**Goals**

To further develop your facility with the art and science of normalization.

**Scenario**

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 (which 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

**Deliverables**

1. Identify and document all functional dependencies.
2. Draw a fully annotated E/R diagram using LucidChart that illustrates the Platonic ideal of beautiful and correct relational database design.
3. Convince me that your database is in 3NF (or even better, in Boyce-Codd Normal Form).

**Hint**

Use entity subtypes wherever possible.

**Resources**

- Chapters 3 and 4.1 and 4.6 in our text, especially 4.1.11 and 4.6
- Stack Overflow - http://stackoverflow.com/questions/tagged/normalization
- Microsoft on Normalization - http://support.microsoft.com/kb/283878

**Submitting**

Submit your ER diagram and documentations as a PDF. Push them to your GitHub repository before the due date (see syllabus). Remember to include your name and date. Neatness counts.