DB Design Proposal

# Intro

We design a database that will hold all possible records needed by a hospital to function and even thrive. The special focus on enabling data for analytics will help in future trend identification and problem solving for highly functional teams.

# Proposed Classes

We should start by identifying the hospital as an object. Then we have the whole collective of elements that interact with this hospital object to create a complex ecosystem. This can be the doctors, nurses and staff who are the lifeblood of the system and then we have the patients who interact with them.

The by products are inventory management along with a complex assortment of documents to accompany all elements of the hospital. These include invoices, prescriptions, lab test reports/results, staff pay, admin directives/rules etc.

Let us categorize the elements:

1. Rooms
   1. Offices
   2. Emergency Services
   3. Inpatient Areas
   4. Outpatient Rooms
   5. Diagnosis Areas
   6. Surgical Units
   7. Administrative Areas
   8. Specialized Departments
   9. Support Services
   10. Residential and Visitor Areas
   11. Utility Areas
   12. Misc Facilities
2. Inventory
   1. Pharmaceuticals
   2. Edibles
   3. Medical Equipment
   4. Supplies
   5. Electronics
   6. Vehicles
3. Budget
   1. Budget
   2. Department Budget
   3. Expense
   4. Revenue
   5. Compensations
   6. Cash Flow
4. Staff
   1. Board
   2. Directors
   3. Medical Administration
   4. Non-Medical Administration
   5. Doctors
   6. Nurses
   7. Medical Technicians
   8. Therapists
   9. Clinical Support
   10. Non-Medical Support
   11. Pharmacy
   12. Transport
   13. Teaching
   14. Research
   15. Volunteers
5. Patients
   1. Medical Record
   2. Consent Forms
   3. Prescriptions
   4. Invoice
6. Schedule
   1. Shift
   2. Staff
   3. Appointments
   4. Emergency
   5. Maintenance
   6. Room
   7. Vehicle
   8. Equipment
7. Documents
   1. Directives
   2. Invoice
   3. Lab Report
   4. Attendance
   5. Insurance
   6. Contracts
   7. Meeting Minutes
   8. Emergency Logs
   9. Maintenance Logs
   10. Expense Logs
   11. Revenue Logs

# Proposed Features

Now that we have grouped the hospital into many parts, let's identify the components that constitute these individual parts.

