DBMS Lec 5:

How to make ER diagram and banking System ER diagram:

ER diagram Practice,

Steps to make ER diagram:

1) Identify entity sets.
2) Identify attributes & their types
3) Identify Relⁿ. & constraints
   - ↳ degree of Relⁿ
   - ↳ Mapping cardinality
   - ↳ participation constraints

ER Model of Banking System:

1) Banking System → Branches name → its (PK)
2) Bank → customers
3) Customers → accounts & take loan
4) Customer associated with some banker
5) Bank has employees
6) Accounts → saving a/c
   ↳ current a/c
7) Loan originated by branch
   ↳ Loan ≥1 customer
   ↳ payment schedule

① Entity Sets:

① Branch ② customer ③ Emplyogee

④ saving a/c ⑤ current a/c

⑥ Loan ⑦ Payment (weak entity dependent on Loan).

② Attributes:

① branch → name, city, assets, liability.

(2) customer → cust_id, name, address, contact no.
composite multi valued

DOB, age
derived

(3) Employee → emp-id, name, contact.no, dependent name, years of service, start-date
derived

(4) Saving a/c → ~~acc-number, balance~~, interest-rate
daily withdrawl limit

(5) current a/c → ~~acc-number, balance~~, per transaction charges, overdraft amount.

saving and current a/c has same attributes so we can apply generalization.

(6) Generalized Entity (Account) → acc-no, balance.

(7) Loan → loan_number, amount.

(8) Weak Entity Payment → Payment no., date, amount.

(3) Relationships :

(1) customer borrows Loan
M : = N

(2) Loan originated by branch
N = : 1

(3) Loan loan-payment — Payment
1 : N

(4) customer deposit Account
M : N

(5) Customer banker Employee
N : 1

Facebook ER diagram:

= → total participation

Facebook :- DB

(0) Features:

(1). Profile → user_profile → friends.

(2). user can post

(3) Post → contains → text content, images, videos

(4). Post → like, comment

(1) Identify entity sets:

(i) user-profile (iii) post-comment

(ii) user-post (iv) post-like

(2) Attributes + types:

(i) user-profile → name, user name, email, password

composite multivalued

contact no., DOB, age → derived

(ii) user-post → postid, text content, images, videos.

→ multivalued ←

created_At, modified_timestamp.

(iii) post_comment → post-commed Id, text-comtent, timestamp.

(iv) past like → post like Id, timestamp.

(3) Rel^n & Constraints:

