Veritabanı Yönetimi

BLM3041-1

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İşçi Bulma Kurumu Bilgi Sistemi

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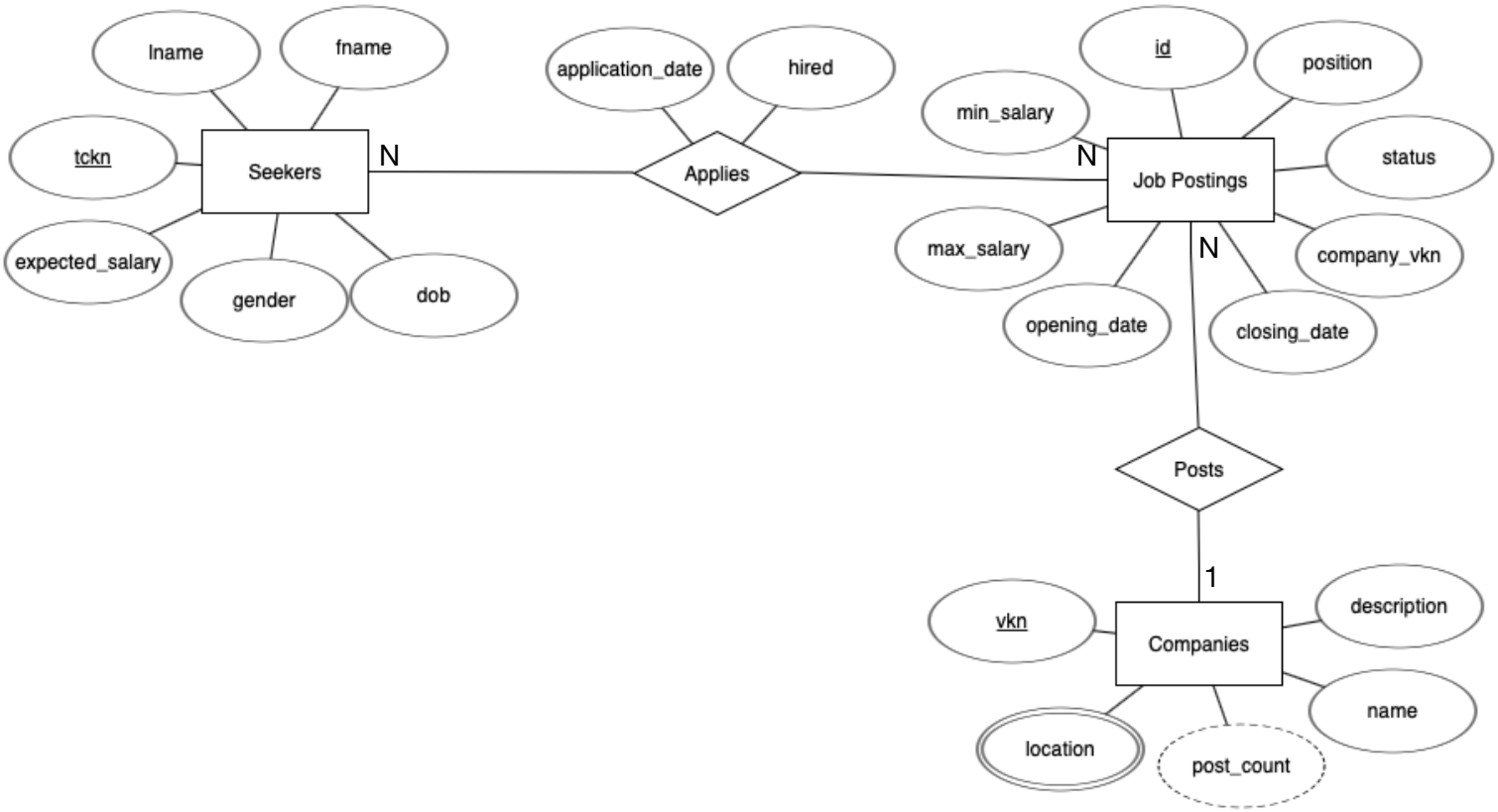
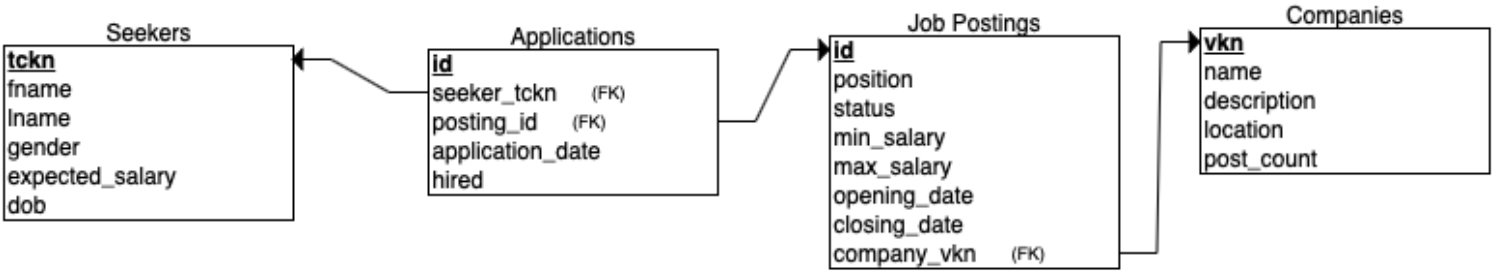
A. ER Diagram



