**System:**  
An international-level pharmacy system named *Mirwais Nika*, connected to Kandahar Province, Daman District, Khosh Ab Village, near Sayedano Mosque. This pharmacy is designed to operate both locally and internationally. It supports multilingual use (Pashto, English, Persian, Urdu), and accepts medication from various countries including Pakistan, Iran, India, and others.

This pharmacy sells international medicines, where **each drug must have**: a globally unique barcode (GS1 standard), name, manufacturer/company, manufacturing date, expiry date (EXPDATE), category (such as antibiotic, painkiller, etc.), purchase price (supporting currency types), selling price, drug type (tablet, capsule, syrup, injection, etc.), national drug code (if applicable), storage requirements, and current quantity in stock. The system should store and track all drugs with complete accuracy.

This pharmacy has a responsible **nurse doctor** who is assigned to examine patients and give prescriptions. The doctor's profile must include: full name, father's name, job title (doctor/nurse/pharmacist), medical license number, shift timing, contact information, and age.

The doctor examines patients. **Each patient must have**: name, surname, full place of residence (village/city, district, province), type of disease, and a diagnosis code (e.g., ICD-10), and is issued a prescription based on the illness. **Each prescription must contain**: a unique barcode, patient name, doctor’s name, list of drugs with drug name, quantity, unit price, and total price, total prescription price, date and time, optional digital notes from the doctor, language of prescription (Pashto, English, etc.), and must be automatically printed via a connected printer. The prescription should also support digital signature capability.

In this system, there are also **loan services** for patients who cannot pay at the time of service. Each loan must include: borrower’s full name, loan amount, loan issue date, due date, payment status (paid, unpaid, overdue), and optional contact number. The system should also generate a report of all issued loans, outstanding loans, and overdue cases.

Additionally, the pharmacy offers **examination services** for patients. Each examination must have a unique code, examination type (blood test, diabetes, BP check, etc.), date and time, assigned medical staff, report (optional), and examination fee.

1. The **entire capital** of the pharmacy based on the purchase price and stock quantity of each drug should be calculated and always visible.
2. If any **drug is sold**, its stock quantity should automatically be deducted. The system must also reduce the capital accordingly based on the quantity sold × purchase price.
3. The system must generate **daily, monthly, and yearly sales reports** that include:
   * Drug name and quantity sold
   * Purchase price per drug and total
   * Selling price per drug and total
   * Total profit made per day, month, and year
   * Filter options to view reports by drug, category, or doctor
4. The system must **alert** when any drug has **three months or less** left before its expiry date, with daily onscreen and printable reports.
5. If the **quantity of any drug becomes zero**, it should generate an **out-of-stock alert**, clearly marking that the drug exists in the system but is no longer physically available.
6. The system should mention the **list of given loans** and calculate their **total value**. It must show all unpaid, paid, and overdue loans with filtering by date or patient.
7. If the **price of a drug is determined by the doctor**, the system must support this functionality and update drug prices. Also, when the barcode is scanned, the system must **automatically show all information about the drug**, including its name, expiry date, quantity, price, company, type, and usage category, without manual search.

The system should support multilingual printing, allow multiple users with different roles (admin, doctor, cashier, storekeeper), provide real-time analytics dashboards (sales, capital, loans, expiries), support regular database backup and data security, and optionally integrate with mobile apps or web-based portals for managing inventory, patients, and reports across multiple pharmacy branches.

**Entities and their Attributes:**

**1. Pharmacy**

* **pharmacy\_id** (Primary Key)
* **name**
* **location** (includes village, district, province, and mosque name)
* **contact\_information** (phone number, email)
* **international\_support** (yes/no for multi-language and multi-currency support)
* **branch\_id** (if multi-branch)

**2. Drug**

* **drug\_id** (Primary Key)
* **barcode** (Unique, GS1 Standard)
* **name**
* **category** (e.g., Antibiotic, Painkiller, etc.)
* **manufacturer** (Company Name)
* **national\_drug\_code** (Optional, NDC or other relevant code)
* **manufacturing\_date**
* **expiry\_date** (EXPDATE)
* **purchase\_price** (currency-specific)
* **selling\_price** (currency-specific)
* **type** (e.g., Tablet, Capsule, Syrup, Injection, etc.)
* **quantity\_in\_stock**
* **storage\_requirements** (e.g., Refrigerated, Room Temperature, etc.)
* **last\_updated** (for tracking stock updates)

**3. Doctor**

* **doctor\_id** (Primary Key)
* **full\_name**
* **father\_name**
* **designation** (Doctor, Nurse, Pharmacist, etc.)
* **medical\_license\_number**
* **age**
* **shift\_timing** (e.g., Morning, Evening)
* **contact\_information** (optional, phone number or email)
* **working\_location** (Pharmacy branch)

**4. Patient**

* **patient\_id** (Primary Key)
* **full\_name**
* **surname**
* **place\_of\_residence** (village/city, district, province)
* **disease\_type** (e.g., Diabetes, Flu, etc.)
* **diagnosis\_code** (e.g., ICD-10)
* **contact\_information** (optional, phone number)
* **registration\_date**
* **assigned\_doctor\_id** (Foreign Key referencing Doctor)

