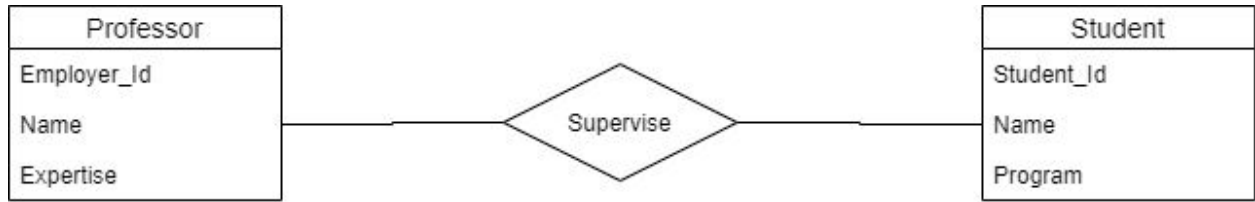


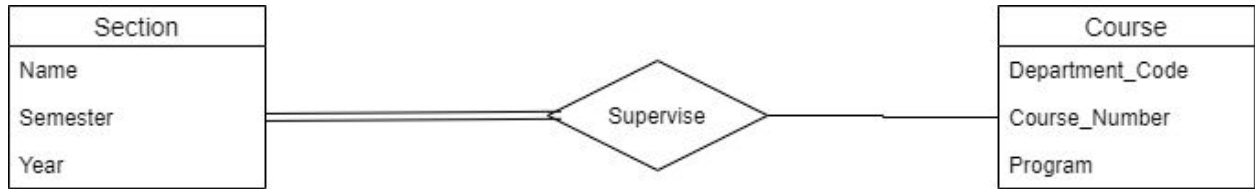
PART A

A1

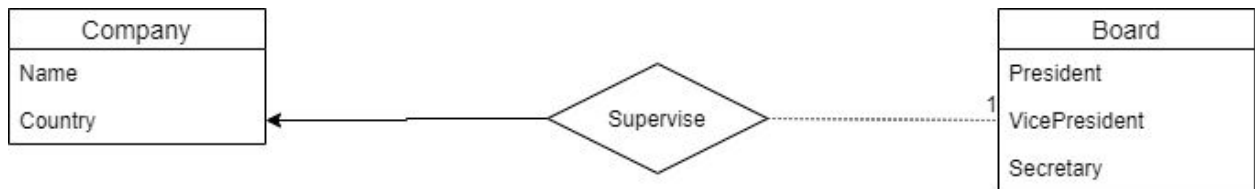
a)



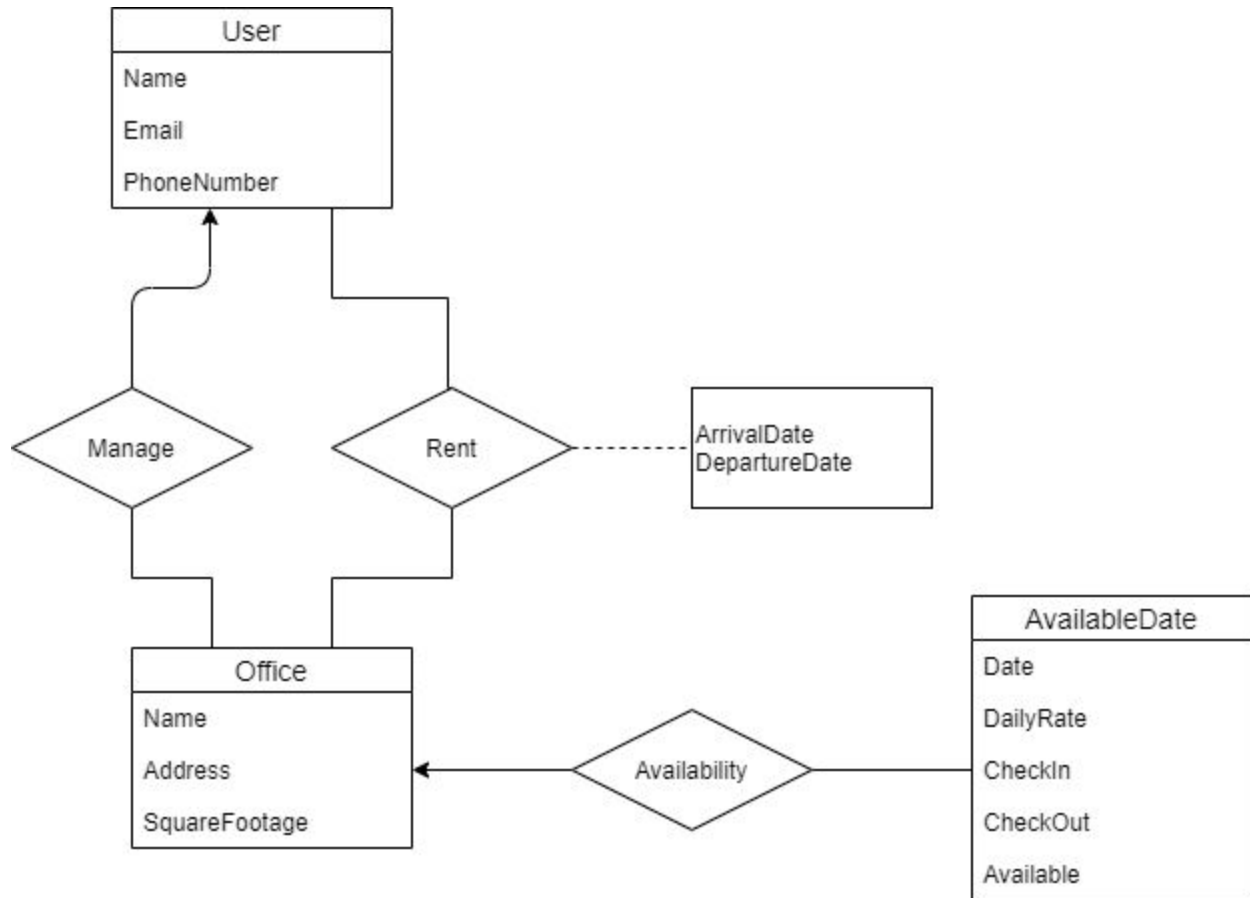
b)



