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Web Engineering and Ecommerce Lab Project

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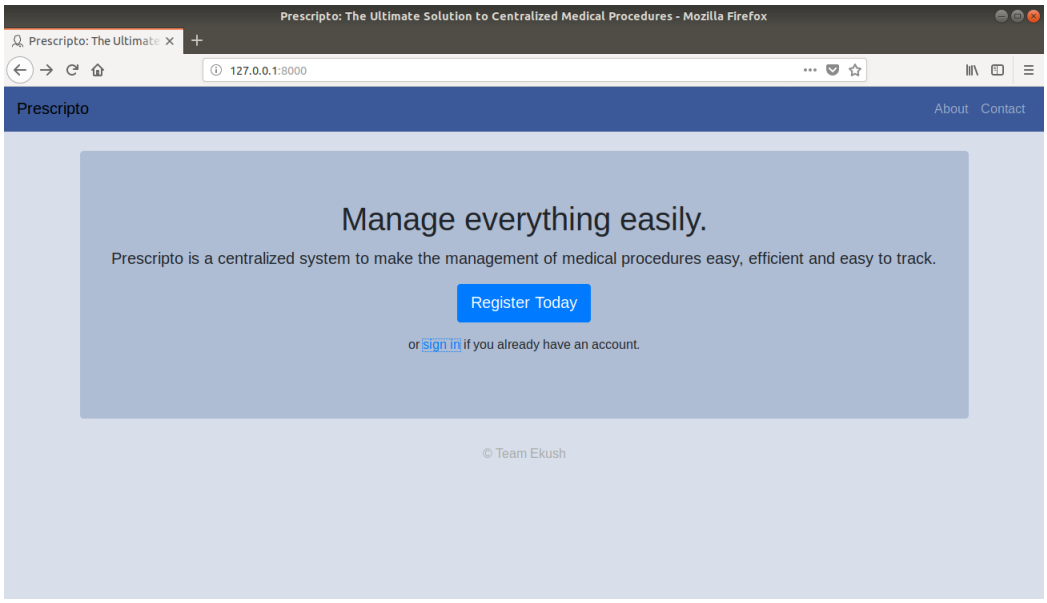
Submitted On : May 06, 2018

Contents

Prescripto
A centralized solution to medical procedures



1 Description

Bangladesh is a densely populated country with scarce medical resources, in terms of both skilled workforce and infrastructure. The health sector is suffering immensely from this lack of resources. Every day, millions of people are looking for appointments, getting attended, tested in the diagnostic centers. All these things require lots of paper works, in many cases, which are lost in a couple of months. It often leads to difficulty for the doctors, when they can not find the previous medical records in place. Besides, due to the lack of skill of the salesman in pharmacies, many people are buying wrong medicines.
Moreover, due to the timely and complicated process of acquiring appointments and getting treated, many people try to avoid seeing doctors, and opt for self-prescribed medicines yet. A recent study shows that, many people are taking antibiotics without proper prescriptions, often for mundane health problems. In most cases, they do not finish the course. This is leading to many people becoming resistant to antibiotics [1]. A survey conducted by Paribesh Bachao Andolon [2] shows that the rate is as much as 55.7%. Much of the blame is due to the fact that, antibiotics are readily available to the mass people, and no proper regulations are in place. And it is extremely difficult for the government to place any restrictions since there are no centralized system available.
And finally, as there is no centralized system, it is extremely difficult for researchers to gather the data needed for various medical researches.
Our goal is to provide with a centralized solution, where the appointments, records, medicines and everything else is stored in the same place.

2 Objective

1. Easy way to provide prescriptions
   We provide a easy way to provide prescriptions. In order to achieve this, we collect the available medicines, and let the doctors choose from them with autocomplete. We do the same for medical procedures.

2. Generating machine readable prescriptions
   We generate machine readable prescriptions, which can be easily read using an OCR. Moreover, since we are storing the ids for every medicine, we can easily integrate this model with a future improvement, which will help automate the sales of medicine too. And once the system is automated, nobody will be able to get medicines without prescriptions any more.

3. Simple access to all past prescriptions along with test reports
   We store all the previous records along with their relevant test reports. Doctors with proper can easily access them from a single place.

