

ASSUMPTIONS AND NOTES

The conceptual model presented below has been designed in the context of "Pharma Rx" - a pharmacy franchise. The model follows a simple "to-be" approach instead of "as-is" because, in my experience, businesses do not usually update the conceptual model in the future, unless there is a substantial change in the model, and updating a conceptual model could be complicated, once the application is pushed to production. So I have tried to post all the entities and functions

Overall assumption:

◆ The patient makes a good entry point for a pharmacy management system, **we do not need to keep a track of Doctor, Clinic, and Testing related activities** such as appointments, tests, and reports. This model is based on four fundamental entities: patient, prescription label, pharmacy store and, the pharmacist. But to address, and facilitate some business constraints that are a part of the pharmacy-business workflow, I have added a bunch of useful entities and relations. These are: Doctor, Drug Information, Sales Invoice, Stock Information, and a Recall Book.

◆ In basic terms, **the process-flow relevant to a pharmacy business** goes like this: The patient visits a doctor, the doctor writes a prescription, the patient takes this prescription to a pharmacy store in his/her vicinity, the pharmacist verifies the doctor's signature i.e.. the authenticity of the prescription, the pharmacist checks for the drug's availability from the POS terminal, if the drug is available the pharmacist will generate a label for the drug, and an invoice for the customer (patient), the patient collects the invoice and the drug container.

◆ **The doctor entity** is essential for a pharmacy to keep a centrally governed database of all registered doctors, it is needed to verify the authenticity of the prescription that was written for a patient. Prescription drugs sales have to be moderated, and reported back to the governing authorities. A customer can easily forge a prescription, so we keep a log of doctor's essential information such as a registered license number, to verify the doctor's identity, block the drug sale, and blacklist the customer (patient).

◆ **Drug Information, Stock Information and Recall register:** The entities label, and invoice are dependent upon drug information and drug availability, this information must be stored properly for multiple purposes:

- A) To avoid the effort of manually inputting a drug's name, by using a unique drug identifier code to identify the drug.
- B) To keep track of drug inventory, and the storage location of each drug for the more efficient functioning of the pharmacy.
- C) To facilitate effortless printing of labels and invoices.
- D) To keep a tab of batch information, which could come handy in the event of a drug recall
- E) To facilitate the pharmacy in notifying customers when a recall event takes place
- F) To facilitate efficient discarding of recalled batches, and expired drugs.

Base Entity Definitions:

- 1.) **Prescription:** A health care program implemented by a physician or other qualified health care practitioner in the form of instructions that govern the plan of care for an individual patient, often abbreviated Rx or RX. The term Rx often refers to a health care provider's written authorization for a patient to purchase a prescription drug from a pharmacist.
 - 2) **Pharmacist:** Pharmacists, also known as chemists or druggists, are health professionals who specialize in the use of medicines, as they deal with the composition, effects, mechanism of action and proper and effective use of drugs.
 - 3) **Pharmacy Shop:** Commonly referred as "Pharmacy" is a retail shop which provides prescription drugs, among other products. At the pharmacy, a pharmacist oversees the fulfillment of medical prescriptions and is available to give advice on their offerings of over-the-counter drugs.
 - 4) **Patient:** A person suffering(or potentially) from an ailment; receiving or registered to receive medical treatment.
 - 5) **Doctor:** a person who is institutionally qualified to treat people who are suffering from an ailment.
 - 6) **Prescription Label:** All prescription medicine containers include information on the label including the patient's name, the name of the medicine, dosage and instructions on how often to take the medicine.
-

Key Assumptions:

- 1.) A **prescription** may be made by only one doctor. ie.. multiple doctors cannot be grouped to write a single prescription
- 2.) A **prescription** may be made for only one patient ie.. multiple patients cannot be part of a single prescription
- 3.) A single **label** may only be generated for a single patient. i.e.. the same label cannot name multiple patients
- 4.) A **pharmacy** may need to have at least one operating pharmacist. and it is not an online store.
- 5.) A **label** may be generated by a single pharmacist. i.e.. At any point, a label can only refer to one pharmacist.
- 6.) A **pharmacist** may also provide an invoice along with the labeled package(usually)
- 7.) A **pharmacy** needs to update the total item count in the inventory, after every drug sale.
- 8.) A **Doctor, Pharmacy, and Pharmacist** have a unique license number issued by a governing agency that can be used to identify them within a country.
- 9.) **Multiple stores** of a brand pharmacy can share the same license number. hence a pharmacyId key attribute is preferable to uniquely identify the pharmacy
- 10.) **Drugs** have a unique identifier code for ex. A National Drug Code (NDC) is used in the US, it is a universal product identifier, such standards are usually found in most countries.
- 11.) In an uncertain event of a **drug recall**, all the bad batches are discarded, and patients who were provided drugs from bad batches are notified.

