Group 1
CSC 460 Program 4
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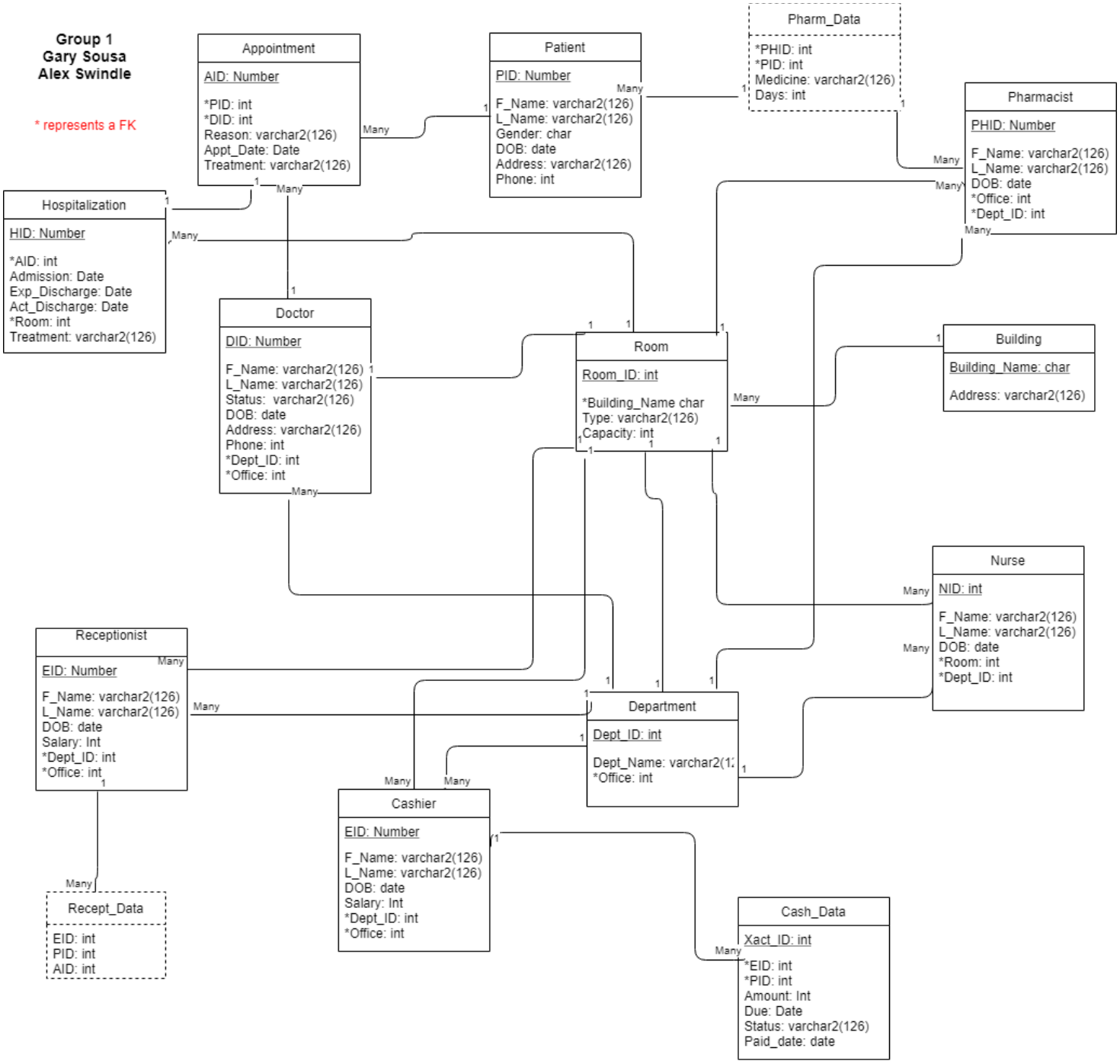
I. Conceptual and Logical Design

Final ER-D:



II. Table outline/constraints (of the actual DB used in the project—the Hospitalization table was part of Appointment and Cashier and Receptionist were combined in a Staff table instead)
* = PK
- = FK

