**Patient Management and Accounting System for Doctors (PMASD)**

Patient Management involves recording patient data, consultation data and prescription data. Since prescriptions are legal documents, they have to be stored correctly.

Accounting System involves logging inflows and outflows of a doctor. We’ll make a very toned-down version of the usual accounting software programs (Tally etc.).

We’ll start with the Patient Management System first though, get started with the project.

**Main Focus: Data entry by user should be super quick. Prescription should be generated in record time (We’ll use a code system to make it fast, will explain later)**

**User Requirements:**

A tile-based home page with the following fields (may change as and when we proceed):

* Professional Income
  + Consultations
  + Admissions
  + Pharmaceuticals
  + Businesses
* Professional Expenses
  + Salaries
  + Other Professional Expenses
* Other Inflow
  + Interest Income
  + (Something to do with tax, don’t know how to frame it)
  + Refunds Received
  + Maturation or Sale of Assets
  + Gifts Received
  + Other Inflows
* Other Outflow
  + Bank Charges
  + Household Expenses
  + (Tax something)
  + Refunds Paid
  + Creation or Purchase of Assets
  + Gifts Given
  + Other Outflows (Apart from Professional Expense)
* Internal Transfers and Miscellaneous
  + Log Depreciation on Assets
  + Log an Internal Transfer
  + Send a letter to Doctors
* Reports
  + Profit & Loss Account
  + Balance Sheet
  + Capital Account
  + Cash Account
  + Cheque Account
  + Card Account
  + UPI Account
  + Asset Account
  + Liability Account
* (Other Operations)
  + Manage Patient Data
  + Manage Doctor Data
  + Manage Medicine Data
  + Manage Investigation Data
  + Manage Lifestyle Data
  + Manage Percentage Data

List of possible assets:

* Fixed Deposits
* Mutual Funds
* Tax Free Bonds
* Property
* Loans given
* Equipment
* Other Investments

List of possible liabilities:

* Loans taken

**Professional Income** (Which is basically the Patient Management part…half the project)

* Consultations
* Admissions

All the forms are mostly similar for these topics, so I’ll discuss them simultaneously…

A patient comes for a consultation or admission. Patient may be a new patient or an existing patient. Patient may be referred by a different Doctor. Patient details, symptoms and history is recorded. An examination is done and the results are recorded. Any investigations which were previously done by the Patient are recorded. A Diagnosis and a treatment plan involving Medicine, Lifestyle Changes, Investigations to be done and Referral to other doctors (if any) is entered by the user. Based on this information a prescription is generated and is ready to be printed / sent digitally. Money paid by patient is recorded after that. Details for each field are as follows:

Register New Patient

1. Auto generated Patient Id. starting from the last patient registered. Running serial number.
2. Existing data to be populated with existing patient no. Patient Id. change facility.
3. Title, Name, DOB, Gender, Address (5 lines), Mobile Nos. (multiple), email (multiple)
4. Create contact update existing contact based on mobile number in Google (Use Google Contacts API)

Search for existing patient on the basis of Name, Patient Id, Mobile no.

Then select Nature of Service.

1. First Consultation
2. Follow-up
3. Admission

If a Patient has been referred to by someone else, ask for that and record the doctor

Then enter the following

1. **Present History**: Predefined list of parameters such as cough, cold, fever. Capture parameter based on short code. Show parameter, duration, additional information. The screen will look something like this.

|  |  |  |
| --- | --- | --- |
| Description | Duration | Additional Information |
| 3 digit code – display description | 3 digit code – display duration | 6 digit code – display additional information |
| Show 3 rows with ability to click “+” sign and add more rows. |  |  |
| Fever | Since 15 days | With chills |

* 1. For the user, there are 3 codes.
  2. All the fields can be overwritten or additional information added by the user.
  3. There should be separate master table where the user should be able to add/edit codes and the values of the rest of the 3 fields.
  4. The code should be unique. The system should not allow adding same code twice.
  5. Whilst storing each prescription, don’t store code only and re-fetch values based on codes, instead source the values in each field, since the user can override and add text.
  6. The master table should be common for all types of history. Against each code, we should store to which type of history and diagnosis the code is applicable. When collecting history of each type, search only codes relevant to that type of history. i.e. Present History should have only codes applicable to Present History.
  7. Give button to add new code in the master. Allow Edit and Delete option.

