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HOSPITAL BED AVAILABILITY CHECKING SYSTEM

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ABSTRACT

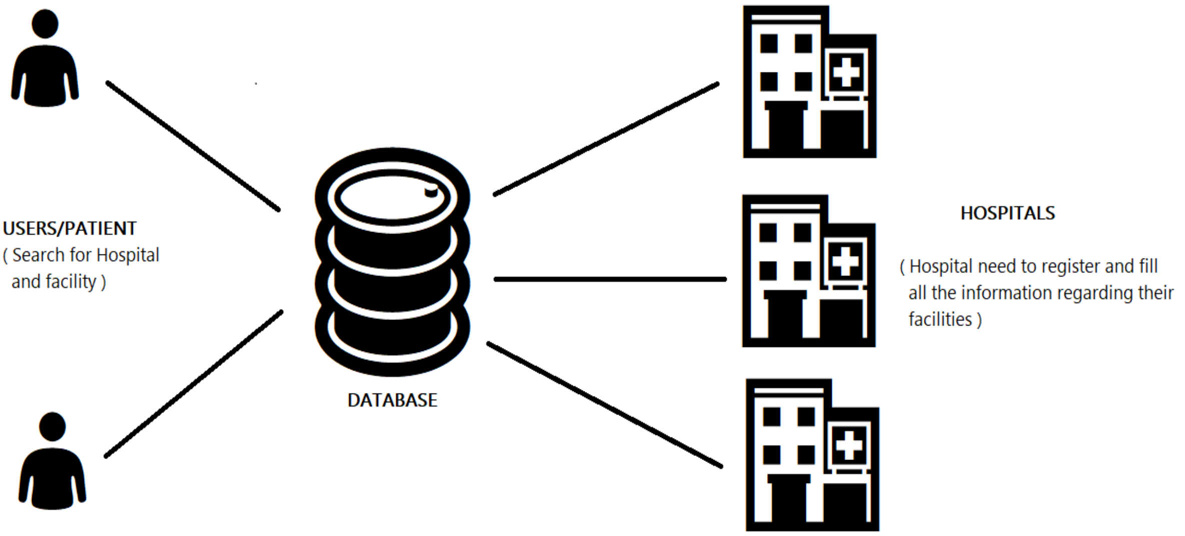
Bed availability at hospitals is a necessary requirement in the town for any person in case of emergency. The helping hand of our website provides information about equipment, facility, beds, and other requirements in hospitals. Currently, there are few websites available that also provide information about the hospital but they have some drawbacks. To get knowledge of hospitals without physically visiting, we have created a dynamic website using Python, Flask, and SQLALCHEMY. It updates the count of beds when someone checks in or is discharged from the hospital.

Keywords: Python, Flask, SQLALCHEMY.

I. INTRODUCTION

Hospitals are one of the most critical and complex administrations and there can be situations when certain amenities can be less or not even present for the people to use. It happens many times when people aren't aware of the occupancy of beds in a particular hospital. Due to this, they suffer a lot as they are unable to get the proper treatment on time. There are cases when new patients have to be admitted to the ICU but due to pre-occupancy in the ICU, they endure a great risk to their life. In such cases, many times there is a premature discharge of the already admitted patient which risks their life as well. Certain situations occur where people are unable to afford the costly treatments available at certain hospitals and they are unaware about other hospitals which provide the same facilities and required assistance at minimal or affordable rates. So there are situations where people suffer a lot due to the unavailability of proper information available in one click. So this research paper includes the solution, methodology, and process which overcomes this problem by building a dynamic website. In this project, a website is created to get information about the occupancy of beds and necessary types of equipment for the patients in a particular hospital, especially in emergency cases. The patients can easily find the location of the desired hospital as well as the information about the number of empty beds present. There can be different types of beds ranging from general beds to EWS beds , oxygen beds to beds with ventilators also. All the information regarding the hospital is taken through a registration form. Through this form , the information about the nodal person is also taken primarily by the name , designation and mail-id so that it is known who is responsible for updating the information regarding that particular hospital. A database is maintained where all the entered information is stored and this database is connected to an admin page which can be accessed only by the admins. This also has an option for terminating a particular hospital if the information provided through the registration form seems irrelevant. Through the information provided on the website, patients can easily find the location of the desired hospital. The data will be kept updated which will result in building an efficient website. This website is very useful for people as well as for hospitals. Also the government can get the information through this website about the existing conditions in a particular hospital. It will provide all the data regarding hospital facilities and it's easy to track bed availability. Users can search for the hospital and get all information about bed availability and facilities offered by hospitals.

