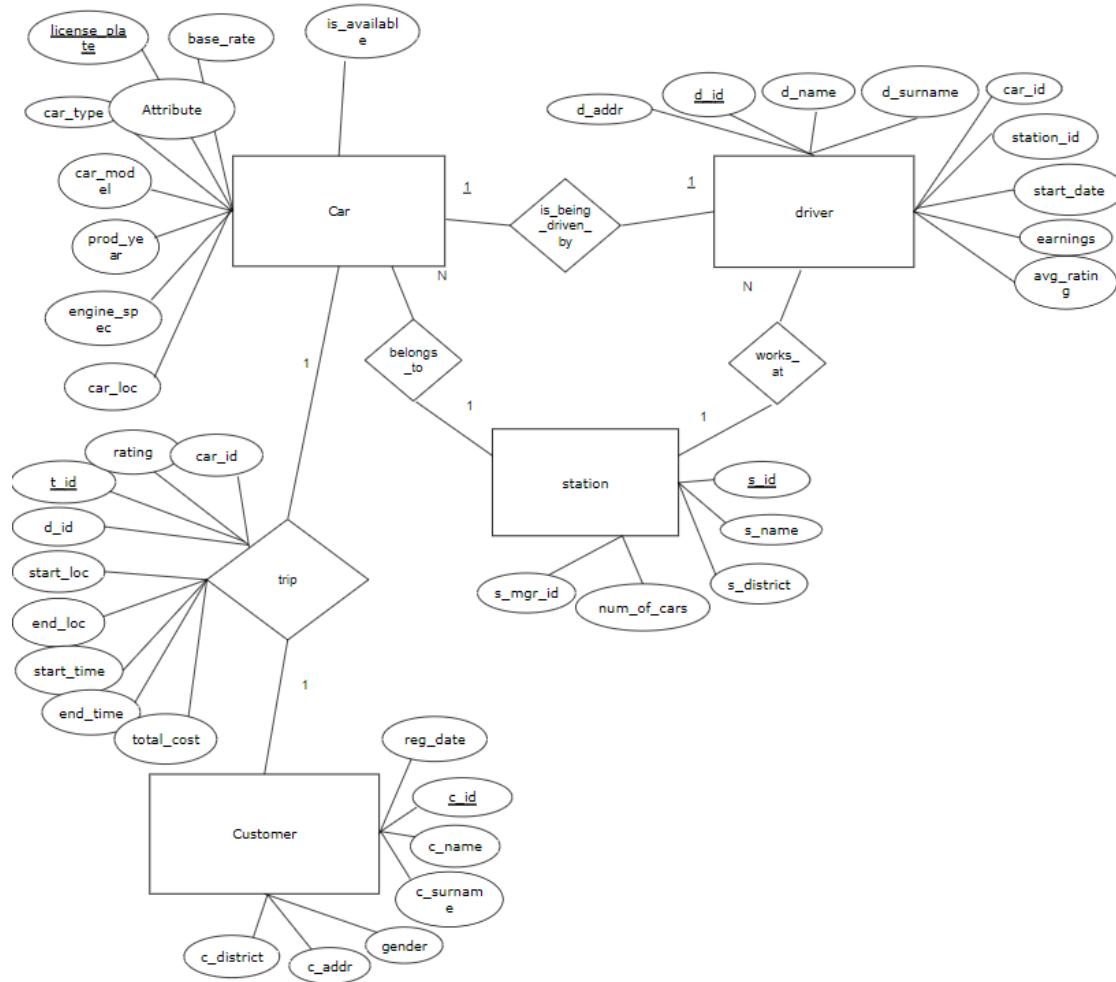
Veritabanı Yönetimi Proje Raporu

Grup Üyeleri:

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Proje Açıklaması: Bizim projemiz kapsamlı bir Taksi Durağı Bilgi Sistemi gerçekleştirmek üzerine. Proje gerçekleştirilirken veritabanı için PostgreSQL, Python, PyQt ve Psycopg kullanılmıştır.

