Data Model HW1
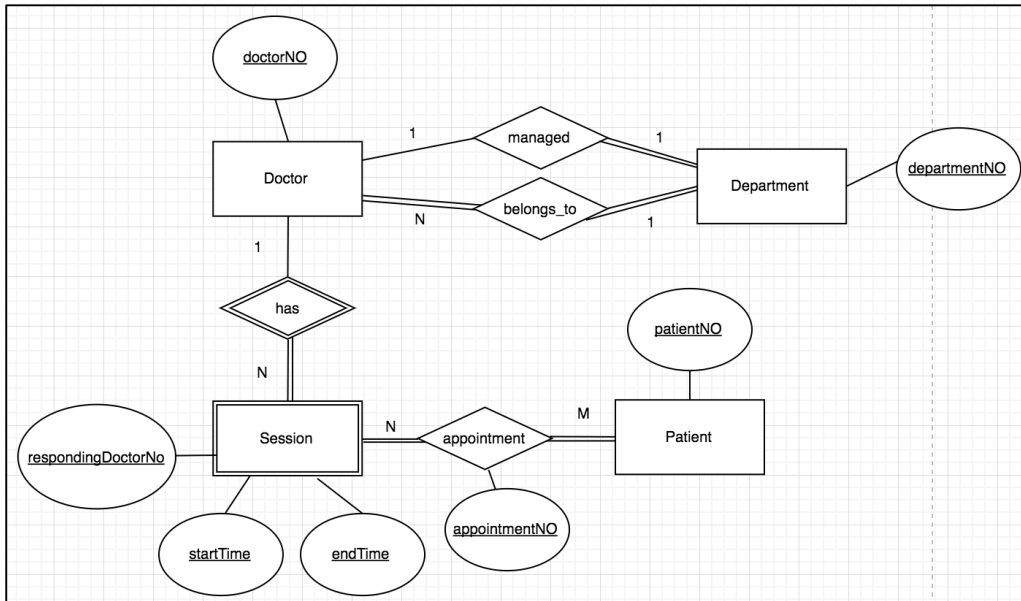
資管所碩一

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1.

(1) ERD

(2) Data Section

Doctor: doctorNO, doctorName, birthday, Identity, position

Candidate Key: doctorNO、Identity

Name	doctorNo
Description	Auto-generated key for department
Domain	9 digits of number Default value: next generated number Not null
Entity	Doctor - min:1 (not null) - max:1 (unique) - role: department managed by doctor Department: - Min: 1 - Max: 1 - role: doctor manage department

Department: departmentNO, departmentName, category, phoneNumber

Candidate key: departmentNO, departmentName

Name	departmentNO
Description	Auto-generated key for department
Domain	9-digits-of number Default value: next generated number Not null
Entry	Department - Min: 0 - Max: 1 - role: doctor belongs to deparment Doctor - Min: 1 - Max: many - role: department of a doctor

Session: startTime, endTime, respondingDoctorNo, capacity

Candidate key: (respondingDoctorNo, startTime, endTime)

Name	startTime
Description	Start time of appointment
Domain	Follow YYYY-MM-DD-HH-MM-SS format Not null
Entity	Session - Min: 1 - Max: 1 - role: Session belongs to Doctor Doctor - Min: 0 - Max: many - role: Doctor has Session

Patient: patientNO, name, sex, birthday, identity

Candidate key: patientNO, identity

Name	patientNO
Description	Auto-generated key for patient
Domain	9 digits of number Default value: next generated number Not null
Entity	Patient - Min: 1 - Max: N - role: Patient have appointment Appointment - Min: 1 - Max: 1 - role: Appointment belongs to patient