(i) user-profile . friend . user-profile

M : N

(ii) user-profile posts ══ user-posts

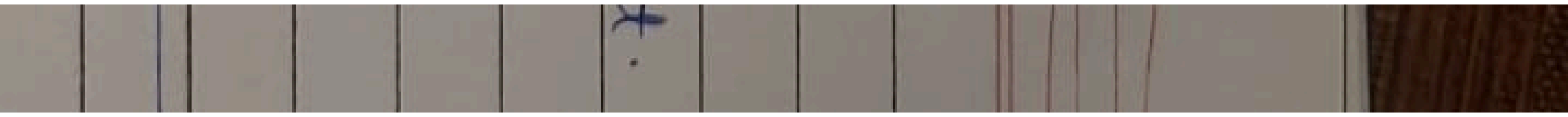
1. ; N

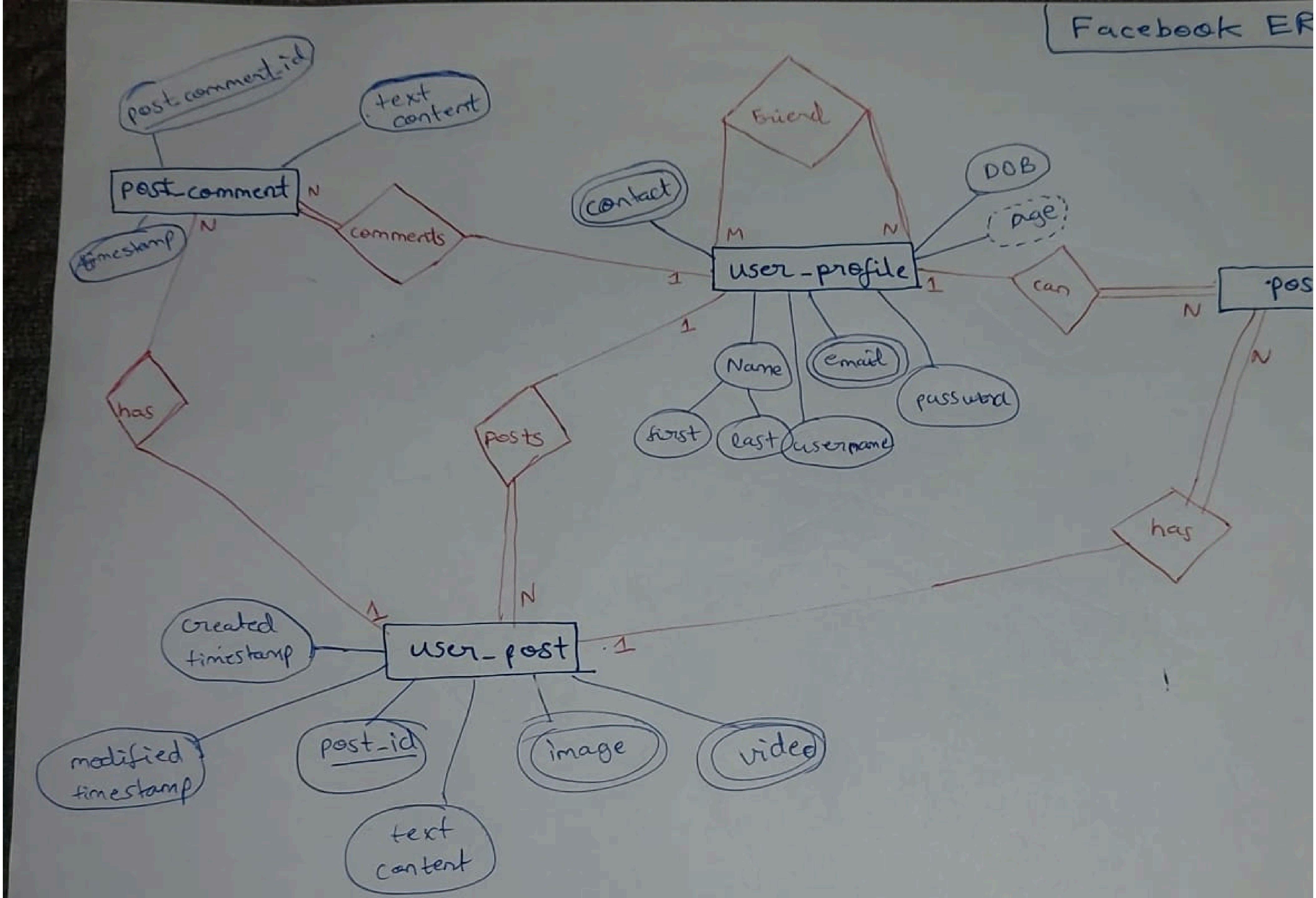
(iii) user_profile . can = post_like
1 : N