Patient

*PID	L_Name	F_Name	Gender	DOB	Address	Phone
int	string	string	char	time	string	int

Constraints:
Gender M or F

Doctor

*DID	L_Name	F_Name	DOB	status	-Dept_ID	-office
int	string	string	time	string	int	int

Constraints:
Status is trainee, tenured, or visiting

Pharmacist

*PHID	L_Name	F_Name	DOB	-Office	-Dept_ID
int	string	string	time	int	int

Department

*Dept_ID	Dept_Name	-Office
int	string	int

Constraints:
Departments: registration, finance, emergency, surgery, oncology, cardiology, pediatrics, nursing, pharmacy

Nurse

*NID	L_Name	F_Name	DOB	-Room	-Dept_ID
int	string	string	time	int	int

Constraints:
Rooms must correspond to hospital rooms; single must have 1 nurse, double 2, 3 for five person

Staff

*EID	L_Name	F_Name	DOB	salary	-Dept_ID	-office	title	gender	phone
int	string	string	time	int	int	int	string	char	int

Constraints:
deptID must be the ones for registration or finance only
office must be one of the two rooms in building I (registration and finance offices)
title is receptionist, cashier

Building

*Building_Name	address
char	string

Constraints:

buildName is only L, I, or M

Room

*Room_ID	-Building_Name	type	capacity
int	char	string	int

Constraints:

roomID: 1 to 300. L has 170 (doctor offices, pharmacy, medical depts (???), ER), I has 2 (registration and finance), M has 128 (hospital only)

type must be: doctor office, registration office, finance office, hospital room, pharmacy, emergency room

capacity: 1, 2, 5, 6

Appointment

*AID	-PID	-DID	reason	Appt_Date	Admission	Exp_Discharge	Act_Discharge	-Room	Treatment
int	int	int	string	time	time	time	time	int	string

Constraints:

discharge and expDischarge >= Admission >= Appt_Date

treatment: surgical, medical, physical therapy

Pharm_Data (weak entity set)

-PHID	-PID	Medicine	Days
int	int	string	int

Recept_Data (weak entity set)

-EID	-PID	-AID
int	int	int

Cash_Data

*XactID	-EID	-PID	Amount	Due	Status	Paid
int	int	int	int	time	string	time

Constraints:

status is paid, late, unpaid

III. Created Query Description

Parameter: Receptionist ID
Values: The medications/prescriber/and patients for all records in the receptionist's data.

That is, for every patient in the Receptionist's logs of appointment, if they are prescribed a medicine, we return the pharmacist in charge of it, the patient's name, and the medicine.

This query satisfies all parts of the spec because we must first reference the Receptionist table, and then move to the Receptionist_Data table to pull in all patients and their medicine. Then using the PID found in Recept_Data, we join on the Pharamacist table on the matching PIDs.

In reality, this query would be useful if we wanted to see what percentages of patients were being prescribed what medications, but breaking it up into various pieces. In this case, these pieces would be partitioned by the receptionist who holds the patient's appointment.

IV. Normalization Analysis

For this analysis, we're arguing that each table is in 3rd normal form, only. This automatically argues that the table is also in 1st and 2nd normal form, since all relations in 3rd normal form must also be in 1st and 2nd.

Table	Dependencies
Appointment	AID - > ALL
Building	Building_Name -> Address
Cashier	EID -> ALL
Cash_Data	Xact_ID -> ALL
Department	Dept_ID -> ALL
Doctor	DID -> ALL
Hospitilization	HID -> ALL
Nurse	NID -> ALL
Patient	PID -> ALL
Pharmacist	PHID-> ALL
Pharmacist Data	{PHID,PID} -> ALL
Receptionist	EID -> ALL
Recept_Data	NONE
Room	Room_ID -> ALL

Justification: You'll see that each table has at most one non-trivial functional dependency and for each the left-hand side is a superkey that determines all of the other attributes in the relation. Thus, every table is in 3rd normal form.