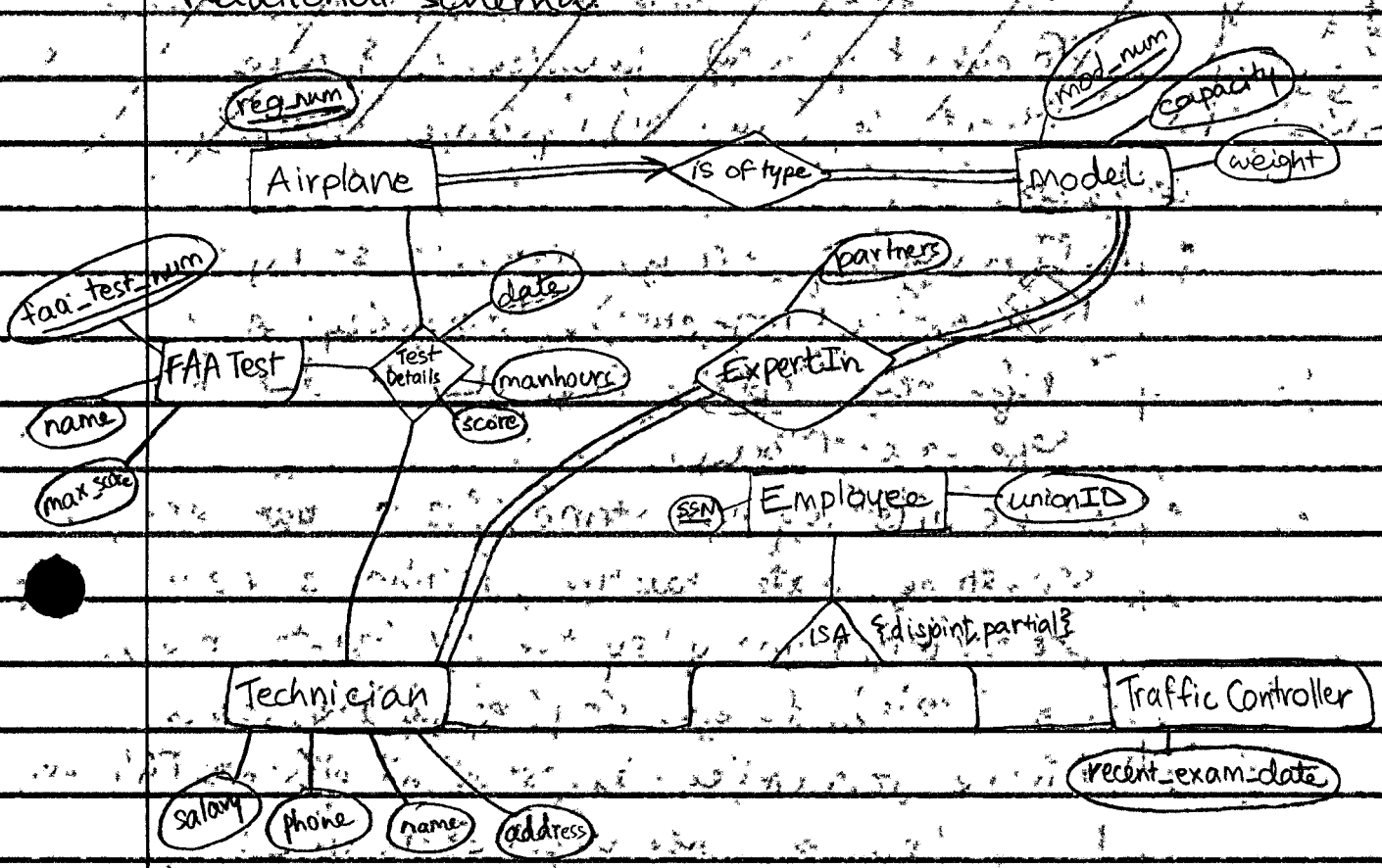
JESSIE GEORGE
HOMEWORK 2

1.

Note: I realized I can improve my ER diagram so I will draw a new ER diagram and give the relational schema



Relational Schema:

- Airplane (reg_num: string, Primary Key (reg_num))
- Model (mod_num: string, capacity: int, weight: real, Primary Key (mod_num))
- FAA_Test (faa_test_num: string, name: string, max_score: Int, Primary Key (faa_test_num))
- Technician (salary: real, phone: string, name: string, address: string, SSN: string, Primary Key (SSN), foreign key (SSN) references Employee)
- Employee (SSN: string, unionID: string, Primary Key (SSN))

- Traffic_Controller(exam_date: datetime, SSN: string, Primary key (SSN), foreign key (SSN) references Employee)
- ~~has~~Expertise(SSN: string, partners: string, mod_num: string, Primary key (SSN, mod_num, partners), foreign key (SSN) references Employee, foreign key (mod_num) references Model)