II. METHODOLOGY


USERS/PATIENT
(Search for Hospital and facility)
DATABASE
HOSPITALS
(Hospital need to register and fill all the information regarding their facilities)

Database Creation: We need to construct a database to hold the information about hospitals. To do this, first we install virtual environment and activate it. Then we import flask, flask-mail and flask-SQLAlchemy for Python. The name of database is given as **hospitalinfo.db** using following command:

app.config['SQLALCHEMY DATABASE URI'] = "sqlite:/hospitalinfo.db".

The database is named hospitalinfo.db and the key to access this database is "db." Next, we import this database into Python and link it to a Python file by using the command below:

python

from app import db

db.create_all ()

Table Creation : We create table hospital in hospitalinfo database using sqlalchemy class

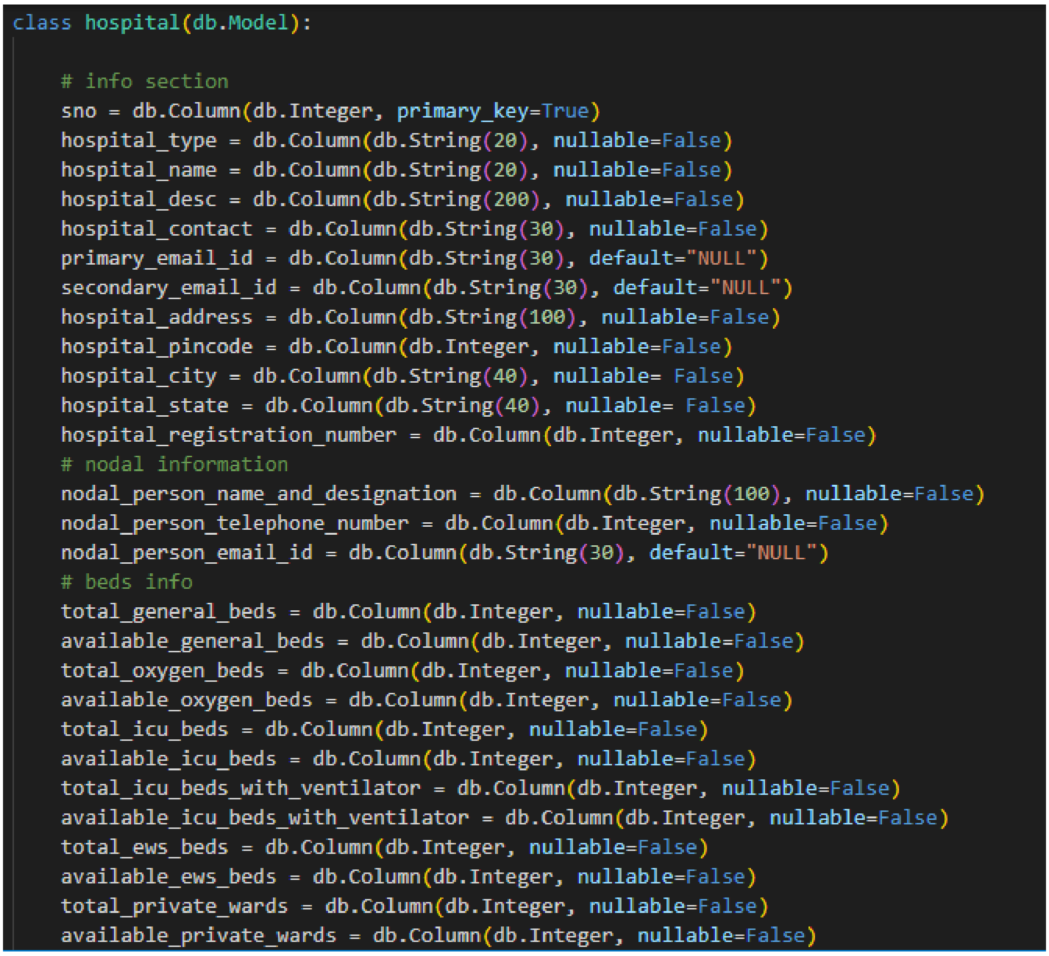
method :

class hospital(db.Model):

