Database Design

Input: Database Requirement

Output: "Relational Schema"

Steps

1. Understand the requirement and Document [Project Mile Stone #1]
   a. List down all possible queries that your database is supposed to be answering
   b. List down all "entities" and "data-items" that your database is going to store
2. Create first draft of ER Diagram. May take a few iterations; review and go back to 1 and 2.
3. Have a final ER Diagram [Project Mile Stone #2]
4. Produce "Relational Schema" from ER Diagram using various "ER to Relation mapping rules"
5. Normal Forms are measure of goodness of a relation. A desirable normal form is BCNF.
6. There are various checks (rules) that are used to determine "Normal Forms". We use concept of "functional dependencies" in determining normal form of a relation.
7. If we find any relation is in a normal form that is lesser than BCNF, we attempt "decomposing" that relation in multiple relations such that we are in BCNF.
8. While decomposition, it is to be ensured that we do not lose anything: data, information, constraint, etc.
9. You have final "Relational Schema" [Project Mile Stone #3]

Database Implementation

1. Write DDL and create schema on a RDBMS (like PostgreSQL)
2. Put in some sample data [Deliverable #4, scripts of (1) and (2)]
3. Write down select queries that are important for the database project [Deliverable #5]
4. Identify some stored procedures or triggers and code them [Deliverable #6]
5. Simple Console Application in C, Java, or whatever you like to use [Deliverable #7]
6. **Final Submission**: final project. Deliverables in final submission are listed in project description.