1. **Past History** – similar to Present History
2. **Personal History** – similar to Present history
3. **Family History** – similar to Present history
4. **OBGY History** (applicable only to female patients) – similar to Present history but applicable only for female patients.
5. **Examination** – standard template to be displayed and values to be filled by user. User defined display order. The current values are in the order required.
   1. Vital Examination
      1. Temperature – (should be either afebrile or febrile, default afebrile)
         1. Afebrile
         2. Febrile
            1. Temperature in degrees Fahrenheit
      2. Pulse: \_\_\_\_\_\_\_\_\_ per minute (mandatory)
      3. Blood Pressure: \_\_\_\_\_\_\_/\_\_\_\_\_\_\_ mmHg (mandatory)
      4. Respiratory Rate: \_\_\_\_\_\_ / min (mandatory, default 18)
      5. SPO2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% (non-mandatory, percentage to be less than 100%) – to be printed only if value is entered.
      6. HGT: \_\_\_\_\_\_\_\_\_\_ mg/dL (non-mandatory, less than 1000) – to be printed only if value is entered.
   2. General Examination
      1. Pallor: select between Absent / Present (mandatory, default Absent)
      2. Icterus: select between Absent / Present (mandatory, default Absent)
      3. Cyanosis: select between Absent / Present (mandatory, default Absent)
      4. Clubbing: select between Absent / Present (mandatory, default Absent)
      5. Edema Feet: select between Present / Absent (mandatory, default Absent) If present <description upto 150 characters>
      6. JVP: select between Normal / Raised
      7. Lymphadenopathy: select between Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
      8. Skin & Hair: select between No Abnormality detected / <description> , default No abnormality detected
   3. Systemic Examination
      1. Respiratory system (RS):
         1. Breath Sounds: select one – bilaterally equal / <description> default – bilaterally equal (show previously stored values as user types) – mandatory
         2. Ronchi: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         3. Crepitations: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         4. Bronchial Breathing: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
      2. Cardio Vascular system (CVS)
         1. Heart Sounds: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         2. Murmur: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         3. Pericardial Rub: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
      3. Abdominal system (AS)
         1. Guarding: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         2. Rigidity: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         3. Tenderness: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         4. Hepatomegaly: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         5. Splenomegaly: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         6. Distension: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
         7. Bowel Sounds: Normal / Absent / Sluggish, (mandatory, default Normal)
      4. Central Nervous system (CNS)
         1. Higher Function: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         2. Cranial Nerves: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         3. Pupils: bilaterally equal reacting to light / <description> default – bilaterally equal reacting to light (show previously stored values as user types) – mandatory
         4. Tone: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         5. Power: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         6. Reflexes: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         7. Planters: Bilateral Flexors / <description> default – Normal (show previously stored values as user types) – mandatory
         8. Sensations: Normal / <description> default – Normal (show previously stored values as user types) – mandatory
         9. Cerebellar Signs: Absent / Present (mandatory, default Absent). If present <description upto 150 characters>
      5. ENT (ENT): Normal / <description> default – Normal (show previously stored values as user types) – mandatory
      6. Musculoskeletal system (MS): select between Normal / <description> , default Normal
6. **Investigations Done** – standard template to be displayed and values to be filled by user. User defined display order. Not to be printed in prescription.

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Investigation  (display full list of investigations in defined sort order)  Give search bar in header | Select Past  Date \_\_\_\_\_\_\_ (non- mandatory) | 28-5-2020 (mandatory) | 1-7-2020  (mandatory) |
| User will type name of investigation (use regexp) |  |  |  |
| Blood Sugar (check for duplicity) |  |  |  |

Give a button to display on those examinations where there is a value.