Then we create attributes related to all info that hospitals fill and provide data size and all constraints like PRIMARY KEY , not null = false**.** To store the information of the hospital, we create a table where every column stores different data.

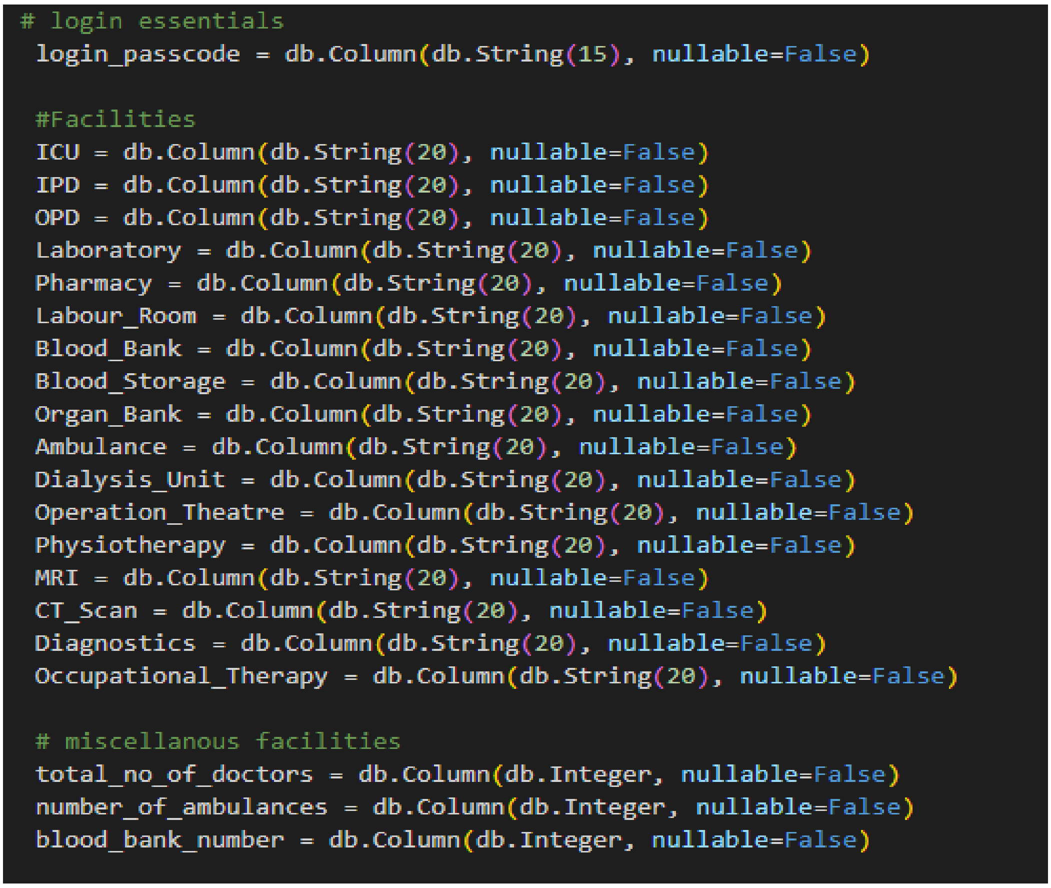
In the Below Image you can see that we create table hospital and their are 31 columns which are divided into :