c)



A2



A3

Find all office spaces in Ottawa that are available March2, 2020.

```
SELECT o.Name,  
       o.Address ,  
       o.SquareFootage  
FROM Office o  
INNER JOIN Availability a  
    ON o.id = a.office_id  
INNER JOIN AvailableDate ad  
    ON a.availableDate_id = ad.id  
WHERE lower(o.Address) like '%ottawa%'  
AND ad.Date = 'March 2, 2020';
```

```
 $\pi(\text{Name}, \text{Address}, \text{SquareFootage})(\sigma(\text{address} = \%ottawa\% \wedge \text{date} = \text{March 2, 2020})$   
 $(\text{Office} \bowtie \text{Availability} \bowtie \text{AvailableDate}))$ 
```

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Find all users (name and email) and the property details (name, and city) and the rental information (date, and daily rate) of all rentals during the month of January 2020.

```
SELECT u.Name,  
       u.Email,  
       o.Name,  
       o.Address,  
       ad.Date,  
       ad.DailyRate  
FROM User u  
INNER JOIN Manage m  
ON u.id = m.user_id  
INNER JOIN office o  
ON m.office_id = o.id  
INNER JOIN availability a  
ON o.id= a.office_id  
INNER JOIN AvailableDate ad  
ON a.AvailableDate_id = ad.id  
WHERE lower(ad.date) like '%january%2020%';
```

$$\Pi(\text{user.Name,Email,office.Name,Address,Date,DailyRate})(\sigma(\text{date}=\text{'\%january\%2020\%'})$$
$$)(\text{User}\bowtie\text{Manage}\bowtie\text{Office}\bowtie\text{Availability}\bowtie\text{AvailableDate}))$$

B2

a)

	name character varying (1000)	experience double precision
1	andrew	2
2	august	0
3	hayden	1

b)

	name [PK] character varying (200)	released_date date
1	MS Word	2011-01-20
2	Sketch	2016-06-15

c)

```

WITH users_2019 (id, name) AS
(SELECT *
FROM users
WHERE join_date BETWEEN '2019-01-01' AND '2019-12-31')
SELECT id,
name,
count(licenses.access_code) AS num
FROM users_2019
LEFT JOIN licenses ON licenses.user_id = id
GROUP BY name, users_2019.id
ORDER BY num DESC;

```

B2)

a)

Select name from users where join_date < '2020-01-01'

b)

```

SELECT u.name,
COUNT(l.access_code) AS num
FROM users u
LEFT JOIN licenses l
ON l.user_id = u.id
GROUP BY u.name
ORDER BY num DESC, u.name;

```

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c)

```
insert INTO users (id,name,join_date)
values (52, 'Phil', '2017-01-01'),
       (53, 'Jean', '2016-01-01'),
       (54, 'George', '2015-02-02');
```

d)

```
UPDATE softwares SET version = '51' where name='Sketch'
```

B3

a)

```
begin;
ALTER TABLE licenses ADD version varchar(100);
UPDATE licenses SET version=s.version FROM licenses l INNER JOIN softwares s ON
l.software_name = s.name;
commit;
```

b)

```
Begin;
ALTER TABLE softwares DROP CONSTRAINT softwares_pkey;
ALTER TABLE softwares
ADD CONSTRAINT softwares_pkey PRIMARY KEY (name,version);
Commit;
```

c)

```
begin;
alter table licenses
Drop constraint licenses_pkey;
alter table licenses
Add constraint licenses_pkey Primary key (access_code,software_name);
Insert into licenses (user_id,software_name,access_code,version) values
(52,'Sketch','xxxyyy111',2012);
Commit;
```

D)

```
insert into licenses Select id, 'Sketch', '1monthfree'
from users u inner Join licenses l on u.id = l.user_id
where software_name <> 'Sketch';
```

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