Allow user to create a table of examinations with sort order from UI

1. **Diagnosis** (non-mandatory)
2. Allow free text entry using a code
3. Allow override and additional text

|  |  |  |
| --- | --- | --- |
| TUBerculosis | May 2020 | With respiratory problem |

Store the above as Past History with date for next visit

1. **Treatment**
   1. General Advice
      1. Diet
      2. Fluid
         1. Plenty of fluids
         2. Fluid restriction \_\_\_\_\_\_\_ litres / day
      3. Exercise
      4. Weight Loss
      5. Stress Management
      6. Ability to add more options
   2. Medication
      1. Tab/Cap/Syr/Oint/Inj
      2. Brand Name
      3. Generic Name
      4. Strength
      5. Administration Route
      6. Frequency
      7. Meal Specification
      8. Duration
      9. Remarks

Master Drug Table

1. Tab/Cap/Syr/Oint/Inj or blank
2. Brand Name (search)
3. Generic Name (search)
4. Company Name + Division
5. Group No.(same group for all medicines selected by the user)
6. Strength - fixed
7. Administration Route – fixed
8. Dosage - type
9. Meal Specification - fixed
10. Duration - type
11. Remarks - type

Screen Layout

Enter disease: Typhoid

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Medication | Formulation | Route | Strength | Dosage | Duration | Remarks |
| Type brand name or generic name  Search and display the following  Brand name, generic name,  Drug should be auto selected within a group based on drug formulation using a weighted round robin | Auto populated | Auto populate administration route | Auto populated | e.g.  101  display as  1----0----1  111  222  001  010  11111etc. upto 5 digits | 3 digit code  e.g.30d means  For 30 days  6m means  For 6 months | Meal specification is auto populated  Additional text entry |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Ability to add / delete / modify medication

Ability to add medicine in between other medicines

Based on the disease / symptom – drugs should be populated and allow user to add/delete/modify

* 1. **Investigations Advised**
     1. Create a master table with Group Name (disease) and the investigations advised. When user enters the group name, all tests prescribed for that group should be auto populated
     2. Same as investigations done without any date column
     3. When the investigations should be done
     4. Advise from where the investigation should be done (list of investigation centres) with name, address, phone no. (Separate master required.

Screen Layout

* + - 1. Investigations after \_\_\_\_\_\_\_\_\_ days/months non-mandatory
      2. From \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (select from list) non-mandatory

If the value is left blank, don’t print the lines.

|  |
| --- |
| Name of Investigation |
| Blood Sugar |
| Xray Chest |
|  |

Repeat upto 2 times

1. **Follow up**
   1. Follow up after \_\_\_\_\_\_\_\_\_ (enter code e.g. FU3d means follow up after 3 days)
2. **Referred to**
   1. Select doctor from master and display Doctor Name, Speciality, Address, Phone No., Timing. (non-mandatory)
   2. Select hospital from a master
   3. Upto 3 doctors/hospitals
3. **Special Remarks**
   1. User typed free text
4. **Sign and stamp**

Print advisory at the end. (use of generic medicines…….)

**Editing of Prescription**

Edit all information.

**Storing & Printing Prescription**

1. Store entire prescription data.
2. Enable printing of prescription with digital signature and facsimile signature.
3. Print on pre-printed stationery or system stored letterhead template. The template of letterhead should be stored.
4. Enable duplicate regeneration and printing with facsimile signature or without any signature. The word “duplicate” should be printed. Duplicate can be printed several times.
5. Duplicate should be printed on the same template. Hence store the prescription letterhead and format with effective date.
6. PDF of prescription not to be stored.
7. Send prescription from software
   1. By email
   2. By printing

As of now this is a lot so we’ll just start with this. We’ll move on to the other topics later on….

I’ll make the basic database tables as much as I can and share them with you. Till then just go through the doc. I’m sure you’ll have questions (even I do), ask them and I’ll try to figure it out….