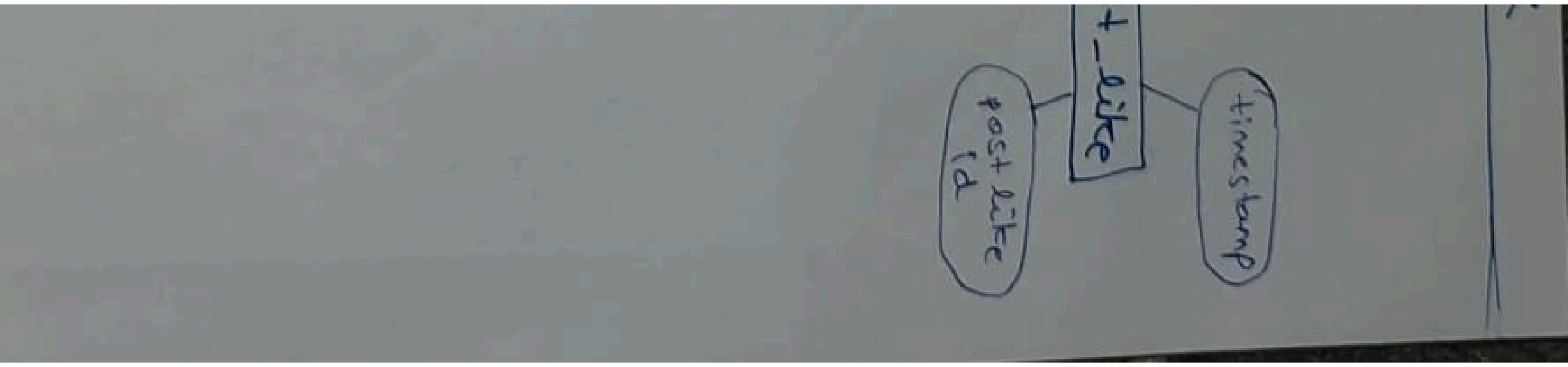
(iv) user_profile comments = post_comments
1 : N

(v) user_post has = post_commen
1 : N

(vi) user_ past has = post_like.
1 : N




Facebook ER
post_comment_id
text content
post_comment
N
timestamp
N
comments
has
Friend
M
N
contact
user_profile
1
1
1
DOB
age
can
N
pos
N
Name
email
password
first
last
username
posts
has
N
1
created timestamp
user_post
1
modified timestamp
post_id
image
video
text content



Online Delivery System ER diagram:

Entities (rectangles)

1. **Customer**
   - customer_id (PK)
   - name
   - phone
   - email
2. **Address** (Composite)
   - house_no
   - street
   - city
   - state
   - pincode
3. **Shipment**
   - tracking_id (PK)
   - created_at
   - weight_total
   - declared_value
   - service_type
4. **Package** (Weak Entity, depends on Shipment)
   - (tracking_id, package_seq) (composite PK, package_seq is partial key)
   - weight
   - length
   - width
   - height
5. **Courier**
   - courier_id (PK)
   - name
   - phone
   - start_date
6. **Hub**
   - hub_id (PK)