**5. Prescription**

* **prescription\_id** (Primary Key)
* **barcode** (Unique, automatically generated)
* **patient\_id** (Foreign Key referencing Patient)
* **doctor\_id** (Foreign Key referencing Doctor)
* **date\_issued**
* **language** (Pashto, English, etc.)
* **total\_price**
* **notes\_from\_doctor** (optional)
* **digital\_signature** (optional)

**6. Prescription\_Item**

* **prescription\_item\_id** (Primary Key)
* **prescription\_id** (Foreign Key referencing Prescription)
* **drug\_id** (Foreign Key referencing Drug)
* **quantity**
* **unit\_price** (price at the time of sale)
* **total\_price** (quantity × unit price)

**7. Loan**

* **loan\_id** (Primary Key)
* **borrower\_name**
* **loan\_amount**
* **loan\_date**
* **due\_date**
* **status** (Paid, Unpaid, Overdue)
* **contact\_information** (optional)
* **loan\_payment\_history** (optional, to track payments)

**8. Examination**

* **examination\_id** (Primary Key)
* **examination\_code** (Unique Code)
* **type** (Blood Test, BP Check, etc.)
* **date\_time** (When the examination was performed)
* **doctor\_id** (Foreign Key referencing Doctor)
* **patient\_id** (Foreign Key referencing Patient)
* **fee**
* **report** (optional, link to a scanned report or digital file)

**9. Sale**

* **sale\_id** (Primary Key)
* **sale\_date**
* **total\_sale\_price**
* **total\_profit**
* **patient\_id** (Foreign Key referencing Patient, optional, if applicable)
* **prescription\_id** (Foreign Key referencing Prescription, optional, if applicable)
* **cashier\_id** (Foreign Key referencing Pharmacy Employee)

**10. Sale\_Item**

* **sale\_item\_id** (Primary Key)
* **sale\_id** (Foreign Key referencing Sale)
* **drug\_id** (Foreign Key referencing Drug)
* **quantity\_sold**
* **unit\_purchase\_price**
* **unit\_selling\_price**
* **total\_price** (quantity\_sold × unit\_selling\_price)

**11. Stock\_Alert**

* **alert\_id** (Primary Key)
* **drug\_id** (Foreign Key referencing Drug)
* **alert\_type** (Out of Stock, Expiry Warning)
* **threshold\_value** (e.g., quantity 0 or expiry date approaching)
* **alert\_date**
* **status** (Active/Resolved)

**12. Drug\_Price\_History**

* **price\_history\_id** (Primary Key)
* **drug\_id** (Foreign Key referencing Drug)
* **old\_price**
* **new\_price**
* **price\_change\_date**
* **changed\_by** (Doctor or Admin)

**13. Pharmacy\_Employee**

* **employee\_id** (Primary Key)
* **full\_name**
* **role** (Admin, Cashier, Storekeeper, etc.)
* **salary**
* **hire\_date**
* **shift\_timing**
* **contact\_information**

**14. Pharmacy\_Branch**

* **branch\_id** (Primary Key)
* **branch\_name**
* **branch\_location** (address, city, province)
* **contact\_information**
* **manager\_id** (Foreign Key referencing Pharmacy\_Employee)

**15. Inventory\_Transaction**

* **transaction\_id** (Primary Key)
* **drug\_id** (Foreign Key referencing Drug)
* **transaction\_type** (Purchase, Sale, Restock, Adjustment)
* **transaction\_date**
* **quantity\_change**
* **unit\_price**
* **total\_amount**
* **transaction\_by** (Pharmacy Employee ID)

**16. Expiry\_Alert**

* **expiry\_alert\_id** (Primary Key)
* **drug\_id** (Foreign Key referencing Drug)
* **alert\_date**
* **alert\_message** (e.g., “Less than 3 months to expiry”)
* **status** (Active/Resolved)

**17. Drug\_Stock**

* **drug\_stock\_id** (Primary Key)
* **drug\_id** (Foreign Key referencing Drug)
* **stock\_quantity**
* **last\_updated** (timestamp)

**Relationship Summary:**

* **Doctor - Patient**: One doctor can treat many patients, and each patient has one assigned doctor.
* **Doctor - Prescription**: Each prescription is created by one doctor.
* **Prescription - Prescription\_Item**: A prescription can have multiple prescription items (medications).
* **Sale - Sale\_Item**: A sale can consist of multiple sale items (drugs sold).
* **Loan - Patient**: Loans are tied to individual patients, although loans are independent of prescriptions and sales.
* **Examination - Patient**: Each examination is linked to a patient.
* **Drug - Stock\_Alert**: Alerts will notify when a drug stock reaches a predefined threshold or expiry date.
* **Pharmacy\_Employee - Pharmacy\_Branch**: Employees can be assigned to specific pharmacy branches.
* **Inventory\_Transaction - Drug**: Tracks all inventory-related transactions (purchases, sales, stock adjustments).