

SYSTEM ANALYSIS & DESIGN

OPEN SOURCE STUDY VIRTUAL CLINIC

Software Project Management Plan (SPMP)

INTRODUCTION

Purpose:

Virtual Clinic is an application that integrates the different people involved in the medical profession. The concept of the project is as follows, a patient can make a consultation request to any registered hospital and doctor in the system by entering the symptoms, the system forwards the consultation request to the doctor across the concerned specialty. The consultation request can be offline or online. Doctor after consultation generates a prescription comprising of Diagnosis, Medicines, and Lab Requests(if needed) based on the symptoms provided by the patient. The system will be one of the best of its kind and will be used for any city by the government for various hospitals across for better healthcare for the society.

PROCESS MODEL

The model used in this open-source software is the “Waterfall model with Back-flow”. The waterfall model is a linear sequential model and given the fact that the requirements are clear, concise, and unambiguous, it fits in really well with the software objective.

The phases under the waterfall model for this software are:

- Project analysis
- Requirement Specification
- System Design
- Database Creation and Coding
- Testing and Integration
- Deployment and maintenance

Requirement Analysis and specifications

The aim of the system is to develop “Virtual Clinic” software, which should automate the process of healthcare, and make it easier for every stakeholder involved in the process. The system is supposed to be used in any city with availability 24x7. Therefore, the proposed system must be able to function under all circumstances.

Software Requirements:

- Database: MySQL
- Web Server: Nginx, Gunicorn
- Automated testing: Travis CI
- Languages: Django, JavaScript, HTML, CSS

FEATURES

- Common Login for all users
- Patient Registration

Functional Features:

- Doctor Database Maintenance – Doctors Registration details along with their qualifications (Add/ Modify/ Delete)
- Patient Database Maintenance – Patient Registration (Add/ Modify/ Delete) – Each patient will have a unique Patient-Id
- Chemist / Pharmacy Database Maintenance – Chemist/ Pharmacy registration – Pharmacy closest to the patient location will be used to deliver medicines at discounted prices
- Labs Database Maintenance – Lab registration – Authorized labs closest to the patient location will be used to collect specimens and provide reports either online or in physical form
- Registered Patients shall have the facility to submit Consultation requests based on their symptoms, they will also have the ability to upload lab reports, if any. There will be 2 modes – New Consultation (paid), Follow-up Consultation based on Lab reports (free)
- Patient consultation requests shall be guided to the best-suited doctor.
- Doctors shall view the Consultation requests and fill the prescription and lab tests required – Both prescription and lab test requests shall be forwarded to the closest Pharmacies and Authorized labs
- Best suited Chemist sends medicine depending on the prescription.
- Best suited Labs shall arrange for specimen collection and provide reports to patients for uploading into the database.

Non - Functional Features:

The system should be able to scale to 100,000+ users concurrently and shall have a quick response time. Further, the system should have 24*7 Availability and very high reliability and stability.

USERS

1. Admin
2. Doctor
3. Patients
4. Chemist
5. Labs

Authorities and access to users

- **Admin:** Add Doctor/Lab/Chemist, Archive Users, Restore Archived Users, Add/Delete Speciality/Symptoms, Add Hospitals, View Activity, View System Statistics, View/Send Messages, Update Profile, Change Password
- **Doctor:** Consult Appointments, View/Update/Generate Prescriptions, View Medical Information of patients, Update Profile, Change Password
- **Patients:** Create Appointments, Update Medical Information, View Prescriptions, View Medical Tests, View/Send Messages, Generate Invoice of Prescription, Update Profile, Change Password
- **Chemist:** Update Medicine Delivery Status(Update Prescriptions), View/Send Messages, Update Profile, Change Password
- **Labs:** Upload Medical Tests, View/Send Messages, Update Profile, Change Password

DATABASES

- **Patient:** patient_id ; name ; mobile_no ; dob ; sex ; address with Pincode; contact details – email
- **Doctor:** doctor_id ; name ; mobile_no ; sex ; field ; experience
- **Chemist:** Chemist_id; Chemist_name; Chemist_address with Pincode;
- **Lab:** Lab_id, Lab_name; Lab_address with Pincode;
- **Patient Case History (if any):** Patiend_id; Consultation_id, Doctor_id; Consultation_Date, Symptoms* (Multi-line – upto 5 lines); Remarks
- **Consultation Details:** Patient_id, doctor_id; Consulation_id; Presrciption Details * (Multi-line upto 10 items) – Medicine_name; medicine_num_of_times, medicine_num_of_days; Lab_details * (Multi-line upto 5 items) – Lab_test_name; Lab_test_condition

SUMMARY & CONCLUSION

For developing Virtual Clinic, the “Waterfall model with backflow” is used as the process model. This software is done in 6 phases namely Project analysis, Requirement Specification, System Design, Database Creation and Coding, Testing and Integration, Deployment and maintenance. Key Deliverables for each phase are SRS, SDD, source code, STP, and user manual.