ER Diyagramı:



Tablolar:

```
DROP TABLE IF EXISTS TRIP;  
DROP TABLE IF EXISTS CUSTOMER;  
DROP TABLE IF EXISTS DRIVER;  
DROP TABLE IF EXISTS STATION;  
DROP TABLE IF EXISTS CAR;
```

```
CREATE TABLE CAR (  
    LICENSE_PLATE VARCHAR(10) PRIMARY KEY,  
    CAR_TYPE VARCHAR(8),  
    CAR_MODEL VARCHAR(16),  
    PROD_YEAR NUMERIC(4),  
    ENGINE_SPEC VARCHAR(10),  
    CAR_LOC VARCHAR(10),  
    BASE_RATE NUMERIC(5),  
    IS_AVAILABLE BOOLEAN DEFAULT TRUE  
);
```

```
CREATE TABLE STATION (  
    S_ID VARCHAR(10) PRIMARY KEY,  
    S_NAME VARCHAR(20) NOT NULL,  
    S_ADDR VARCHAR(20),  
    S_DISTRICT VARCHAR(20),  
    S_NEIGHBORHOOD VARCHAR(20),  
    S_MGR_ID VARCHAR(10), -- #TODO: IMPLEMENT + FOREIGN KEY  
    NUM_OF_CARS NUMERIC(3)  
);
```

```
CREATE TABLE DRIVER (  
    D_ID VARCHAR(10) PRIMARY KEY,  
    D_NAME VARCHAR(12) NOT NULL,  
    D_SURNAME VARCHAR(18) NOT NULL,  
    CAR_ID VARCHAR(10),  
    STATION_ID VARCHAR(10),  
    START_DATE DATE,  
    EARNINGS NUMERIC(5),  
    AVG_RATING NUMERIC(3,1),  
    D_ADDR VARCHAR(20),  
    FOREIGN KEY (STATION_ID) REFERENCES STATION (S_ID) ON DELETE CASCADE,  
    FOREIGN KEY (CAR_ID) REFERENCES CAR (LICENSE_PLATE) ON DELETE CASCADE  
);
```

```
CREATE TABLE TRIP (  
    T_ID VARCHAR(10) PRIMARY KEY,
```

```
D_ID VARCHAR(10),
CAR_ID VARCHAR(10),
START_LOC VARCHAR(20),
END_LOC VARCHAR(20),
START_TIME TIME,
END_TIME TIME,
TOTAL_COST NUMERIC(5,2),
RATING NUMERIC(3,1),
FOREIGN KEY (D_ID) REFERENCES DRIVER (D_ID) ON DELETE CASCADE,
FOREIGN KEY (CAR_ID) REFERENCES CAR (LICENSE_PLATE) ON DELETE CASCADE
);
```

```
CREATE TABLE CUSTOMER (
  C_ID VARCHAR(10) PRIMARY KEY,
  C_NAME VARCHAR(20),
  C_SURNAME VARCHAR(20),
  GENDER CHAR(1),
  C_ADDR VARCHAR(20),
  C_DISTRICT VARCHAR(20),
  REG_DATE DATE
);
```

```
CREATE TABLE CREDENTIALS (
  USERNAME VARCHAR (16) PRIMARY KEY,
  PASSWORD VARCHAR (64), -- HASHED PASSWORD
  USER_TYPE VARCHAR (10), -- CUSTOMER, MANAGER
  USER_ID VARCHAR (10) -- D_ID, C_ID, M_ID
);
```

	license_plate [PK] character varying (10)	car_type character varying (8)	car_model character varying (16)	prod_year numeric (4)	engine_spec character varying (10)	car_loc character varying (10)	base_rate numeric (5)	is_available boolean
1	34T1221	Sedan	Egea	2019	1.6diesel	Beşiktaş	10	true
2	34T3223	Sedan	Focus	2014	1.6petrol	Kadıköy	15	true
3	34T5412	SUV	TOGG	2023	electric	Kadıköy	10	true
4	34T8944	SUV	X5 M	2021	4.4petrol	Bakırköy	15	true
5	34TA329	Sedan	E220d	2017	2.0diesel	Kadıköy	15	true
6	34TCV31	Ticari	Florio	2016	5.0petrol	Kadıköy	20	true
7	34TDS32	Coupe	Mustang	2015	5.0petrol	Beşiktaş	20	true
8	34TE873	Coupe	Viper ACR	2016	8.3petrol	Esenyurt	20	true
9	34TIO69	Sedan	M5 CS	2021	4.4petrol	Üsküdar	15	true
10	34TU592	Sedan	Egea	2020	2.0petrol	Sarıyer	20	true

	s_id [PK] character varying (10)	s_name character varying (20)	s_addr character varying (20)	s_district character varying (20)	s_neighborhood character varying (20)	s_mgr_id character varying (10)	num_of_cars numeric (3)
1	S170409409	Akasya		Kadıköy		MGR1184298	12
2	S170411149	Eser		Beşiktaş		MGR1171254	14
3	S170422129	Yıldız		Şişli		MGR1194443	15
4	S170437509	Çiçek		Kadıköy		MGR1171254	14
5	S170778609	Merkez		Üsküdar		MGR1594943	15
6	S178713409	Beşiktaş		Beşiktaş		MGR1173298	20
7	S179723449	Poyraz		Beyoğlu		MGR1176664	16
8	S179766429	Mevlana		Esenyurt		MGR119046	18
9	S179766989	Yılmaz		Beylikdüzü		MGR1907246	18
10	S179774329	Ünal		Bakırköy		MGR1176886	16