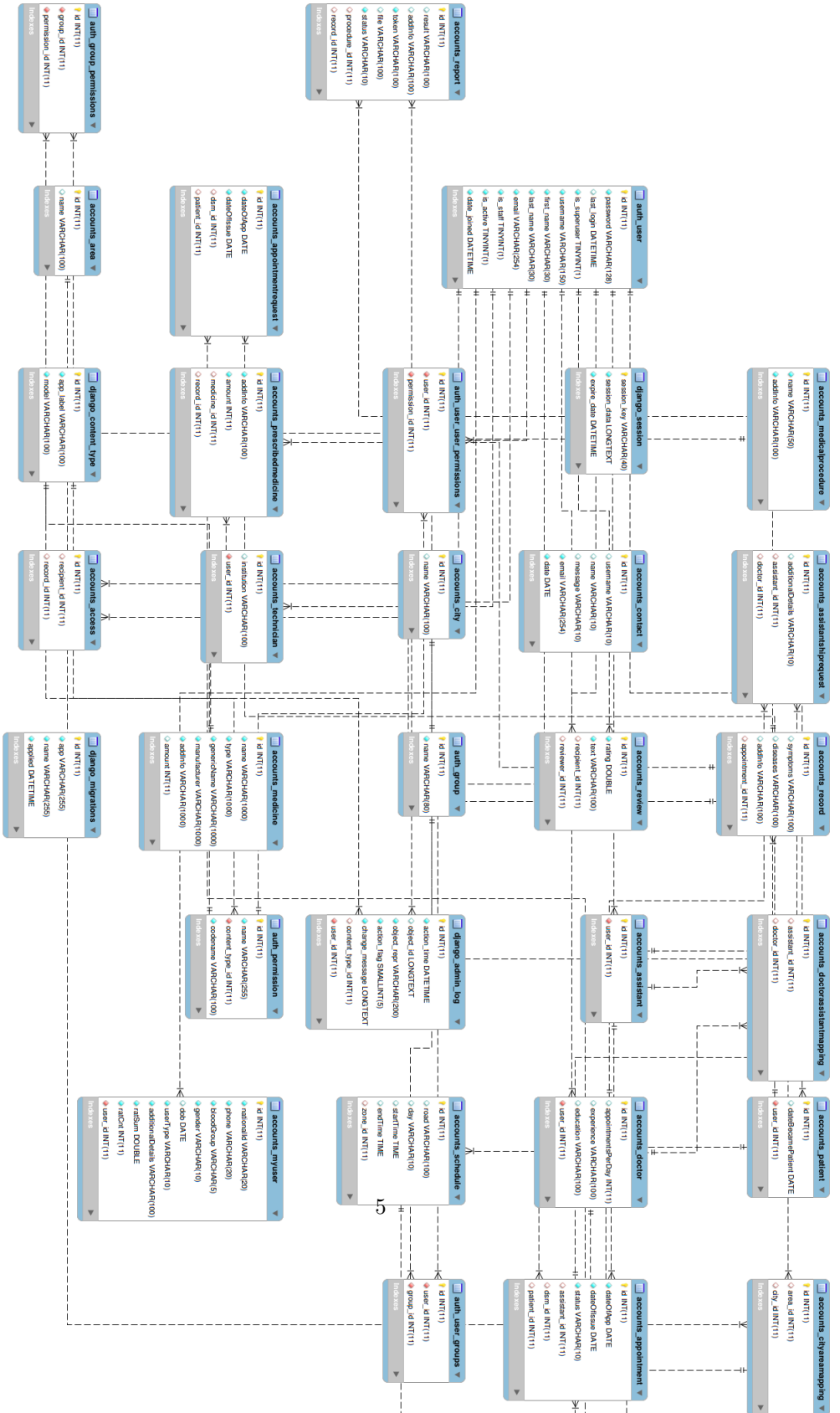
4. Simple way to requesting appointments
   We provide an easy and efficient way to requesting appointments. Patients

can either search for doctors, and request for appointments themselves, or go to assistants in medical centers where the assistants can register appointments for them.

5. Greater control on sales of sensitive medicines
   As we only accept a predefined sets of medicines, the government can easily impose ban on various medicines, which will help facilitate quality assurance.

6. Developing a chatbot
   We plan to develop an intelligent chatbot which can help people find doctors.

3 Database Design



4 Platform and Libraries

1. Python [Version 3.6.5]

   (a) datetime
   (b) Fuzzywuzzy
   (c) heapq

2. Django [Version 1.11.11]
3. HTML [Version 5]
4. CSS [Version 4]
5. Bootstrap [Version 4.1.1]
6. Javascript [Version 6]
7. Jquery [Version 3.3.1]
8. Mysql [Version 5.7.22]

5 Features

1. Administrator

   (a) The administrator can read various system messages in his dashboard.
   (b) The administrator can change the types of users.
   (c) The administrator can add or remove medicines and medical procedures.