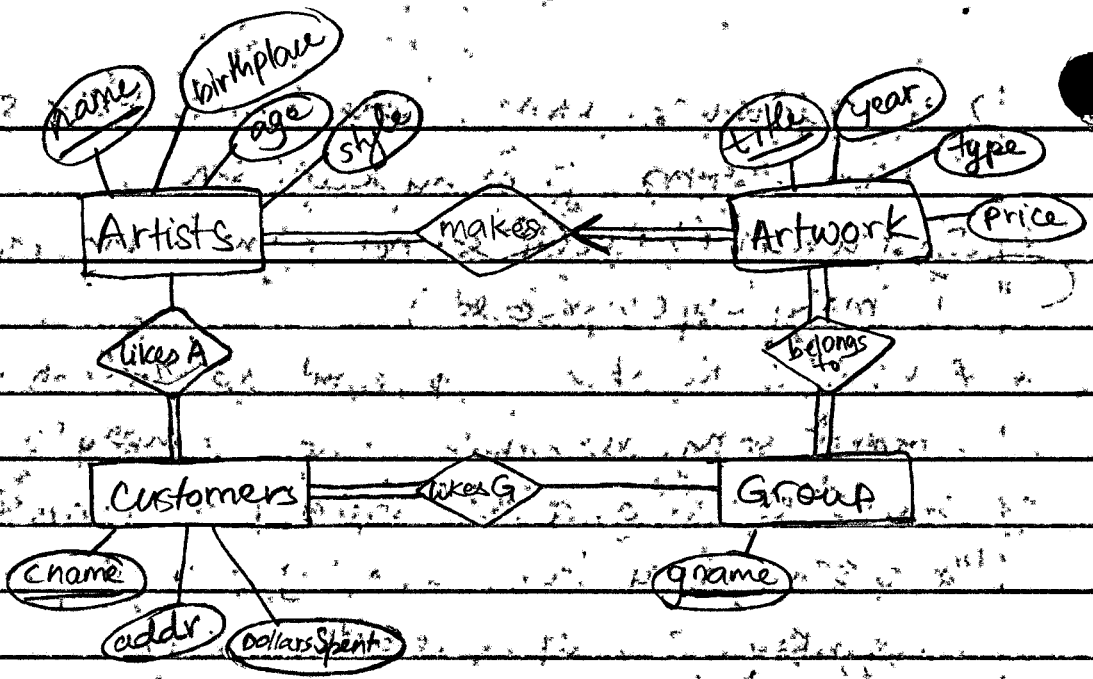
I merged the 'has' relationship with ~~has~~

- isOfType(reg_num: string, mod_num: string, Primary key (reg_num), foreign key (reg_num) references Airplane, foreign key (mod_num) references Model)
- testDetails(reg_num: string, faa_test_num: string, ssn: string, date: datetime, manhours: real, score: int, Primary key (reg_num, faa_test_num, ssn, date), foreign key (reg_num) references Airline, foreign key (faa_test_num) reference FAA_Test, foreign key (SSN) references Employee)
- ExpertIn(mod_num: string, ssn: string, partners: array of strings, primary key (mod_num, ssn, partners), foreign key (mod_num) references Model, foreign key (SSN) references Employee).

2. • Musician (ssn: string, name: string, address: string, phone: string, primary key (SSN))
• Instrument (barcode: string, name: string, musical_key: string, primary key (barcode))
• Album (title: string, copyright_date: datetime, format: string, albumID: string, primary key (albumID))
• Song (title: string, author: string, primary key (title, author))
• Plays (ssn: string, barcode: string, primary key (ssn, barcode), foreign key (ssn) references Musician, Foreign key (barcode) references Instrument)
• Contains (albumID: string, title: string, author: string, Primary key (title, author), foreign key (albumID) references Album, Foreign key (title, author) references Song)
• Performs (ssn: string, title: string, author: string, Primary key (ssn, title, author), foreign key (ssn) references Musician, foreign key (title, author) references Song)
• Produces (albumID: string, ssn: string, primary key (albumID), foreign key (albumID) references Album, foreign key (ssn) references Musician)

Are there constraints you can't capture in schema?
Yes. The cardinality constraints (one-to-many etc.) cannot be represented in relational schema. The participation (total/partial) can't be represented in relational schema.

3.



Relational schema:

- Artists(name: string, birthplace: string, age: int, style: string, primary key (name))
- Artwork(title: string, year: int, type: string, price: real, primary key (title))
- Group(gname: string, primary key (gname))
- Customers(cname: string, addr: string, DollarsSpent: real, Primary key (cname))
- makes(name: string, title: string, primary key (title), foreign key (name) references Artists, foreign key (title) references Artwork)
- LikesA(name: string, cname: string, Primary key (~~Customers~~ name), foreign key (name) references Artists, foreign key (cname) references Customers)
- LikesG(cname: string, gname: string, Primary key (cname), foreign key (cname) references Customers, foreign key (gname) references Group)