	d_id [PK] character varying (10)	d_name character varying (12)	d_surname character varying (18)	car_id character varying (10)	station_id character varying (10)	start_date date	earnings numeric (5)	avg_rating numeric (3,1)	d_addr character varying (20)
1	D160203051	Rıza	Sivri	34T3223	S179766429	2021-07-10	8000	8.2	Bakırköy
2	D160328751	Erman	Çağlar	34TCV31	S179766429	2021-05-10	8100	8.7	Beşiktaş
3	D162348764	Mustafa	Başaran	34TIO69	S178713409	2021-11-09	7420	7.1	Şişli
4	D163244751	Mehmet	Yıldız	34T3223	S179766429	2021-11-10	6200	5.2	Esenyurt
5	D164349761	Yiğit	Akça	34TU592	S170437509	2021-03-20	9500	9.5	Beşiktaş
6	D164398548	Mert	Beşer	34TDS32	S170409409	2021-06-22	7520	6.0	Kadıköy
7	D164988751	Erman	Çağlar	34TCV31	S179766429	2021-12-20	7700	6.7	Beşiktaş
8	D165980664	Suha	Ünal	34T8944	S170437509	2021-05-09	6200	8.1	Üsküdar
9	D165987654	Erman	Yaşar	34T8944	S170437509	2021-07-21	6200	8.3	Beyoğlu
10	D168428951	Mehmet	Akça	34TU592	S170437509	2021-05-12	6590	7.2	Beylikdüzü

	c_id [PK] character varying (10)	c_name character varying (20)	c_surname character varying (20)	gender character (1)	c_addr character varying (20)	c_district character varying (20)	reg_date date
1	C190389093	Tuğçe	Ünal	F		Kadıköy	2021-04-18
2	C193827420	Parsa	Kazerooni	M		Esenyurt	2021-06-11
3	C193942597	Hande	Turan	F		Beyoğlu	2021-10-12
4	C193999537	Mikael	Akerfeldt	M		Beylikdüzü	2021-08-12
5	C194326093	Bağır	Çelebi	M		Kadıköy	2021-04-23
6	C194390340	Matt	Heafy	M		Bakırköy	2021-02-11
7	C194738280	Berrak	Özçelik	F		Esenyurt	2021-09-25
8	C194832734	Kaan	Kural	M		Kadıköy	2021-07-11
9	C197489301	Ufuk	Özkurt	M		Beşiktaş	2021-07-07
10	C198929081	Mehmet	Kaya	M		Beşiktaş	2021-01-03

	t_id [PK] character varying (10)	d_id character varying (10)	car_id character varying (10)	start_loc character varying (20)	end_loc character varying (20)	start_time time without time zone	end_time time without time zone	total_cost numeric (5,2)	rating numeric (3,1)
1	T203647764	D165987654	34T8944	Esenyurt	Beylikdüzü	15:38:00	16:24:00	32.00	5.0
2	T203896664	D164398548	34T8944	Esenyurt	Beylikdüzü	15:38:00	16:24:00	40.00	6.0
3	T204188894	D160328751	34T5412	Beşiktaş	Şişli	19:08:00	19:52:00	37.00	8.0
4	T204320948	D160328751	34TU592	Bakırköy	Zeytinburnu	15:45:00	16:16:00	31.00	7.8
5	T204498398	D164398548	34TIO69	Üsküdar	Kadıköy	17:43:00	18:16:00	25.00	8.3
6	T204765948	D164349761	34TU592	Beylikdüzü	Bakırköy	15:25:00	16:16:00	60.00	6.3
7	T206444123	D163244751	34TCV31	Kadıköy	Üsküdar	11:58:00	12:24:00	48.00	8.9
8	T206667584	D165980664	34TCV31	Kadıköy	Ataşehir	11:08:00	12:24:00	51.00	8.7
9	T209083750	D165980664	34TDS32	Beyoğlu	Şişli	02:24:00	02:37:00	22.00	8.2
10	T209398490	D164988751	34TDS32	Beşiktaş	Şişli	02:44:00	02:37:00	27.00	7.8

Procedure:

