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Database Management
Lab #9: Normalization 3
11/17/16

1) Functional Dependencies:

People:
PID → FirstName, LastName, DOB
Primary Key (PID)

Engineers:
PID → DegreeEarned, FavVideoGame
Primary Key (PID)

Astronauts:
PID → DateOfFirstFlight, GolfHandicap, Spouse
Primary Key (PID)

FlightControlOperators:
PID → ChairPreference, DrinkPreference, HangoverCure
Primary Key (PID)

EngineerCrew:
PID, SID →
Primary Key (PID, SID)

AstronautCrew:
PID, SID →
Primary Key (PID, SID)

OperatorCrew:
PID, SID →
Primary Key (PID, SID)

SpaceCraft:
SID → Name, TailNumber, WeightInTons, FuelType, CrewCapacity
Primary Key (SID)

SpaceCraftSystem:
SID, SystID →
Primary Key (SID, SystID)

Systems:
SystID → Name, Description, CostUSD
Primary Key (SystID)

SystemParts:

PartID, SystID →
Primary Key (PartID, SystID)

Parts:

PartID, SupplierID → Name, Description, CostUSD
Primary Key (PartID, Supplier ID)

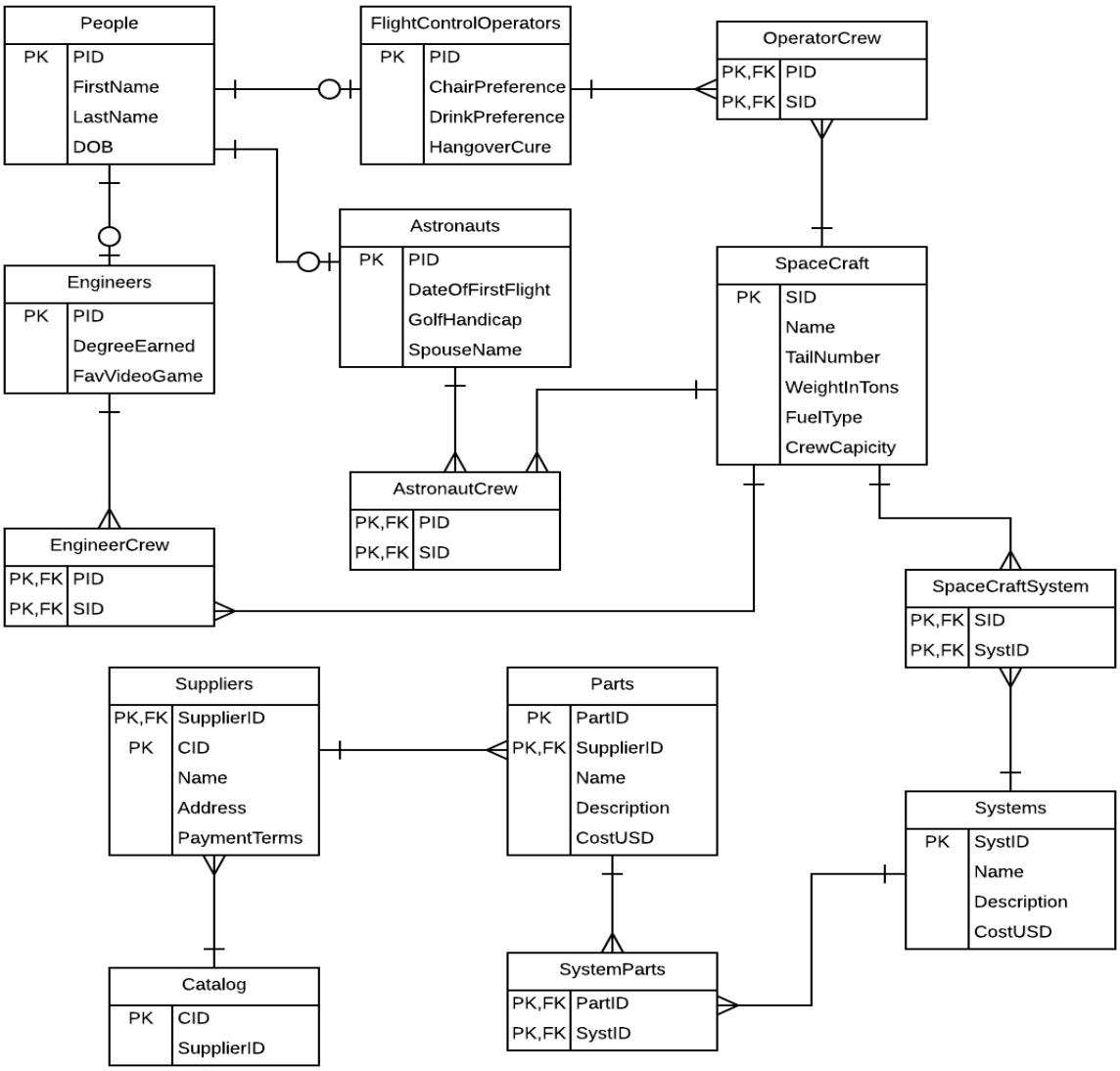
Suppliers:

SupplierID, CID → Name, Address, PaymentTerms
Primary Key (SupplierID, CID)

Catalog:

CID → SupplierID

2) E/R Diagram



3) <u>Third Normal Form?</u>

This database I have created is in 3NF. In order for a database to be in 3NF it must first be in 1NF and 2NF. My database is in 1NF since every field is atomic and also satisfies 2NF since there are no partial dependencies. Every non-key attribute is dependent on the full primary key even in cases where the primary key is a composite key. For example in the Parts table, the non-key attributes of name, description and costUSD are depended on both the partID and the supplierID. After establishing 1NF and 2NF, a database must also have the characteristic that each no-key attribute is dependent on the key, the whole key, and nothing but the key (so help you Codd) in order for it to satisfy 3NF. Every table in this database only has one primary key that is the determinant of the other no-key fields. Foreign keys are used to reference other tables and entity subtypes are used to avoid data duplication.