Appointment: AppointmentNO, estimated time

Candidate key: AppointmentNO

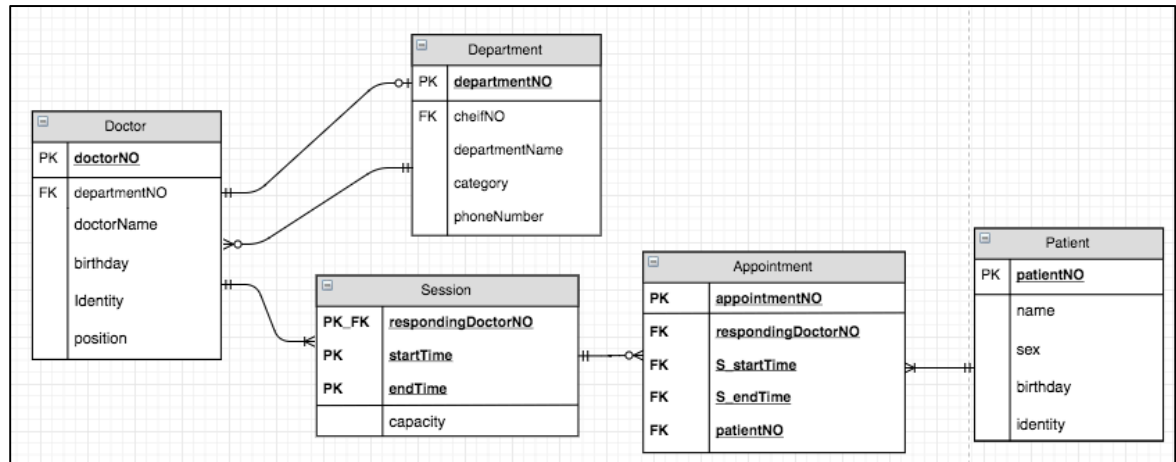| Name	AppointmentNO
Description	Auto-generated key for Appointment
Domain	9 digits of number Default value: next generated number Not null
Entity	Appointment - Min: 1 - Max: 1 - role: Appointment belongs to Session Session - Min: 0 - Max: many - role: Session have Appointment

Assumption Section

1. 每個 Department 一定會有一個以上的醫生
2. 每個 Session 一定會有一個或一個以上的醫生看診
3. 每個 Session 一定會有 Patient 來看診
4. Patient 一定要有 Session 才是該醫院的病人

Constraint Section

1. resident 醫生一週的 diagnosis session 不能超過 9 小時。

(3) logistical ERD

(4)

Department(departmentNO -> departmentName、category、phoneNumber)

Doctor(doctorNO-> name、birthday、identity、position)

Session(respondingDoctorNO、startTime、endTime -> capacity)

Appointment(appointmentNO -> estimated time)
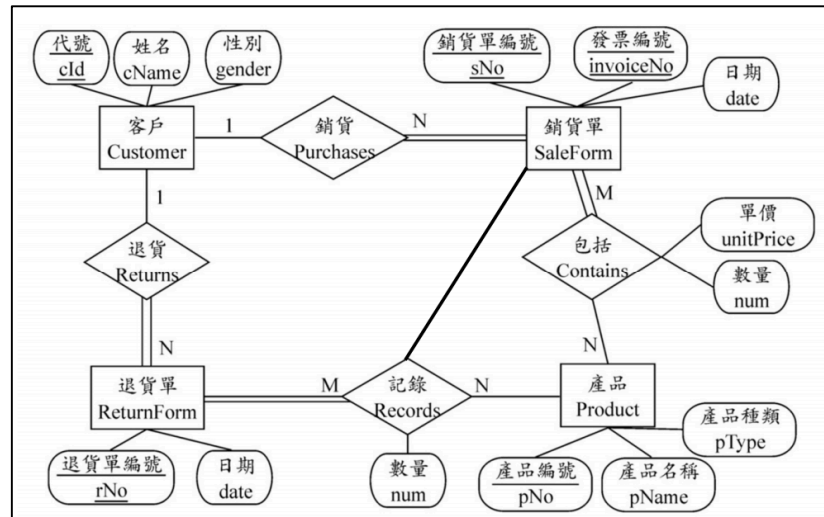
Patient(patientNO -> name、sex、birthday、identity)

(5) 沒有 transitive dependency，符合 3NF

2.

2-1
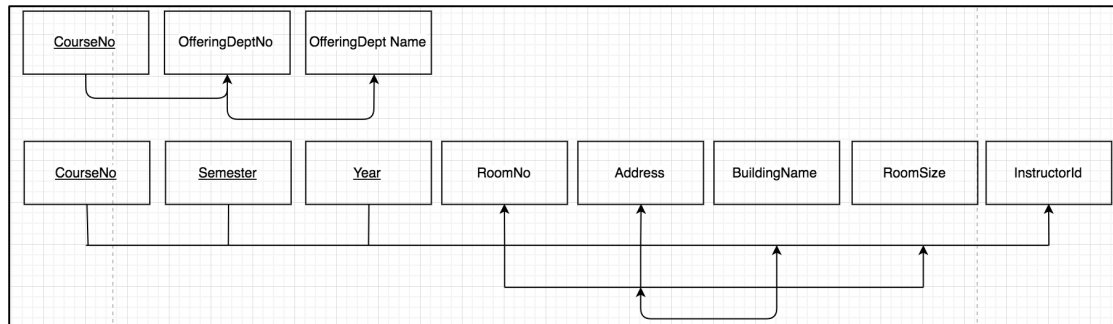得知退貨商品的原銷貨單編號，因此將銷貨單跟紀錄連起來，同時紀錄銷貨單編號、退貨單編號、產品編號。