--FUNCTION 1, 2 (WITH UPDATE)

```
CREATE FUNCTION SET_CAR_STATUS_FALSE(LIC_PLT VARCHAR(10))
RETURNS VOID AS $$
BEGIN
    UPDATE CAR
    SET IS_AVAILABLE = FALSE
    WHERE LICENSE_PLATE = LIC_PLT;
END;
$$ LANGUAGE PLPGSQL;
```

```
CREATE FUNCTION SET_CAR_STATUS_TRUE(LIC_PLT VARCHAR(10))
RETURNS VOID AS $$
BEGIN
    UPDATE CAR
    SET IS_AVAILABLE = TRUE
    WHERE LICENSE_PLATE = LIC_PLT;
END;
$$ LANGUAGE PLPGSQL;
```

--FUNCTION 3 (WITH DELETE)

```
CREATE FUNCTION DELETE_OLD_CARS(LIC_PLT VARCHAR(10))
RETURNS VOID AS $$
BEGIN
    DELETE FROM CAR
    WHERE PROD_YEAR < 2015;
END;
$$ LANGUAGE PLPGSQL;
```

--TRIGGER

```
CREATE TRIGGER CALL_TAXI
AFTER INSERT
ON TRIP
FOR EACH ROW
EXECUTE FUNCTION UPDATE_CAR_STATUS(NEW.LICENSE_PLATE);
```

--CURSOR

```
CREATE OR REPLACE FUNCTION DISPLAY_DRIVERS(ST_ID VARCHAR(10))
RETURNS VOID AS $$
DECLARE
    DRIVERS CURSOR FOR SELECT D_NAME, D_SURNAME FROM DRIVER WHERE ST_ID =
STATION_ID;
BEGIN
    FOR I IN DRIVERS LOOP
```

```
        RAISE INFO 'SÜRÜCÜ: % %', I.D_NAME, I.D_SURNAME;
    END LOOP;
END;
$$ LANGUAGE PLPGSQL;
```

--VIEW

```
CREATE VIEW KADIKOY_TAXI AS
SELECT S_NAME, CAR_MODEL
FROM CAR, STATION
WHERE CAR_LOC = 'KADIKÖY' AND S_DISTRICT = 'KADIKÖY';
```

--AGGREGATE

```
SELECT COUNT(CAR_MODEL), CAR_LOC, CAR_MODEL, CAR_TYPE, IS_AVAILABLE
FROM CAR
GROUP BY CAR_LOC, CAR_MODEL, CAR_TYPE, IS_AVAILABLE;
```

```
SELECT COUNT(D_NAME), D_NAME, D_SURNAME, D_ADDR
FROM DRIVER
GROUP BY D_NAME, D_SURNAME, D_ADDR
HAVING COUNT(D_ADDR) > 2;
```

```
-- SELECT AVG(RATING)
-- FROM DRIVER, TRIP
-- WHERE DRIVER.D_ID = TRIP.D_ID
-- WHERE RATING IS NOT NULL;
```

--INTERSECT

```
SELECT CAR_MODEL, CAR_TYPE, CAR_LOC
FROM CAR
WHERE IS_AVAILABLE = TRUE
INTERSECT
SELECT CAR_MODEL, CAR_TYPE, CAR_LOC
FROM CAR
WHERE CAR_LOC = 'KADIKÖY' AND CAR_MODEL = 'EGEA';
```

--TYPE & RECORD

```
CREATE TYPE TRIP_INFO AS (STARTLOC VARCHAR(20), ENDLOC VARCHAR(20), CAR_MODEL
VARCHAR(16), STARTTIME TIME, ENDTIME TIME, TOTALCOST NUMERIC(5,2), RATING
NUMERIC(3,1));
```

```
CREATE OR REPLACE FUNCTION DISPLAY_TRIPS(LOC TRIP.START_LOC%TYPE)
RETURNS TRIP_INFO AS $$
DECLARE
```

```

        RET_VALUE TRIP_INFO;
    BEGIN
        SELECT TR.START_LOC, TR.END_LOC, CAR.CAR_MODEL, TR.START_TIME,
        TR.END_TIME, TR.TOTAL_COST, TR.RATING INTO TRIP_INFO
        FROM TRIP TR, CAR
        WHERE TR.CAR_ID = CAR.LICENSE_PLATE;
        RETURN TRIP_INFO;
    END;
    $$ LANGUAGE PLPGSQL;

    SELECT DISPLAY_TRIPS('BEŞİKTAŞ');

```

Fill Database:

