Jenna Ficula
Lab 9

Functional Dependencies:

(People) pid → fname, lname, DOB

(Engineers) pid → highestDegreeEarned, favoriteVideoGame

(FlightControlOperators) pid → chairPreerence, preferedDrink, hangoverCure

(Astronauts) pid → yearsFlying, golfHandicap, spouseName

sid → name, tailNum, weightTons, fuelType, crewCapacity

sysId → name, description, costUSD

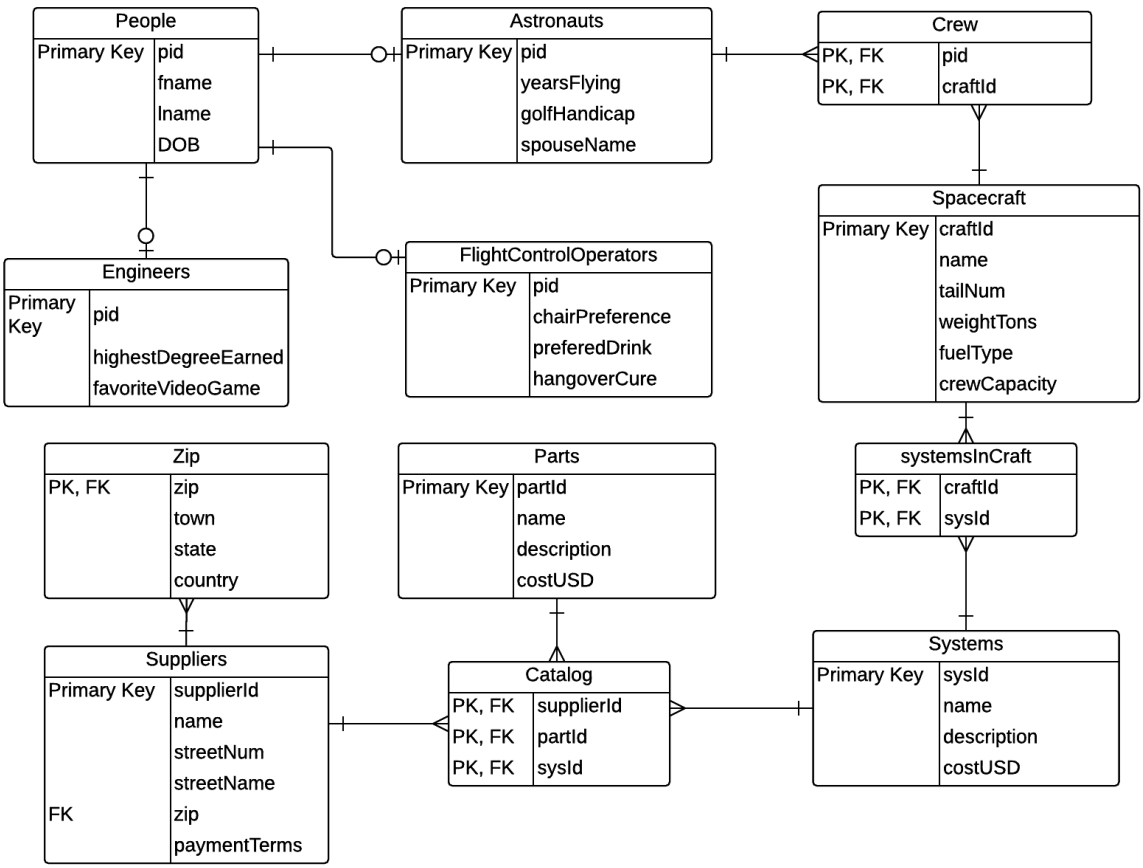
partId → name, description, costUSD

supplierId → name, address, paymentTerms

Crew → pid, craftId

systemsInCraft → craftId, sysId

Catalogue → supplierId, partId, sysId



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This database is in third normal form because it is in first and second normal form with no transitive or multi key dependencies. The database satisfies the requirements for first normal form because all fields are atomic. The only exception to first normal form would be the address field in the suppliers table. This field was broken down into atomic fields by separating out address number, address name, and zip code. In this way, there are no internal structures any individual field because address is not an inherent datatype. To be in second normal form, there must be no partial key dependencies. In the majority of tables, there are no composite keys which reduces the chance of a partial key dependency. Tables that include composite keys contain no additional attributes which means there could not be a partial key dependency.

For the database to be in third normal form there should not be any multi key dependencies. Tables each contain a single unique primary key which uniquely identifies a row. Tables with composite keys are derived from primary keys from other entities. These tables contain no other attributes. Since these composite key do not functionally determine any attributes, there are no dependencies. This table achieves third normal form. Once the table has achieve third normal form, it has essentially achieved Boyce-Codd normal form. So in these table which contain only one candidate key and are in 3NF, there are already in BCNF because there is no column that is functionally dependent on anything besides that key. Therefore, this database is in 3NF and Boyce-Codd Normal form.