B. Relational Model Diagram



C. Tablolar

1. Seekers

```
18  SELECT * FROM SEEKERS;
```

Data Output | Explain | Messages | Notifications

	tckn [PK] character varying (12)	fname character varying (50)	lname character varying (50)	gender character (1)	expected_salary integer	dob date
1	13810608984	Aydın	Sancak	E	5184	1983-01-05
2	34552736780	Saffet	Bayrak	E	7464	1987-10-11
3	55447684306	Türkan	Gürsoy	K	5328	1989-10-26
4	84795448964	Canan	Ersoy	K	11404	1995-07-07
5	83752123944	İzzet	Birden	E	24883	1996-04-06
6	68311147708	Can	Arat	E	3628	1999-11-05
7	43013920552	Aydın	Oral	E	25920	1984-12-12
8	40445977628	Kemal	Mutlu	E	10782	1975-06-12
9	68198602000	Zeynep	Yılmaz	K	7257	1988-07-25
10	71080755272	Ali	Yılmaz	E	9331	1990-02-24

2. Applications

```
18  SELECT * FROM APPLICATIONS;
```

Data Output | Explain | Messages | Notifications

	id [PK] integer	seeker_tckn character varying (12)	posting_id integer	application_date date	hired character (1)
1	1	83752123944	2	2019-12-12	1
2	2	96637756762	1	2020-01-03	0
3	3	96637756762	13	2020-01-03	0
4	4	56179376644	7	2019-10-07	1
5	5	38934400696	10	2020-01-01	1
6	6	87344897336	2	2019-12-12	0
7	7	87344897336	9	2019-07-29	1
8	8	40445977628	1	2020-01-03	0
9	9	40445977628	11	2020-01-03	0
10	10	68198602000	4	2020-07-04	0

3. Postings

```
18  SELECT * FROM POSTINGS;
```

Data Output | Explain | Messages | Notifications

	id [PK] integer	position character varying (100)	status character varying (6)	company_vkn character varying (12)	min_salary integer	max_salary integer	opening_date date	closing_date date
1	1	Veritabanı Uzmanı	open	7017438581	5000	10000	2020-01-03	2021-01-01
2	2	İş Analisti	closed	4291657945	7000	10000	2019-10-26	2019-12-12
3	3	Endüstri Mühendisi	open	6680288285	3000	11000	2019-10-11	2021-11-06
4	4	Sistem Analisti	open	9999248558	7000	10000	2019-05-10	2021-02-24
5	5	İş Analisti	open	9999248558	7000	10000	2020-07-04	2021-06-02
6	6	Operasyon Yöneticisi	open	3736925410	7000	12000	2019-02-01	2021-12-08
7	7	Yazılım Mühendisi	closed	3018532388	6500	10000	2019-03-07	2019-10-07
8	8	İş Analisti	open	7017438581	10000	15000	2020-10-05	2021-04-11
9	9	Risk Uzmanı	closed	2414000980	6500	7000	2019-12-26	2019-07-29
10	10	Yazılım Mühendisi	closed	3225281796	12000	15000	2019-11-07	2020-01-01

