PAT Task

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Specifications Document

MediSeek Hospital Management System

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# **Problem Summary**

MediSeek is a newly established independent and highly advanced Health Care Company that was developed to function off its own multifaceted and interconnecting Hospital Management System(HMS) [EST. Jan 2020 in light of the coronavirus pandemic]. MediSeek has a multitude of healthcare facilities/residences in most major towns and cities in South Africa and the overall operation of such a medical facility takes coordinated efficiency, strategy and tremendous accuracy as real world lives are impacted every single day of the year. This can be achieved through the precise capture of patient and staff details and history, scheduling of upcoming appointments and a corresponding billing system for prescribed medicines. The purpose of *Mediseek* is to provide an easy-to-use holistic application to internally manage the extreme amounts of data and introduce a communication medium between all the supported health facilities in a specific region or country. An application that will relieve pressure from the already rigorous duty that comes with maintaining day-to-day activities and records. An application that will allow for patients to be referred to other specialists that are more available or even hold more experience(more qualifications) in the area, optimizing the experience.

Every hospital is divided into respective departments, each needing to be managed and updated when need be. Medical professionals are to check, diagnose and discharge multiple patients, as well as schedule new appointments. These professionals work in different departments and are based in different residences throughout the country as well. The correct medicines should be given to the patients which the patients should accurately be billed for. Mediseek will allow for administrative caretakers to keep track of all the tangibles of their own organisation as well as have the access to view the information of medical personnel working at other care centres, acting as a directory as well. There is a need to constantly be aware of patient’s prior health history, prescribed treatments, inventory management, upcoming scheduled appointments, diagnosis and many more so ensuring that this information is consistent and accurate at all times for every single life under care is essential. A bonus is that the MediSeek management application is extremely user-friendly and easy-to-use even for the people who may not be so tech savvy.

# **Motivation and Research**

During these current times, the healthcare system has been placed under immense pressure. Keeping track of the availability experts to aid people has become a very necessary addition. Especially understanding how dysfunctional the country already is, the passive running, and overall efficiency of the care system cannot be. Medical facilities are places that will always hail traffic regardless of the time of the year and so refining this system will allow for cohesive precision because when lives are on the line you cannot afford to fall short in organisation. This application will function as  system that helps manage the information related to health care and aids in the job completion of health care providers effectively.

The opportunity for the app is prevalent as there is no such application that functions on such a large-scale catering to the features and specifications all at the same time. There are many similar companies that only cater to private use such as :

**|Netcare**

Netcare.co.za. (2021). *Netcare - The Leading Private Healthcare Provider in S.A*. [online] Available at: https://www.netcare.co.za/ [Accessed 12 Apr. 2021].

Facilities include 62 hospitals, 56 medical and dental centres, 80 pharmacies, 36 administered practices, trauma and emergency services, and management services for pathology laboratories. Utilising the services of 2 486 medical specialists, 439 general practitioners and 153 dentists, the group addresses the primary and specialised healthcare needs of almost 5 million patients annually. Netcare is powered by the world’s leading provider of business software solutions called SAP.

**||SAP for Healthcare**

SAP. (2017). *Healthcare | Industry Software | SAP*. [online] Available at: https://www.sap.com/africa/industries/healthcare.html [Accessed 12 Apr. 2021].

SAP for Healthcare is designed to streamline and integrate all the processes in the core areas of admissions, discharging and transfer (ADT) of a patient. It also automates management of all aspects of electronic health records, billing rules and calculations, and drug management. This program does not serve as a specialist directory which MediSeek does.

**|eHospital Systems**

Capterra. (2021). *eHospital Systems*. [online] Available at: https://www.capterra.co.za/software/138518/ehospital-systems [Accessed 12 Apr. 2021].

‌This application is independent and does not work with a corresponding healthcare company, equally it does not contain calendar management . It also does not contain the extra functionality of acting as a specialist directory for other professionals around the area.

‌**|MedFin**

MediFin. (2020). *Find a Doctor | MediFin*. [online] Available at: https://medifin.co.za/doctor-directory/ [Accessed 12 Apr. 2021].

‌This is a website that acts as a directory for medical practitioners. Mediseek contains such functionality but differs in the fact that it is designated for healthcare facilities and is only functional in South Africa. MediFin also does not contain the general capabilities of a base level Hospital Management System such as the retention of patient details and history, the ability to set up and calendar appointments and to prescribe medicine.

# **Specifications and Program Function**

* The MediSeek HM System will be a stand-alone multi-user single access application.
* The details of the respective staff, patients and residences will be permanently stored.
* The User can either be an Administrator, Doctor, Receptionist, or a Pharmacist.
* Staff Functions:
* Search a Name of a doctor and their details.
* Group all the Doctors of a specific specialty
* Remove a staff member that has left.
* Add a new staff member that has just transferred.
* Update the details of a Staff member
* Limited access (doctor, administrators, pharmacist, and receptionist) different information for staff through passwords at login
* Create Appointments
* View Appointments
* Delete Appointments
* Search and group If there is a doctor that has a specific speciality at a specific residence
* Adding a new residence
* Removing a non-functioning residence
* Patients
* Admit a patient.
* Discharge a patient
* Update Patient Details by searching patient ID.
* Issue a prescription.
* Update a patient’s information, specifically diagnosis.
* Calculate a bill for the prescription (word document)
* Issue a prescription (word document)
* Residence Functions:
* Group all the facilities with a helipad
* Group the residences considered a Clinic/ICU

# **Specifications of Interface**

**Summary**

* Opening Loading Screen & Select Job Description GUI.
* Log-in GUI - surpassed using a Staff\_ID and a password.
* Main GUI –­­ contains several tabs and components of the program.

