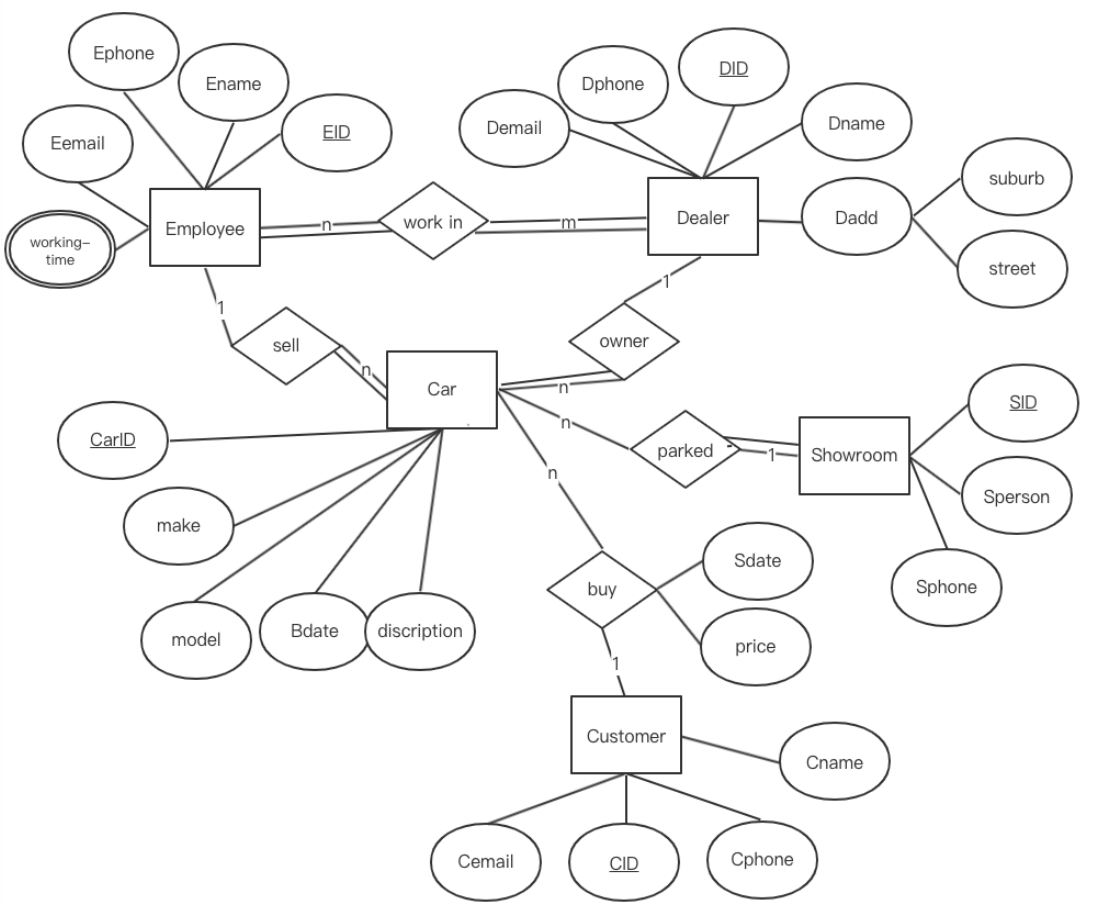
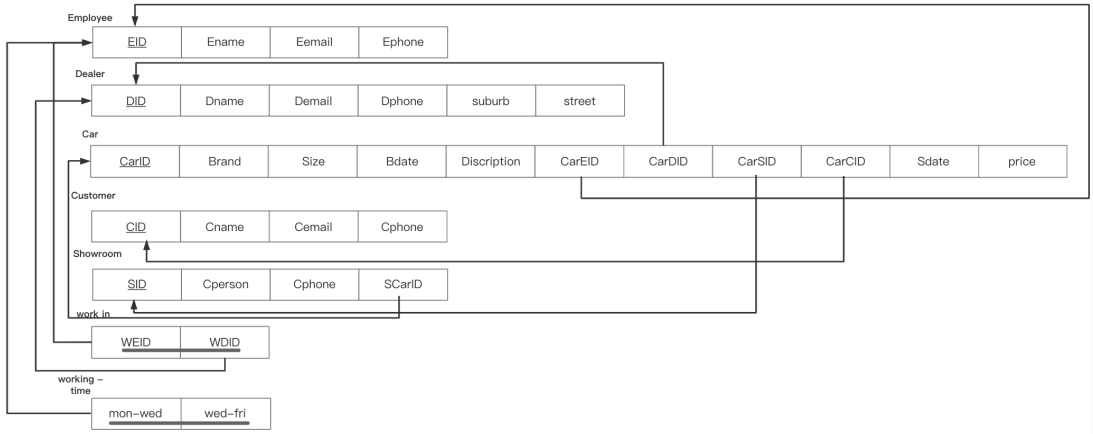
Question1



Question 2



Question 3

1.

π(eName)(σ (dName = ‘sales’)(Department $\bowtie_{D.dID=E.dID}$ Employee)).

2.

R1 ← π(dID)σ(dName ≠‘human resource’)(Department)

R2 ← π(pID)(Host$\bowtie_{H_dID = R_dID}$R1)

π(pName)(Project÷ R2)

3.

$R1 \leftarrow \pi(eID)\ \sigma(gender = \text{‘male’})(Employee)$

$R3 \leftarrow \pi(pID)\ (WrokOn \bowtie_{E\_dID = W\_dID} R1)$

$R2 \leftarrow \pi(eID)\ \sigma(gender = \text{‘female’})(Employee)$

$R4 \leftarrow \pi(pID)\ (WrokOn \bowtie_{E\_dID = W\_dID} R2)$

$R5 \leftarrow \pi(pID)(Project) - (R3 \cap R4))$

$\pi(pName)(Project \bowtie_{P\_pID=R\_pID} R5)$

4.

$R1 \leftarrow \pi(pID)\sigma(cost >= \text{‘1million’})(Project)$

$R2 \leftarrow \pi(pID)\sigma(cost < \text{‘1million’})(Project)$

$R3 \leftarrow \pi(eID)\ (WrokOn \bowtie_{W\_pID = R\_pID} R1)$

$R4 \leftarrow \pi(eID)\ (WrokOn \bowtie_{W\_pID = R\_pID} R1)$

$R5 \leftarrow \pi(dID)(R3 \bowtie_{R\_eID = E\_eID} Employee)$

$R6 \leftarrow \pi(dID)(R4 \bowtie_{R\_eID = E\_eID} Employee))$

$R5 – R6$