1. Rooms
   1. Doctor Offices
      1. Id
      2. Floor
      3. Inventory Units Id
   2. Emergency Services
      1. Id
      2. Name
      3. Floor
      4. Critical Level
      5. Availability
      6. Inventory Units Id
   3. Inpatient Areas
      1. Id
      2. Name
      3. Floor
      4. Capacity
      5. Intensive Care
      6. Availability
      7. Inventory Units Id
   4. Outpatient Rooms
      1. Id
      2. Name
      3. Floor
      4. Capacity
      5. Availability
      6. Inventory Units Id
   5. Diagnosis Rooms
      1. Id
      2. Name
      3. Floor
      4. Capacity
      5. Diagnostic Facilities List
      6. Availability
      7. Inventory Units Id
   6. Surgical Units
      1. Id
      2. Name
      3. Floor
      4. Surgery Type
      5. Attached Teaching Area
      6. Availability
      7. Inventory Units Id
   7. Administrative Rooms
      1. Id
      2. Floor
      3. Executive Level
      4. Department
      5. Inventory Units Id
   8. Specialized Departments
      1. Id
      2. Name
      3. Floor
      4. Capacity
      5. Treatment Facilities List
      6. Availability
      7. Inventory Units Id
   9. Support Services
      1. Id
      2. Name
      3. Floor
      4. Inventory Units Id
   10. Pharmacy
       1. Id
       2. Floor
       3. Invoice Id
       4. Pharmaceuticals Id
       5. Pharmaceuticals Quantity
       6. Inventory Units Id
   11. Residential and Visitor Areas
       1. Id
       2. Floor
       3. Type
       4. Capacity
       5. Inventory Units Id
   12. Utility Areas
       1. Id
       2. Name
       3. Floor
       4. Utility Type
       5. Utility Output Units
       6. Inventory Units Id
   13. Misc Facilities
       1. Id
       2. Name
       3. Type
       4. Capacity
       5. Area Units
       6. Inventory Units Id
   14. Inventory Units
       1. Id
       2. Medical Equipment Id
       3. Electronics Id
       4. Vehicles Id
2. Inventory
   1. Pharmaceuticals
      1. Id
      2. Name
      3. Brand
      4. Type
      5. Volume Unit
      6. Weight Unit
      7. Package Size Unit
      8. Quantity
      9. Purchase Date
      10. Expiration Date
   2. Edibles
      1. Id
      2. Name
      3. Kitchen Id
      4. Purchase Date
      5. Expiration Date
   3. Medical Equipment
      1. Id
      2. Room Type
      3. Room Id
      4. Available
      5. Maintenance Schedule Id
      6. Maintenance Logs Id
      7. Start Date
      8. End Date
   4. Supplies
      1. Id
      2. Name
      3. Quantity
      4. Pharmacy Id
      5. Purchase Date
      6. Expiration Date
   5. Electronics
      1. Id
      2. Name
      3. Medical
      4. Quantity
      5. Room Id
      6. Start Date
      7. End Date
   6. Vehicles
      1. Id
      2. Type
      3. Model
      4. Purpose
      5. Capacity
      6. Availability
      7. Maintenance Schedule Id
      8. Maintenance Logs Id
3. Budget
   1. Budget
      1. Id
      2. Year
      3. Total Amount
      4. Allocated Amount
      5. Remaining Amount
      6. Description
   2. Department Budget
      1. Id
      2. Department Id
      3. Year
      4. Total Amount
      5. Allocated Amount
      6. Remaining Amount
      7. Description
   3. Expense
      1. Id
      2. Department Id
      3. Amount
      4. Invoice Id
      5. Date
      6. Approved By
      7. Description
      8. Type
      9. Cashflow Id
   4. Revenue
      1. Id
      2. Department Id
      3. Amount
      4. Invoice Id
      5. Date
      6. Description
      7. Type
      8. Cashflow Id
   5. Compensations
      1. Id
      2. Staff Id
      3. Amount
      4. Invoice Id
      5. Date
      6. Approved By
      7. Description
      8. Type
      9. Cashflow Id
   6. Cash Flow
      1. Id
      2. Balance
      3. Amount
      4. Invoice Id
      5. Flow
      6. Date
      7. Type
      8. Record Editor
4. Staff
   1. Board
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
   2. Directors
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Active
      6. Start Date
      7. End Date
      8. Responsibility Description
   3. Administration
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Active
      6. Start Date
      7. End Date
      8. Medical
   4. Doctors
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Specialization
      6. Qualifications
      7. Active
      8. Start Date
      9. End Date
      10. Research Team Id
   5. Nurses
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Trainings
      6. Licenses
      7. Active
      8. Start Date
      9. End Date
   6. Medical Technicians
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Licenses
      6. Active
      7. Start Date
      8. End Date
      9. Equipment Operators
   7. Therapists
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Qualifications
      6. Licenses
      7. Active
      8. Start Date
      9. End Date
   8. Clinical Support
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Qualifications
      6. Licenses
      7. Active
      8. Start Date
      9. End Date
   9. Non-Medical Support
      1. Id
      2. Profile Id
      3. Position Id
      4. Attendance Id
      5. Active
      6. Start Date
      7. End Date
   10. Pharmacy
       1. Id
       2. Profile Id
       3. Position Id
       4. Attendance Id
       5. Licenses
       6. Active
       7. Start Date
       8. End Date
   11. Transport
       1. Id
       2. Profile Id
       3. Position Id
       4. Attendance Id
       5. Licenses
       6. Active
       7. Start Date
       8. End Date
   12. Teaching
       1. Id
       2. Profile Id
       3. Position Id
       4. Attendance Id
       5. Specializations
       6. Qualifications
       7. Trainings
       8. Active
       9. Start Date
       10. End Date
       11. Research Id
   13. Research Teams
       1. Id
       2. Research Description
       3. Start Date
       4. End Date
