A Prescription Management System

The goal is to construct an information system to assist a pharmacist in filling and refilling prescriptions. A prescription is a dated, written order for a drug compound issued for a customer by a physician. Information on a prescription must include a specification of the compound, quantity, and instructions. Instructions are required, including mode of administration (oral, nasal, injection, etc.), even if they are simply "take as directed." A prescription may optionally include number of refills and an indication to fill generically or as written. A customer presents a prescription to a pharmacy to have it filled. The pharmacy assigns a number to each prescription and enters it in the system. Prescriptions expire one year after they are written or when all refills are completed but are held at a pharmacy for five years.

The prescription will include a diagnostic code for the purpose of the prescription. The pharmacist can use the diagnostic code to verify that the compound is being taken for an appropriate condition. For example, if a medication for high blood pressure was prescribed with a diagnostic code for low blood pressure, the pharmacist might check with the doctor. Each compound has default instructions and a route of administration, which the pharmacist might check against the specifications of the doctor. The prescription has an authorized number of refills, each of which must be tracked. This model treats the first filling of the prescription as a refill for simplicity.

A customer has a name, address, age, a list of known allergies to prescription drugs, one or physicians and an affiliation with an insurance company. A customer may have many active prescriptions.

An allergy is identified by a code that identifies an allergic reaction to a drug or family of drugs. Customer allergies are identified by a pharmacy as a list of allergy codes. A customer is allergic to any compound with the same code. Thus, when a new compound becomes available, the manufacturer can identify vulnerable individuals by determining their allergy codes.

A physician has a unique identification number, a telephone number and a license number and may have many patients.

A customer may have a primary insurance carrier that may pay some or all of the cost of a prescription. An insurance carrier may approve direct payment to the pharmacy on behalf of a customer. There are reimbursement rules governing the insurance coverage, including specification of deductible amounts and co-payments. Payment approval for a refill is done electronically with transactions with the insurance carrier. Each insurance transaction includes a transaction number, which identifies and authenticates the transaction, and an approval code" which indicates the response of the insurance carrier.

The system should assist the pharmacist with the tasks:

- Assign a prescription number to the prescription for identification purposes.
- Fill or refill a prescription, including printing labels and instructions.
- Track the number of refills left and the expiration date of the prescription.
- Verify that the drug is appropriate for the condition being treated.
- Locate existing information on customers and prescriptions.
- Add new customers and new drugs

The system should assist with the following insurance tasks:

- Entering and editing customer insurance information
- Determining if a given prescription is covered by the customer's insurance
- Electronic negotiation of payment for a refill with a customer's insurance carrier.
- Determining how much of the price of the refill is covered by insurance.

The data entry GUI and the label printing systems are separate systems with which the prescription system communicates by messages. The insurance carriers is also a separate system with which the prescription system communicates by messages.