DBMS Projects

These are module based projects to be done as a direct implementation of whatever you learn in your classes.

1. Disk + Record Manager

- Design an efficient way to store records on a disk
- Explore various record-storing protocols
- Build indexes as and when required
- Keep track of disk accesses (read/write ops)
- Compare the efficiency for various workloads
  - Select / Join
  - Which index is present / not present, etc..

2. Query Processor + Optimizer

- Process a given query to generate its computation graph
  - You can use tools like bison & flex for this part
- Generate a plan (like psql or sqlite) and estimate the cost of the operation
- Perform basic optimizations as in Silberschatz

3. Concurrency Manager

- Implement Two PL protocol
- Maintain a resource allocation graph to detect and handle deadlocks
- Bonus Credit: Implement the Tree Locking Protocol
- During the demo, proper logs must be shown for all the lock and unlock operations

4. Transaction Manager

- Implement Read Committed and Repeatable Read / Snapshot Isolation
- It's a bit difficult in general, so no need to be perfectly correct.
- Proper logs, benchmarks and demos must be shown