Scenario: Prescription fulfilment at CVS Pharmacy

CVS is a large pharmacy chain with hundreds of pharmacy stores. One of CVS’s main activities is to sell prescription drugs. Customers of CVS can submit their prescriptions via a Web form or the CVS mobile app. For this, they just have to fill in a couple of questions, enter their preferred date-time and the pharmacy store where they would like to pick up their prescription, and then upload a picture of their prescription.

Some customers submit their prescription in person, by dropping it off in the drive-through counter or in the front counter of a pharmacy store. Customers who drop-off their prescription in-person can request that their prescription be filled immediately. In this case, they have to wait 20-60 minutes depending on the workload. Most drop-off customers are not willing to wait that long, so they opt to nominate a pick-up time at a later point during the day. Generally, customers drop their prescriptions in the morning before going to work (or at lunchtime) and they come back to pick up the drugs after work, typically between 5pm and 6pm. When dropping their prescription, a technician asks the customer for the pick-up time and puts the prescription in a box labelled with the hour preceding the pick-up time. For example, if the customer asks to have the prescription be ready at 5pm, the technician will drop it in the box with the label 4pm (there is one box for each hour of the day).

Every half an hour or so, a pharmacy technician checks the prescriptions that have been submitted, both those submitted online or those in the drop-off box. During busy times (almost always) the technician focuses on the prescriptions that are due to be picked-up within the next one hour (those for later hours are left there and handled later, closer to the pick-up time).

The technician enters the details of each prescription (e.g. doctor details, patient details and medication details) into the pharmacy system. Note that this needs to be done both for prescriptions submitted on paper as well as those submitted online (as a picture). The pharmacy has tried to use OCR in the past, but doctor’s handwriting is not the easiest thing to handle for OCR systems.

As soon as the details of a prescription are entered, the pharmacy system performs an automated check called Drug Utilization Review (DUR). This check is meant to determine if the prescription contains any drugs that may be incompatible with other drugs that had been dispensed to the same customer in the past, or drugs that may be inappropriate for the customer taking into account the customer data maintained in the system. Any alarms raised during the automated DUR are reviewed by a pharmacist who performs a more thorough check. In some cases, the pharmacist even has to call the doctor who issued the prescription in order to confirm it.

After the DUR, the system performs an insurance check in order to determine whether the customer’s insurance policy will pay for part or for the whole cost of the drugs. In most cases, the output of this check is that the insurance company would pay for a certain percentage of the costs, while the customer has to pay for the remaining part (also called the co-payment). The rules for determining how much the insurance company will pay and how much the customer has to pay are very complicated. Every insurance company has different rules. In some cases, the insurance policy does not cover one or several drugs in a prescription, but the drug in question can be replaced by another drug that is covered by the insurance policy. When such cases are detected,
the pharmacist generally calls the doctor and/or the patient to determine if it is possible to perform the drug replacement.

Once the prescription passes the insurance check, it is assigned to a technician who collects the drugs from the shelves and puts them in a bag with the prescription stapled to it. After the technician has filled a given prescription, the bag is passed to the pharmacist who double-checks that the prescription has been filled correctly. After this quality check, the pharmacist seals the bag and puts it in the pick-up area. When a customer arrives to pick up a prescription, a technician retrieves the prescription and asks the customer for payment in case the drugs in the prescription are not (fully) covered by the customer’s insurance.

CVS pharmacy has a high churn rate. Over 10% of customers churned in the past year due to poor customer service. Recurrent customer complaints include the fact that a customer arrives at pickup time and their prescription is not ready yet, that customers have to wait long in the queue when they arrive to pick up their prescription, and that oftentimes, customers have to pay more than they expected to pay (because the insurance did not cover the drugs or only a small percentage of them).