4. Companies

```
18  SELECT * FROM COMPANIES;
```

Data Output | Explain | Messages | Notifications

	vkn [PK] character varying (12)	name character varying (50)	description character varying (250)	location text[]	post_count integer
1	8049007111	Garanti Teknoloji	Türkiye'nin ilk 3 bankası içine ...	{Istanbul,Iz...	0
2	4710261098	Mercedes Benz	Türkiye'de İstanbul'da ve Aksa...	{Istanbul,Ad...	0
3	3276892154	NCR	Dünyanın en iyi finansal hizme...	{Ankara,Izmi...	0
4	3247717522	Ziraat Bankası	Türkiye'nin son 100 yıldır en iyi...	{Istanbul,Ad...	0
5	7421803526	Hepsiburada	E-ticaret sektörünü bir adım öt...	{Ankara,Izmi...	1
6	3018532388	Turkcell	Türkiye'nin en büyük telekomü...	{Istanbul,Iz...	1
7	2414000980	Akbank	Türkiye'nin en fazla aktif müşt...	{Istanbul,An...	1
8	6680288285	Aselsan	Geliştirdiği savunma teknolojil...	{Istanbul,An...	1
9	4291657945	Kuveyt Türk Katılım Bankası	Katılım bankaları arasında 1., t...	{Istanbul,An...	1
10	1949942318	Tüpraş	Türkiye'nin en çok kar eden şir...	{Ankara,Ada...	1

D. Maddeleri Sağlayan Kod Blokları

2. Tablolarınızda primary key ve foreign key kısıtlarını kullanmalısınız.

```
CREATE TABLE IF NOT EXISTS APPLICATIONS (
    id INT PRIMARY KEY,
    seeker_tckn VARCHAR(12) NOT NULL,
    posting_id INT NOT NULL,
    application_date DATE DEFAULT CURRENT_DATE NOT NULL,
    hired CHAR DEFAULT 0 NOT NULL,
    CONSTRAINT fk_seeker
        FOREIGN KEY(seeker_tckn)
```

```
        REFERENCES SEEKERS(tckn)
        ON DELETE CASCADE,
    CONSTRAINT fk_posting
        FOREIGN KEY(posting_id)
        REFERENCES POSTINGS(id)
        ON DELETE NO ACTION
);
```

3. En az bir tabloda silme kısıtı ve sayı kısıtı olmalıdır.

```
CREATE TABLE IF NOT EXISTS POSTINGS (
    id INT PRIMARY KEY,
    position VARCHAR(100),
    status VARCHAR(6) DEFAULT 'open' NOT NULL,
    company_vkn VARCHAR(12) NOT NULL,
    min_salary INT NOT NULL CHECK (min_salary > 0),
    max_salary INT NOT NULL,
    opening_date DATE,
    closing_date DATE,
    FOREIGN KEY(company_vkn) REFERENCES COMPANIES(vkn)
);
```

4. Arayüzden en az birer tane insert, update ve delete işlemi gerçekleştirilebilmelidir.

```
INSERT INTO SEEKERS VALUES
('79266970006', 'Can', 'Eryürür', 'E', 2400, '12-02-1983');
UPDATE SEEKERS SET dob = '03-03-1993' WHERE tckn = '79266970006';
DELETE FROM SEEKERS WHERE tckn = '79266970006';
```

5. Arayüzden girilecek bir değere göre ekrana sonuçların listelendiği bir sorgu yazmalısınız.

```
SELECT * FROM SEEKERS_AGE WHERE AGE < 30;
```

6. Arayüzden çağrılan sorgulardan en az biri “view” olarak tanımlanmış olmalıdır.

```
CREATE OR REPLACE VIEW SEEKERS_AGE AS
SELECT tckn,
        CONCAT(fname, ' ', lname) AS name,
        expected_salary,
        CAST(DATE_PART('YEAR', AGE(dob)) AS INT) AS age
FROM SEEKERS;
```

7. En az bir adet “sequence” oluşturmalı ve arayüzden yapılacak insert sırasında ilgili sütundaki değerlerin otomatik olarak atanmasını sağlamalısınız.

```
CREATE SEQUENCE IF NOT EXISTS SEQ_APPLICATION_ID
START WITH 1 INCREMENT BY 1 NO CYCLE;


INSERT INTO APPLICATIONS VALUES
(nextval('SEQ_APPLICATION_ID'), '83752123944', 2, '12-12-2019', 1);
```

8. Arayüzden çağrılan sorgulardan en az birinde union veya intersect veya except kullanmış olmalısınız.

```
SELECT * FROM SEEKERS_AGE WHERE AGE > 30 AND expected_salary < 12500
INTERSECT
SELECT * FROM SEEKERS_AGE WHERE tckn IN (SELECT seeker_tckn FROM APPLICATIONS);
```

9. Sorgularınızın en az biri aggregate fonksiyonlar içermeli, having ifadesi kullanılmalıdır.

```
SELECT tbl2.name,
       tbl1.posting_count
FROM (
    SELECT company_vkn,
           COUNT(*) AS posting_count
    FROM POSTINGS
    GROUP BY company_vkn
    HAVING COUNT(*) > 1
) tbl1
INNER JOIN COMPANIES tbl2
ON tbl1.company_vkn = tbl2.vkn;
```