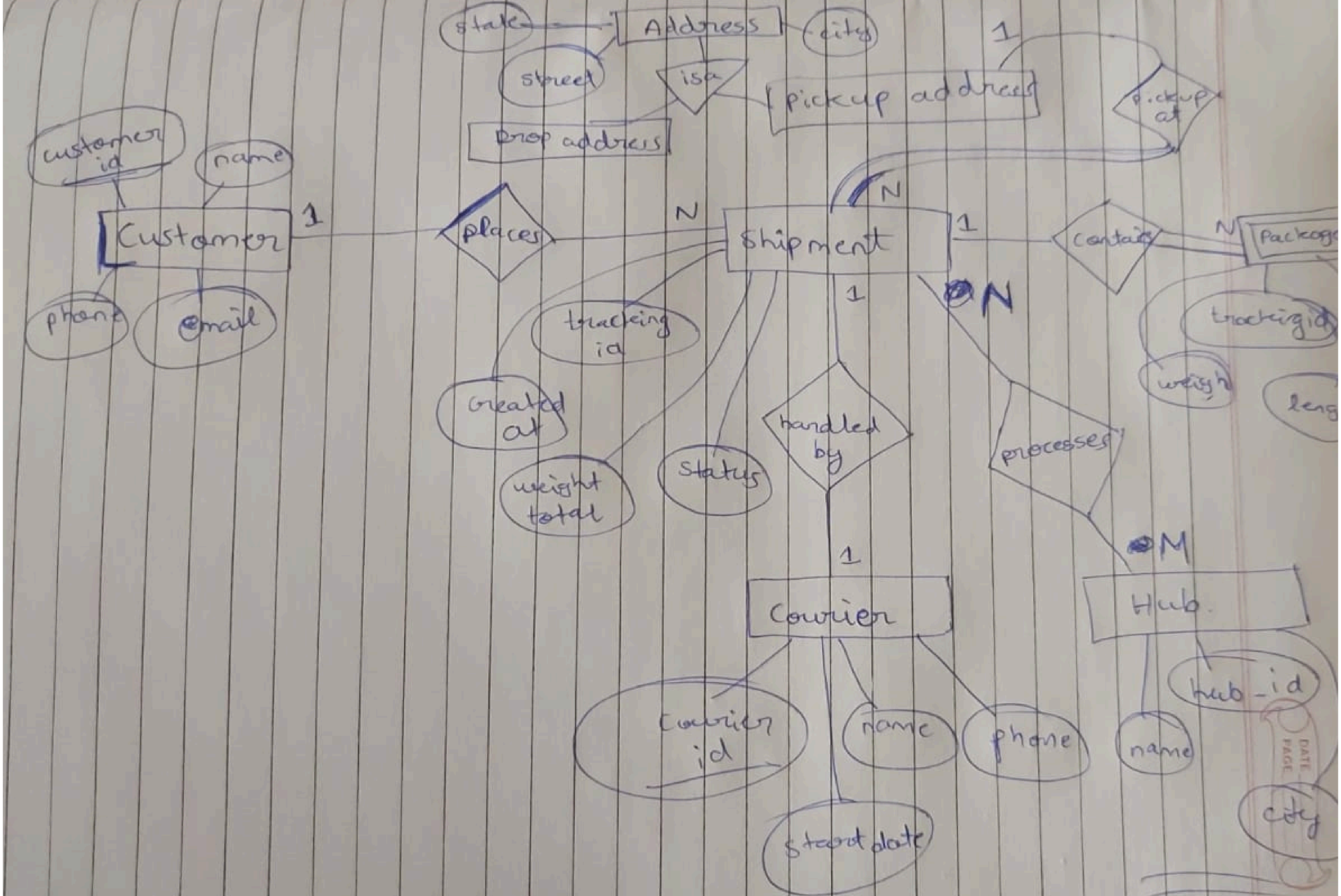
    - name
    - city
    - capacity

Relationships (diamonds)

1. **places**
    - Customer (1) → Shipment (N)
    - Total on Shipment side
2. **pickup_at** (role of Address)
    - Shipment (1) → Address (1)
    - Total on Shipment
3. **deliver_to** (role of Address)
    - Shipment (1) → Address (1)
    - Total on Shipment
4. **contains**
    - Shipment (1) → Package (N)
    - Package has total participation (weak)
5. **handled_by**
    - Shipment (N) → Courier (1)
6. **processes**
    - Shipment (M) ↔ Hub (N)

Diagram Layout (like your Banking ERD)

- Put **Customer** on the left, linked by “places” to **Shipment** in the center.
- Connect Shipment to **Address** twice with role names: pickup_at and deliver_to.
- Below Shipment, attach **Package** (weak entity, double rectangle).
- On the right side, connect Shipment to **Courier** (handled_by) and **Hub** (processes).


state
Address
city
street
isa
pickup address
Drop address
1
pickup at
customer id
name
Customer
1
places
N
Shipment
N
1
contains
N
Package
phone
email
tracking id
1
N
trackingid
weigh
leng
created at
handled by
processes
weight total
status
1
M
Courier
Hub.
hub_id
courier id
name
phone
name
city
start date