-- CARS

```

INSERT INTO CAR VALUES('34T1221', 'SEDAN', 'COROLLA', 2019, '1.6 DIZEL', 'MALTEPE', 7);
INSERT INTO CAR VALUES('34T5412', 'SEDAN', 'FOCUS', 2015, '1.6 DIZEL', 'BESIKTAS', 7);
INSERT INTO CAR VALUES('34T7845', 'SEDAN', 'PASSAT', 2020, '2.0 PETROL', 'KADIKOY', 12);
INSERT INTO CAR VALUES('34BAT45', 'COUPE', 'BATMOBIL', 2021, '4.0 PETROL', 'SARIYER', 90);
INSERT INTO CAR VALUES('34TA329', 'SEDAN', 'EGEA', 2019, '1.6 DIZEL', 'BESIKTAS', 5);
INSERT INTO CAR VALUES('34TE567', 'SEDAN', 'E220D', 2017, '2.0 DIZEL', 'ESENLER', 15);
INSERT INTO CAR VALUES('34TE873', 'SEDAN', 'LINEA', 2012, '1.6 DIZEL', 'ESENLER', 5);
INSERT INTO CAR VALUES('34TR679', 'SUV', 'TOGG', 2023, 'ELEKTRIKLI', 'USKUDAR', 12);
INSERT INTO CAR VALUES('34TS666', 'COUPE', 'VIPER ACR', 2019, '8.3 PETROL', 'SARIYER', 50);
INSERT INTO CAR VALUES('34TT319', 'TICARI', 'DOBLO', 2014, '1.6 DIZEL', 'BAKIRKÖY', 8);

```

-- STATIONS

```

INSERT INTO STATION VALUES ('S178713409', 'BEŞİKTAŞ', '', 'BEŞİKTAŞ', '', 'MGR1173298', 20);
INSERT INTO STATION VALUES ('S170409409', 'AKASYA', '', 'KADIKÖY', '', 'MGR1184298', 12);
INSERT INTO STATION VALUES ('S170437509', 'ÇİÇEK', '', 'KADIKÖY', '', 'MGR1171254', 14);
INSERT INTO STATION VALUES ('S179766429', 'MEVLANA', '', 'ESEN YURT', '', 'MGR119046', 18);

```

-- DRIVER

```

INSERT INTO DRIVER VALUES ('D164083894', 'MAHMUT', 'ÜNLÜ', '34T1221', 'S178713409',
'2021-09-09', 6950, 7.1, 'ŞİŞLİ');
INSERT INTO DRIVER VALUES ('D164358948', 'MURAT', 'KARAYEL', '34T5412', 'S170409409',
'2021-06-12', 8200, 6.2, 'KADIKÖY');
INSERT INTO DRIVER VALUES ('D164746664', 'ÖMER', 'KÖKCÜR', '34TA329', 'S170437509',
'2021-03-09', 6500, 8.3, 'ÜSKÜDAR');
INSERT INTO DRIVER VALUES ('D160943750', 'ERMAN', 'YAŞAR', '34TE873', 'S179766429',
'2021-05-11', 7980, 8.1, 'BEYLİKDÜZÜ');

```

-- CUSTOMERS

```
INSERT INTO CUSTOMER VALUES ('C198929081', 'MEHMET', 'KAYA', 'M', '', 'BEŞİKTAŞ',  
'2021-01-03');  
INSERT INTO CUSTOMER VALUES ('C190389093', 'TUĞÇE', 'ÜNAL', 'F', '', 'KADIKÖY',  
'2021-04-18');  
INSERT INTO CUSTOMER VALUES ('C194832734', 'KAAN', 'KURAL', 'M', '', 'KADIKÖY',  
'2021-07-11');  
INSERT INTO CUSTOMER VALUES ('C193827420', 'PARSA', 'KAZEROONI', 'M', '', 'ESEN YURT',  
'2021-06-11');
```

-- TRIP

```
INSERT INTO TRIP VALUES ('T204083894', 'D164083894', '34T5412', 'KADIKÖY', 'ATAŞEHİR',  
'19:08', '19:52', 37, 8.0);  
INSERT INTO TRIP VALUES ('T204358948', 'D164358948', '34TA329', 'ÜSKÜDAR', 'KADIKÖY',  
'17:43', '18:16', 25, 8.3);  
INSERT INTO TRIP VALUES ('T204746664', 'D164746664', '34TE873', 'BEYLİKDÜZÜ', 'BAKIRKÖY',  
'15:38', '16:24', 62, 9.0);  
INSERT INTO TRIP VALUES ('T200943750', 'D160943750', '34T1221', 'BEŞİKTAŞ', 'BEYOĞLU',  
'02:24', '02:37', 19, 8.5);
```