10. Arayüzden girilen değerleri parametre olarak alıp ekrana sonuç döndüren 3 farklı SQL fonksiyonu tanımlamış olmalısınız. Bu fonksiyonlarda en az birer tane “record” ve “cursor” tanımı-kullanımı olmalıdır.

```
CREATE OR REPLACE FUNCTION raise_expected_salary(percentage INT)
RETURNS TABLE (
    fname VARCHAR(50),
    lname VARCHAR(50),
    raised_expected_salary INT,
    dob DATE
)
AS $$
BEGIN
    IF (percentage > 0) THEN
        --First update table
        UPDATE SEEKERS SET expected_salary = expected_salary * (100 +
percentage) / 100;
        --Then return it
        RETURN QUERY
            SELECT
                tbl1.fname,
                tbl1.lname,
                tbl1.expected_salary AS raised_expected_salary,
                tbl1.dob
            FROM
                SEEKERS tbl1;
    ELSE
        RAISE EXCEPTION 'Percantage must be higher than 0';
    END IF;
END;
$$ LANGUAGE PLPGSQL;
```

```
CREATE OR REPLACE FUNCTION find_companies(count INT)
RETURNS SETOF VARCHAR
AS $$
BEGIN
    IF (count IS NOT NULL) THEN
        RETURN QUERY
            SELECT name
            FROM COMPANIES
            WHERE array_length(location, 1) > count;
    ELSE
        RAISE EXCEPTION 'city cant be null';
    END IF;
END;
$$ LANGUAGE PLPGSQL;
```

```
CREATE OR REPLACE FUNCTION find_max_salary_by_position(job_position VARCHAR, OUT
max_salary INT)
AS $$
BEGIN
    IF (job_position IS NOT NULL) THEN
            SELECT MAX(tbl1.max_salary) INTO max_salary
            FROM POSTINGS tbl1
            WHERE upper(tbl1.position) = upper(job_position);
    ELSE
        RAISE EXCEPTION 'position cant be null';
    END IF;
END;
$$ LANGUAGE PLPGSQL;
```

```
CREATE FUNCTION AVGSALARY (SEX CHAR(1)) RETURNS NUMERIC AS $$
DECLARE
sum_sal NUMERIC;
i integer;
curs CURSOR FOR SELECT expected_salary FROM seekers WHERE gender=sex;

BEGIN
sum_sal := 0;
i =0;
FOR satir IN curs LOOP
sum_sal := sum_sal + satir.expected_salary;
i := i + 1;
END LOOP;

RETURN sum_sal/i;
END;
$$ LANGUAGE PLPGSQL;
```

11. 2 adet trigger tanımlamalı ve arayüzden girilecek değerlerle tetiklemelisiniz. Trigger'ın çalıştığına dair arayüze bilgilendirme mesajı döndürülmelidir.

```
CREATE OR REPLACE FUNCTION CHECK_AGE() RETURNS trigger AS $CHECK_AGE$
    BEGIN
        RAISE INFO 'CHECK_AGE function is triggered';
        IF CAST(DATE_PART('YEAR', AGE(NEW.dob)) AS INT) < 18 THEN
            RAISE EXCEPTION 'Children under the age of 18 cannot register to the
system';
        END IF;

        RETURN NEW;
    END;
$CHECK_AGE$ LANGUAGE plpgsql;

CREATE TRIGGER CHECK_AGE BEFORE INSERT OR UPDATE ON SEEKERS
    FOR EACH ROW EXECUTE PROCEDURE CHECK_AGE();
```

```
CREATE OR REPLACE FUNCTION CALC_POST_COUNT() RETURNS TRIGGER AS $POST_COUNT$
    BEGIN
        RAISE INFO 'calc_post_count function is triggered';
        IF (TG_OP = 'DELETE') THEN
            UPDATE COMPANIES SET post_count = post_count -1 WHERE vkn =
OLD.company_vkn;
        ELSIF (TG_OP = 'UPDATE') THEN
            UPDATE COMPANIES SET post_count = post_count -1 WHERE vkn =
OLD.company_vkn;
            UPDATE COMPANIES SET post_count = post_count +1 WHERE vkn =
NEW.company_vkn;
        ELSIF (TG_OP = 'INSERT') THEN
            UPDATE COMPANIES SET post_count = post_count +1 WHERE vkn =
NEW.company_vkn;
        END IF;
        RETURN NULL;
    END;
$POST_COUNT$ LANGUAGE plpgsql;

CREATE TRIGGER POST_COUNT
AFTER INSERT OR UPDATE OR DELETE ON POSTINGS
    FOR EACH ROW EXECUTE PROCEDURE CALC_POST_COUNT();
```