2-2
Figure1 沒有，左下是退貨部分、右上是銷貨部分，兩者並沒有重複的部分。
Figure2 有：可以把 Meter 跟 Bill 之間的 Assigned 關聯去掉，因為透過 MReading 其實兩者間就以連結起來，所以這個關聯是不必要的。(上課時有講述過類似的題目)

3.

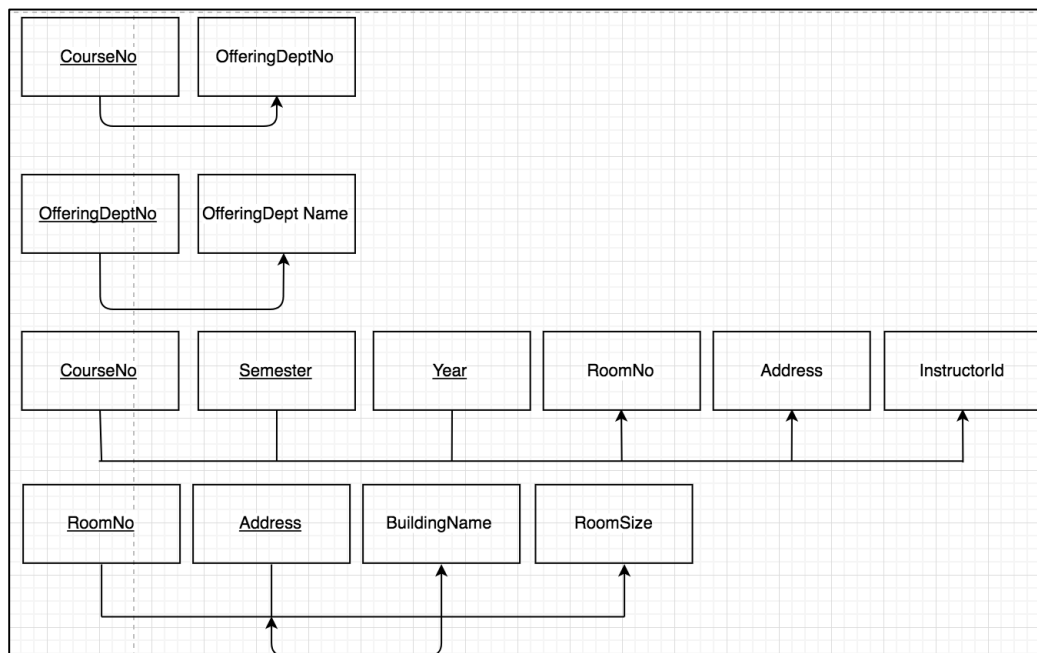3-1 (2NF) partial dependency -> full dependency

Update Anomaly:

CourseNo	OfferingDepNo	OfferingDepName
101	303	金融所
102	306	資管所
103	306	資管所

如果要修改 OfferingDepName，必須修改每一筆資料，有部分沒改到就會造成資料不一致的狀況。像是在這邊更改資管所，就必須兩筆資料都要更改。

3-2 (3NF)

Update Anomaly:

RoomNo	Address	BuildingName	RoomSize
1002	指南路二段	研究大樓	20

1001	指南路四段	資訊大樓	30
1003	指南路二段	研究大樓	20

當要更改 BuildingName 的名字時，需要把整張 table 的 BuildingName 都進行更改，否則會有資料不一致的問題

3-3 (Candidate Key)

Table1：CourseNo

Table2：OfferingDeptNo

Table3：(CourseNo, Semester, Year)

Table4：(RoomNo, Address)

3-4 (BCNF)

因為 Address 跟 BuildingName 會互相指到對方，所以使用 BCNF