

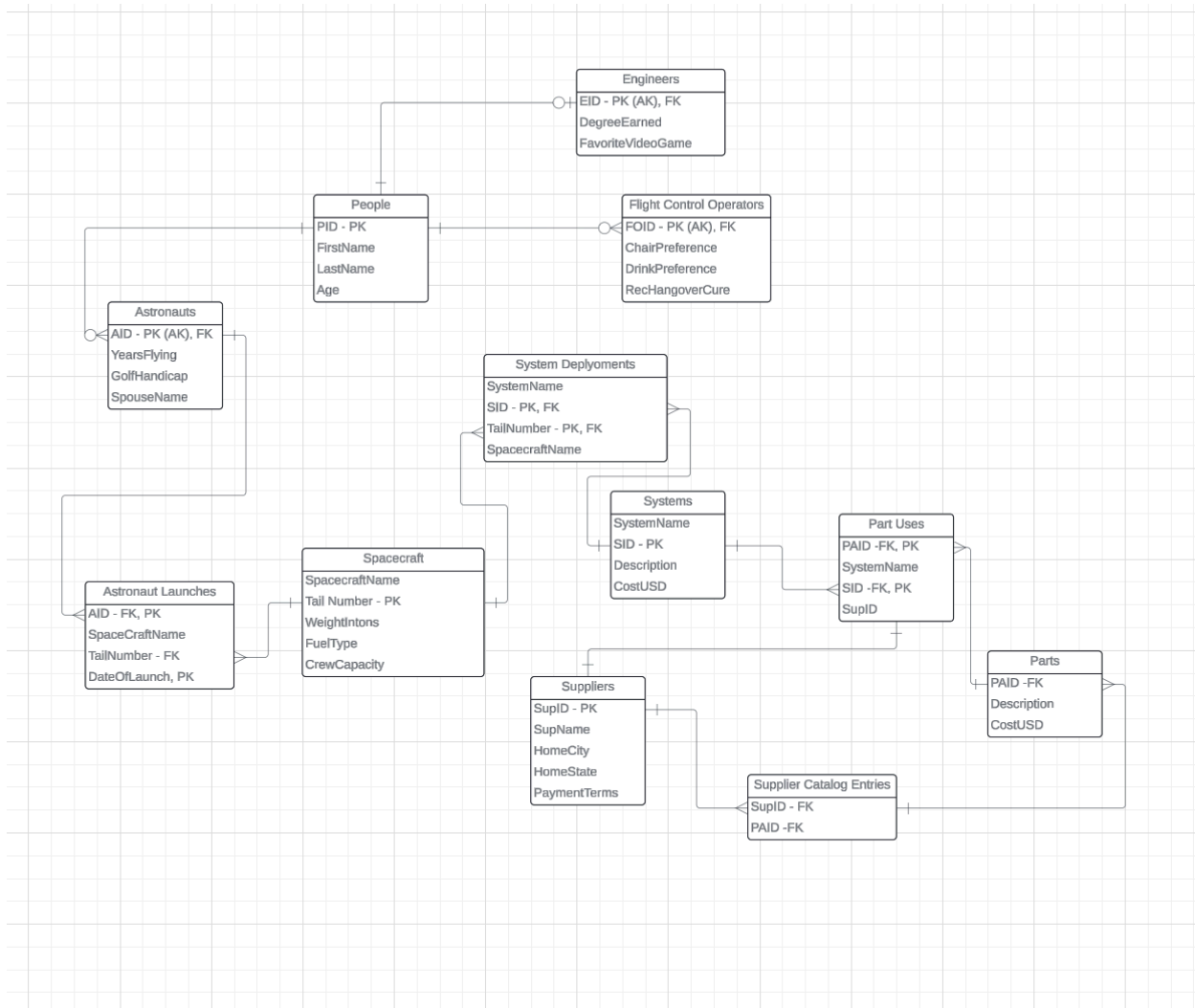
Lab 9 NASA Normalization - Shannon Maier

Functional Dependencies

- People
 - PID, first name, last name, age
 - Functional Dependencies
 - $PID \rightarrow \text{firstName, LastName, Age}$
- Engineers →
 - EID, (artificial key, foreign key), highest academic degree earned, favorite video game
 - Functional Dependencies
 - $EID \rightarrow \text{DegreeEarned, FavoriteVideoGame}$
- Astronauts
 - AID (artificial key, foreign key), years flying, gold handicap, spouse name
 - Functional Dependencies
 - $AID \rightarrow \text{years flying, gold handicap, spouse name}$
- Flight Control Operators
 - FOID (artificial key, foreign key), chair preference, preferred drink, recommended hangover cure
 - Functional Dependencies
 - $FOID \rightarrow \text{chair preference, preferred drink, recommended hangover cure}$
- Spacecraft
 - spacecraft name, tail number, weight in tons, fuel type, crew capacity
 - Functional Dependencies
 - $TailNumber \rightarrow \text{SpacecraftName, weight in tons, fuel type, crew capacity}$
- Astronaut launches
 - AID, spacecraft name, tail number, date of launch
 - Functional Dependencies
 - $AID, \text{date of Launch} \rightarrow \text{Spacecraftname, tail nnumber}$
- Systems
 - System name, SID, description, CostUSD
 - Functional Dependencies
 - $SID \rightarrow \text{SystemName, description CostUSD}$
- System deployments
 - System name, SID, spacecraft tail number
 - Functional Dependencies

- SID, Spacecraft tailNumber → System Name
- Parts
 - PAID, description, costUSD
 - Functional Dependencies
 - PAID → Description, costUSD
- Part Uses
 - PAID, system name, SID, supplierID
 - Functional Dependencies
 - PAID, SID → SystemName, supplierID
- Suppliers
 - SupplierID, name, home city, home state, payment terms
 - SupplierID → name, home city, home state, payment terms
- Part Supplier Catalog
 - SupplierID, PAID

ER Diagram



Why in 3rd Normal Form?

This database is in the 3rd Normal Form first because it is in the 2nd Normal Form: all functional dependencies are fully dependent on the Primary Keys of each table, meaning that there are no partial dependencies. All non-key attributes are dependent on only the Primary Keys. Furthermore, no non-keys are dependent on other non-keys, so there are no transitive dependencies. This makes the database in 3rd Normal Form.