       5. Attendance Id
       6. Result Description
       7. Reports Id
       8. Office Id\*
   14. Volunteers
       1. Id
       2. Profile Id
       3. Attendance Id
       4. Department Id
       5. Start Date
       6. End Date
   15. Departments
       1. Id
       2. Description
       3. Offices Id List\*
   16. Position
       1. Id
       2. Title
       3. PayScale
       4. Compensation
       5. Position Description
       6. Department Id
       7. Clearance
       8. Office Id
5. Patients
   1. Patient
      1. Id
      2. Profile Id
      3. Inpatient
   2. Consent Forms
      1. Patient Id
      2. Consent Form Id
      3. Date
   3. Prescriptions
      1. Patient Id
      2. Invoice Id
      3. Date
   4. Invoice
      1. Patient Id
      2. Invoice Id
      3. Date
   5. Lab Reports
      1. Patient Id
      2. Invoice Id
      3. Date
   6. Medical Records
      1. Patient Id
      2. Medical Record Id
      3. Date
6. Profile
   1. Id
   2. First Name
   3. Last Name
   4. Contact Number
   5. Emergency Contact Number
   6. Address 1
   7. Address 2
   8. Email
7. Schedule
   1. Shift
      1. Id
      2. Shift Id
      3. Staff Unit Id
      4. Department Id
      5. Room Id
   2. Doctor Unit Id
      1. Id
      2. Doctor Unit Id
      3. Doctor Id
   3. Staff Unit
      1. Id
      2. Staff Unit Id
      3. Staff Id
   4. Shift Description
      1. Id
      2. Description
      3. Start Date
      4. End Date
   5. Appointments
      1. Id
      2. Patient Id
      3. Doctor Id
      4. Staff Unit Id
      5. Room Id
      6. Start Date
      7. End Date
   6. Emergency
      1. Id
      2. Patient Id
      3. Doctor Id
      4. Staff Unit Id
      5. Room Id
      6. Start Date
      7. End Date
   7. Maintenance
      1. Id
      2. Room Id
      3. Inventory Unit Id
      4. Staff Unit Id
      5. Start Date
      6. End Date
   8. Vehicle
      1. Id
      2. Purpose
      3. Vehicle Id
      4. Start Date
      5. End Date
   9. Inventory Unit
      1. Id
      2. Medical Equipment Id
      3. Electronics Id
   10. Patient Attendances
       1. Id
       2. Patient Id
       3. Doctor Unit Id
       4. Staff Unit Id
       5. Purpose
       6. Date
       7. Room Id
8. Documents
   1. Directives
      1. Id
      2. Name
      3. Approved By
      4. Approved Date
      5. Start Date
      6. End Date
      7. Report Id
      8. Pdf Link
   2. Invoice
      1. Id
      2. Name
      3. Description
      4. Currency
      5. Total Amount
      6. Tax Amount
      7. Issuer Id
      8. Issuer Name
      9. Recipient Id
      10. Recipient Name
      11. Issue Date
      12. Payment Date
      13. Payment Status
      14. Approved By
      15. Pdf Link
   3. Prescriptions
      1. Id
      2. Doctor Unit Id
      3. Patient Id
      4. Patient Name
      5. Date
      6. Approved By
      7. Pdf Link
   4. Lab Report
      1. Id
      2. Name
      3. Description
      4. Medical Equipment Id
      5. Patient Id
      6. Doctor Unit Id
      7. Staff Unit Id
      8. Date Of Test
      9. Date of Report
      10. Approved By
      11. Pdf Link
   5. Consent Forms
      1. Id
      2. Name
      3. Description
      4. Patient Id
      5. Approved By
      6. Consenter Name
      7. Consenter Profile Id
      8. Date
      9. Pdf Link
   6. Report
      1. Id
      2. Name
      3. Description
      4. Issuer Id
      5. Date
      6. Pdf Link
   7. Attendance
      1. Id
      2. Attendance Id
      3. Shift Id
      4. Start Date
      5. End Date
   8. Insurance
      1. Id
      2. Policy Name
      3. Policy Description
      4. Policy Type
      5. Holder Profile Id
      6. Provider Name
      7. Provider Representative Name
      8. Provider Representative Id
      9. Approved By Id
      10. Approval Date
      11. Coverage Amount
      12. Premium Amount
      13. Start Date
      14. End Date
      15. Claim Limit
      16. Provider Contact
      17. Provider Email
      18. Status
      19. Pdf Link
   9. Contracts
      1. Id
      2. Name
      3. Description
      4. Contract Type
      5. Start Date
      6. End Date
      7. Renew Date
      8. Status
      9. Department Id
      10. Issued By Id
      11. Approved By Id
      12. Signee Id
      13. Payment Amount
      14. Pdf Contract Link
      15. Pdf Terms and Conditions Link
   10. Meeting Minutes
       1. Id
       2. Agenda
       3. Report Id
       4. Staff Units Id
       5. Member Count
       6. Start Date
       7. End Date
   11. Patient Medical Records
       1. Id
       2. Patient Id
       3. Date
       4. Appointment
       5. Inpatient
       6. Room Id
       7. Doctor Unit Id
       8. Staff Unit Id
       9. Diagnosis
       10. Treatment
       11. Approved By Id
       12. Additional Notes
       13. Pdf Link
   12. Medical Equipment Logs
       1. Id
       2. Medical Equipment Id
       3. Usage Start Date
       4. Usage End Date
       5. Patient Id
       6. Operator Id
       7. Report Id
   13. Emergency Logs
       1. Id
       2. Critical Level
       3. Description
       4. Report Id
       5. Patient Id
       6. Room Id
       7. Doctor Unit Id
       8. Staff Unit Id
       9. Date
   14. Maintenance Logs
       1. Id
       2. Room Id
       3. Medical Equipment Id
       4. Vehicle Id
       5. Electronics Id
       6. Start Date
       7. End Date
   15. Prescription Details
       1. Id
       2. Prescription Id
       3. Pharmaceutical Id
       4. Supplies Id
       5. Usage Description
   16. Invoice Details
       1. Id
       2. Invoice Id
       3. Pharmaceuticals Id
       4. Supplies Id
       5. Electronics Id
       6. Medical Equipment Id
   17. Staff Unit
       1. Id
       2. Director Id
       3. Administration Id
       4. Doctor Id

We can now use this template to build our database and customize it further.