- Main info - 12
- Nodal info - 3
- Beds info - 12
- Login - 1
- Miscellaneous - 3



```
class hospital(db.Model):

    # info section
    sno = db.Column(db.Integer, primary_key=True)
    hospital_type = db.Column(db.String(20), nullable=False)
    hospital_name = db.Column(db.String(20), nullable=False)
    hospital_desc = db.Column(db.String(200), nullable=False)
    hospital_contact = db.Column(db.String(30), nullable=False)
    primary_email_id = db.Column(db.String(30), default="NULL")
    secondary_email_id = db.Column(db.String(30), default="NULL")
    hospital_address = db.Column(db.String(100), nullable=False)
    hospital_pincode = db.Column(db.Integer, nullable=False)
    hospital_city = db.Column(db.String(40), nullable= False)
    hospital_state = db.Column(db.String(40), nullable= False)
    hospital_registration_number = db.Column(db.Integer, nullable=False)
    # nodal information
    nodal_person_name_and_designation = db.Column(db.String(100), nullable=False)
    nodal_person_telephone_number = db.Column(db.Integer, nullable=False)
    nodal_person_email_id = db.Column(db.String(30), default="NULL")
    # beds info
    total_general_beds = db.Column(db.Integer, nullable=False)
    available_general_beds = db.Column(db.Integer, nullable=False)
    total_oxygen_beds = db.Column(db.Integer, nullable=False)
    available_oxygen_beds = db.Column(db.Integer, nullable=False)
    total_icu_beds = db.Column(db.Integer, nullable=False)
    available_icu_beds = db.Column(db.Integer, nullable=False)
    total_icu_beds_with_ventilator = db.Column(db.Integer, nullable=False)
    available_icu_beds_with_ventilator = db.Column(db.Integer, nullable=False)
    total_ews_beds = db.Column(db.Integer, nullable=False)
    available_ews_beds = db.Column(db.Integer, nullable=False)
    total_private_wards = db.Column(db.Integer, nullable=False)
    available_private_wards = db.Column(db.Integer, nullable=False)
```



```
# login essentials
 login_passcode = db.Column(db.String(15), nullable=False)

 #Facilities
 ICU = db.Column(db.String(20), nullable=False)
 IPD = db.Column(db.String(20), nullable=False)
 OPD = db.Column(db.String(20), nullable=False)
 Laboratory = db.Column(db.String(20), nullable=False)
 Pharmacy = db.Column(db.String(20), nullable=False)
 Labour_Room = db.Column(db.String(20), nullable=False)
 Blood_Bank = db.Column(db.String(20), nullable=False)
 Blood_Storage = db.Column(db.String(20), nullable=False)
 Organ_Bank = db.Column(db.String(20), nullable=False)
 Ambulance = db.Column(db.String(20), nullable=False)
 Dialysis_Unit = db.Column(db.String(20), nullable=False)
 Operation_Theatre = db.Column(db.String(20), nullable=False)
 Physiotherapy = db.Column(db.String(20), nullable=False)
 MRI = db.Column(db.String(20), nullable=False)
 CT_Scan = db.Column(db.String(20), nullable=False)
 Diagnostics = db.Column(db.String(20), nullable=False)
 Occupational_Therapy = db.Column(db.String(20), nullable=False)

 # miscellanous facilities
 total_no_of_doctors = db.Column(db.Integer, nullable=False)
 number_of_ambulances = db.Column(db.Integer, nullable=False)
 blood_bank_number = db.Column(db.Integer, nullable=False)
```

DataBase Collection: Using the function REGISTRATION(), which has numerous variables to store data like hospital name, hospital address, hospital desc, hospital contact and many other attributes that will be entered by hospital staff, we collect data from the hospital administration and pass the details to an object. This object is passed to the class Model where all the information is stored in the database.

III. PERFORMANCE EVALUATION

We have identified the issue of hospital bed facilities, and the solution we offer is a dynamic website that satisfies all requirements for hospital facilities and equipment types. We discuss in methodology how we are implementing this project in real life by using various techniques. In this part, we are going to discuss how the website is working and the final product.

- User/Patient view:- The website is going to help majorly to all the people they just have to search for the website (No registration, No Id) after that they can search for hospitals in two ways.