\*is unique to respective job description type:

* + Doctor/Receptionist/Administrator/Pharmacist
* About GUI – give links to assistance and company info.

Readability

* No grammatical/spelling errors.
* Easily comprehensible screen and component configuration.
* Instructions will be concise but informative.
* Contrast between wording and background must be distinguishable.

Theme

* Light Green, White, Blue and Black.
* Usually be a green or white background with dark text colours.
* Use of GIFs.
* Capitals in the beginning of all component titles.
* Watermarked Logo on every page.

Navigation

* Help documents will be one click away at all times.
* Use of Text Fields for input and Labels for output.

Layout

* Easily comprehensible screen and component configuration.
* Every GUI is the same dimensions.
* Components will be symmetrically aligned.
* Make use of GUIs and Word documents.
* Logout, Help, About pages will always be in the top right corner of the program.

Consistency

* All text font, text size and case will be the same in respective locations.
* Background and foreground will be the same.
* Watermarked logo will be in the same place and in the same size.

# **Specifications of Help**

Within MediSeek there will be an *About* page that will contain all the information about the company and its inner workings for inquisitive users looking to find out more. In the pharmaceuticals section of the program there will also be a document that gives individual prices for medicines so accurate bills can be calculated and receipts can be issued. Furthermore, every single page in the program will have access to *Help* Document in the menu of the program that breaks down how to achieve and extract your desired information to guarantee an efficient and fruitful user-friendly experience synonymous with MediSeek i.e and Instruction Manual. This *Help* tab will have separate Sections that explain how to:

* View Records
* Updating Records
* Add Patients
* Add Staff Members
* Book Appointments
* Issue prescriptions

And more.

In terms of help regarding the backend code behind the program, there is also a API that has descriptions of most of the methods and processes within the program.

# **Specifications of Permanent Data Storage**

The user-friendly Microsoft Access will be used as the Data Management System for MediSeek, making use of the language SQL. Its inherit ability to efficiently store data in independent tables and extract that data with the use of specific relationships and queries. The database contains the following tables:

**tblStaff**

(sName, sSurname, Gender, Job Description, Specialty, Residence, Qualifications, Contact, Staff\_ID, Password)

* will be added to while the program is running. All staff will be loaded into RAM when the main screen is loaded and will be accessible to Receptionists and Administrators. This data will be updated when new staff are added or when old staff are removed/have information updated by Admins. These admin may only add staff belonging to this specific facility. They will have their Staff\_ID used for coordinating respective appointments and prescriptions for patients.

**tblResidences**

(Residence, Capacity, Province, Contact, COVID-19 Testing Station, Address)

* will be added to while the program is running. All residences will be loaded into RAM when the main screen is loaded and will be accessible to Receptionists, Doctors and Administrators. This table will be used in the directory page of the program to enable professionals to refer struggling people to other MediSeek Health Facilities

**tblDirectory**

(sName, sSurname, Gender, Job Description, Specialty, Residence, Qualifications, Contact, Staff\_ID)

* will be added to while the program is running. All offsite specialists will be loaded into RAM when the login screen is loaded and will be accessible to Receptionists, Doctors and Administrators. This table will be used in the directory page of the program to enable professionals to refer struggling people to other MediSeek specialists around the country, providing them with a contact details and the ability to view specialists based on residence/specialty.

**tblPatience**

(pName, pSurname, Gender, PatientNo, MedicalAid, SpecialtyCode, Diagnosis, Prescription)

* will be added to while the program is running. All patients will be loaded into RAM when the main screen is loaded and will be accessible to Receptionists, Doctors, Pharmacists and Administrators. This table will be used to assist pharmacists in prescribing the correct medicines to patients and bill their medical aid or person, receptionists will be able to create appointments for patients and doctors will be able to view history of visits.

**tblAppointments**

(PatientNo, Staff\_ID, appDate, Admission, Diagnosis)

* will be added to while the program is running. All appointments will be loaded into RAM when the main screen is loaded and will be accessible to Receptionists and Doctors. This table will be used to assist doctors in analysing previous diagnosis for previous visits and help receptionists create working schedules for which doctors can view upcoming appointments.

**tblSpecialties**

(Specialty, SpecialtyCode)

* will be added to while the program is running. All specialties will be loaded into RAM when the main screen is loaded and will be accessible to Receptionists, Admins and Doctors. This table will be as a helping table to give context to the specialty departments certain patients may be under and the corresponding department their doctors are under as well.

**tblMedicine**

(Medicine, UsageDescription, Cost)

* will be made use of while the program is running. All medicines will be loaded into RAM when the main screen is loaded and will be accessible to Pharmacists only. This table will be used for viewing and when issuing a prescription in that details will be taken from the table and manipulated in order to present a well informed bill and prescription for all the users.

# **Hardware and Software Requirements**

Hardware

Processor: 1 gigahertz (GHz) or faster compatible processor or System on a Chip (SoC)

RAM: 1 gigabyte (GB) for 32-bit or 2 GB for 64-bit

Hard drive size: 32GB or larger hard disk

Display: 800x600

Internet Connection: Internet connectivity is necessary to perform updates and to download and take advantage of some features.

Available ports: USB, Ethernet, etc

Software

OS: Windows 10 or newer

Applications: Netbeans IDE 8.0 or newer

Microsoft Access 2019, Version 17.0

Java JDK 8

Microsoft Word 2019, Version 16.0

A suitable web browser