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Labouseur Lab 9

Design and document with a fully annotated ER diagram a relational database for NASA using the following data. You may create primary keys for strong entities.

- Engineers: First name, last name, highest academic degree earned, age, favorite video game
- Astronauts: First name, last name, years flying, age, golf handicap, spouse name
- Flight Control Operators: First name, last name, chair preference, age, preferred drink, recommended hangover cure
- Spacecraft: name, tail number, weight in tons, fuel type, crew capacity
- Crew: who (astronauts) flew on what spacecraft
- Systems: name, description, costUSD (a spacecraft has many systems)
- Parts: name, description, costUSD (a system has many parts)
- Suppliers: name, address, payment terms (suppliers supply parts for systems for spacecraft)
- Catalog: who supplies what parts

1. Functional Dependencies

**People**

PID → FirstName, LastName, Age

**Engineers**

PID → HighestDegree, FavVideoGame

**FlightControlOperators**

PID → ChairPref, DrinkPref, HangoverCure

**Astronauts**

PID → YearsFlying, GolfHandicap, Spouse

**Crew**

PID → SCID

**SpaceCraft**

SCID → Name, TailNumber, Weight(Tons), FuleType, CrewCapacity

**Systems**

SystemID → Name, Description, Cost(USD)

**Parts**

PartID → Name, Description, Cost(USD)

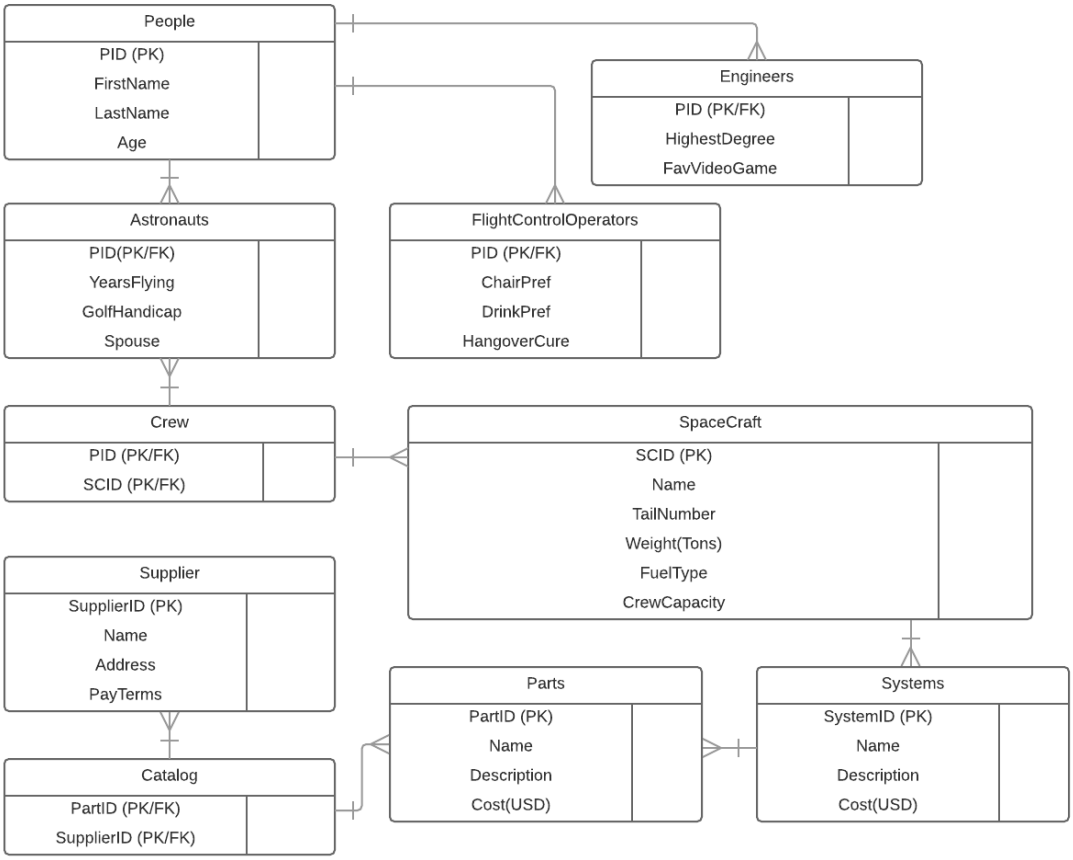
**Catalog**

PartID → SupplierID

**Supplier**

SupplierID → Name, Address, PayTerms

2. ER Diagram (Hopefully considered to be the platonic ideal)




3. This database is in first normal forms because all data is atomic, meaning each attribute contains only a single value from the specified domain. It is in second normal form because it is in first normal form and there are no partial key dependencies. This means that no attributes are dependent on subsets of candidate keys within the tables. Lastly, this database is in 3nf because it is in 2nf and there are no multi key dependencies in which a non-key entity is more dependent on another non-key entity than the primary key. Put simply, everything is dependent upon the key, the whole key, and nothing but the key.