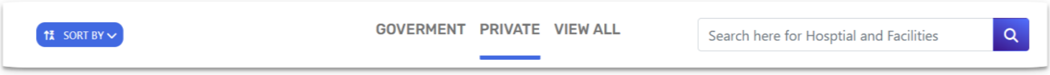


Figure A: Search tab for user

Direct Search: We provide a Search tab for users where they can search the hospital directly by name and we provide all the information about the hospitals.

→ In the list of hospital user can see whether the hospital is Private or Government, info about beds, oxygen amount present in the hospital, for more detail about the hospital CLICK on the hospital name and you are transferred to the Detail page about the hospital where you can find the ICU beds, General beds, Equipment.

- Hospital Administration View :- Hospitals need to register on our website on the registration page we provide. Where we provide all facilities to fill in Name, Id, Mail, Contacts, and Equipment checkbox to select how many Equipment Hospitals have, Images , Total beds, available beds, general beds and ICU beds. Hospitals need to update the information of beds every 6hr.

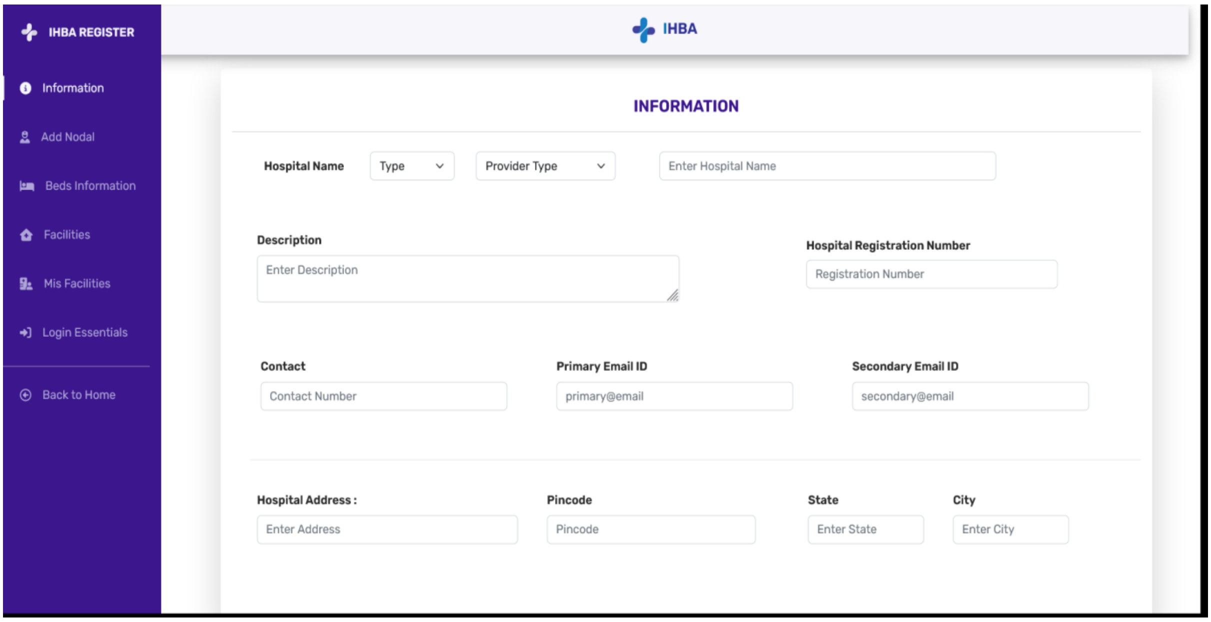


Figure B: Hospital Registration Page

IV. CONCLUSION

The purpose of our website is to provide information to the people about hospitals beds, Equipment, Facilities. Where user can search for hospitals and get all information and reach the hospitals according to their requirement. We use PYTHON, FLASK for backend development HTML, CSS and JQUERY for frontend Development and SQLALCHEMY for database management. Our website is open for all hospitals, there is no boundation of city or state , and hospitals need to update the information honestly. For more detail and confirmation, users can also call hospitals.

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