2. Doctor

   (a) Doctors can see the appointments for a day in their dashboards.
   (b) Doctors can edit their profiles and choose their schedules.
   (c) Doctors can generate prescriptions in a form, which pops up when a button associated with an appointment clicked.
   (d) Doctors can see all the previous records associated with a registered patient.
   (e) Doctors can easily add medicines and medical procedures using autocomplete.

3. Patient

    (a) Patients can search for doctors by different factors, like location, name or speciality.

    (b) Patients can request for appointments with a particular doctor, which will later be confirmed by assistants of the doctor in question.

    (c) Patients can see all their future appointments and previous records in their dashboards.

    (d) Patients are handed tokens for their medical procedures, when a prescription is generated.

    (e) Patients can chat with a bot, which can help them find doctors. The bot is very simple, but it can handle general search queries.

4. Assistant

    (a) Assistants can register new appointments for patients.

    (b) Assistants can send requests to doctors in order to become their assistants.

5. Technician

    (a) Technicians can add reports for medical procedures. They need the token associated with the medical procedure to add reports.

6 Conclusion

6.1 How to run the project

To run the project, you have to follow the following instructions.

1. First, you need to make sure that you have the proper version of the following modules installed.

    (a) Python [Version 3.6.5]

    (b) Django [Version 1.11.11]

    (c) Mysql [Version 5.7.22]

    You also need to install the following three python libraries:

    (a) datetime

    (b) Fuzzywuzzy

    (c) heapq

2. In mysql, you need to open a database named "NDB"

3. Go to the 'prescripto/settings.py' file and provide the mysql usernames and password in the following section:

```
DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.mysql',
        'NAME': 'NDB',
        'USER': 'root',
        'PASSWORD': '1234qwer',
        'HOST': 'localhost',
        'PORT': '',
    }
}
```

4. Then come back to project root folder and make the migrations for database using the following commands:

   (a) python3 manage.py makemigrations

   (b) python3 manage.py makemigrations accounts

   (c) python3 manage.py migrate

   (d) python3 manage.py migrate accounts

5. Create a superuser using the following command:

   (a) python3 manage.py createsuperuser

   This is the administrator account, and it can modify anything in the database by going to 'https://localhost:8000/admin'

6. Now you need to add some dummy data to the database. We have compiled a mysql script for that. First login to mysql, and use the NDB database. Then run the mysql commands in the '/DB/SQL.txt' file.

7. Login to admin account, and change the passwords of csedu101 (Patient), csedu201 (Doctor), csedu301 (Assistant) and csedu401 (Technician).

8. Now you can test the website by logging into the aforementioned accounts.

6.2 Summary of work

6.3 Problems faced

We faced various problems due to inexperience in web development. We were not much familiar to the Django framework, and have suffered quite a bit. But we have learned a lot while finishing this project, and feel a lot more confident.

6.4 Future Plan

1. Granting access of data to Researchers
   Although we currently store all the data properly, we do not grant access to them to anyone except the patient and future doctors. We plan to add another group of users to our existing website, who will be able to request access to records, and the patients will be able to grant access.

2. Centralized database of all medicines and medical procedures
   Currently the website holds information only about a handful of medicines and medical procedures. We plan to extend the database to at least all the medicines of three or four pharmaceutical companies.

3. Government control on medicine quality and prices
   The website currently do not facilitate government control. But in order to regulate medicine qualities and prices, this is a necessity. We plan to extend the project such that the government and other proper regulatory bodies will be able to control several aspects of the medicines and procedures.

4. Limiting the responsibility of the administrator
   Currently the administrator has access to everything in the website, including prescriptions and uploaded reports. We plan to limit the access of the administrator.

5. User verification
   Anyone can register as doctors or assistants at this point. We plan to add verification to the process. We would need to add another group of users called moderators to achieve this.

References

[1] Antibiotic resistance, the ticking time bomb in Bangladesh - https://www.snih.org/antibiotic-resistance-bangladesh/

[2] The antibiotics death trap - https://www.dhakatribune.com/feature/health-wellness/2017/06/29/antibiotics-death-trap/