

# Staff Management for Android

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## *Abstract*

The employees or the staffs are believed to be as the backbone of any organization and so their management becomes the deciding aspect for any firm to be successful. The proposed thesis seeks to design a personnel management model that may be accessed by the admin as well as the user. However, the primary purpose of the author is to target the healthcare sector and offer the thesis in managing the nursing staff. The model is intended to be put on two platforms that may be accessed by the user as well as the admin. In this example, the user is the one who is seeking for a job in the healthcare field. For this goal, an Android platform is constructed using the principles and programming language of JAVA; whilst on the other hand an application interface of web app is being offered to the admin as the back end. C# and Asp.net are the programming languages that are used on the back end of the system. The implemented software allows the user the ability to look for a job in nearby place and apply for a vacant position. The user is also provided the ability to schedule a space as per his feasibility. On the other side, the admin is granted a complete access to staff's mobility and he may monitor it through the web app. The admin is given the opportunity to manage vacancies and allocate respective jobs to the workforce. Hence, it can be claimed that this proposed system model delivers an efficient manner to the admin to monitor and control the workforce. Further, the system is also planned to be implemented in the cloud using MS Azure.

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## **Introduction**

It is generally agreed that the key connection between staff management and hospital information is the need to manage the information about staff members that is stored in data repositories associated with hospitals. A management system like this one assist persons in finding open positions in regions that are geographically closer to their homes, and it also assists them in booking and storing data in an organized fashion. Individuals are granted access to resources, are able to communicate with the office network, and are given the ability to select productive working hours thanks to the model of nursing staff management. The generation of positive feedback in nursing staff management has been enabled and helped by these variables [1]. This management system's implementation workflow is different from conventional projects in terms of accuracy and experimental analysis. In typically, accuracy and ROC curves are used as the assessment criteria when deploying machine learning models; however, in this instance, the model is assessed using the ideas of big data. The benefit of using big data is its capacity to assess current issues and resolve them by fusing current data with historical ones. As a result, this aids in assigning each staff

management mechanism to each block of executor, who would then be in charge of storing, altering, and updating the information and data on the system. Huge amounts of data created by online APIs can be mined in real time to help with decision-making through the processes of big data and data mining.

On the other hand, the system's current operational implementation of these administration chores still does not include any means of storing the electronic records of those who want to sign up for it. The transmission of information between a person who wants to register and the administrator, who truly needs a suitable staff, is hampered by such missing records and user data. In addition, it has been noted that these management systems are being created by the business itself, which forces the current employers of the business to choose and present the clinical needs of the staff, thus putting the clinical needs of a candidate for employment behind. As a result, this form of organization tends to adapt to and meet the demands of current employees while limiting the prospects for others. Such a management method wastes the resources that have been collected and leads to inequalities in the hospital management software.

Regarding the imbalance seen in these staff management software's, there are still some public and medical health data that systematically track visit data, timesheets, and vacancy slots reserved by staff members looking for work. Such a management system aids in the efficient interpretation of big data, the creation of distinct job-seeker categories, the labelling of such chances, and further aids in the real-time processing of this data. As a result, it can be argued that a nurse management system has been optimised after using Big Data and Data Mining techniques.

Finding suitable employment that is close to one's place of residence gets difficult as the population of people living in the UK rises. Additionally, searching for such occupations becomes a time-consuming chore when done manually. This task primarily entails travelling to look for a job, completing application forms, applying for positions, etc. Even if they find the opportunities, it is not always clear that the candidate's schedule will work with the timing of the position or the convenience of their commute. On occasion, a position may become available, but the applicant may not be interested in the position or the pay range may not be as expected. The job seeker may occasionally need to set up an interview with the business in the event that everything turns out well in order to get recruited.

Therefore, the main goal of the research is to create a staff management system based on Big Data that would be able to give each potential employee in the city information about job openings, bookings, booking status, and timesheets.

The purpose of choosing this domain was due to the fact that many people in the UK have difficulty registering oneself and locating employment that is close to their place of residence. The parties engaged in the process—those who hire the people and those who want to apply for such jobs—find that this management system serves as a solution. The following are some benefits of the suggested system:

- The computerised implementation is effective and precise, reducing the amount of manual labour required of a person to look for work
- The model provides both users and administrators with simple access to data and information
- User data is saved securely
- Staff can be managed remotely
- Timesheets are updated on a regular basis

- A significant amount of manual work is eliminated

But the foundation of the suggested thesis is based on Big Data ideas and uses JSON architecture, Java language/scripting, and a SQL database that can be used on both the client and server sides.

## Literature Review

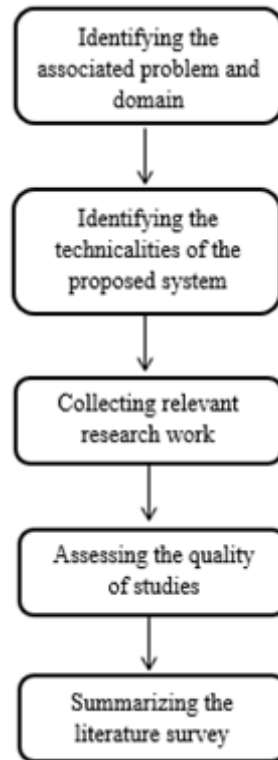
One of the greatest crises being experienced by many nations around the world is the scarcity of nursing professionals. A number of nations have been collaborating to find a solution, but they are finding it to be a very challenging process. The lack of workers in the nursing department is regarded as a difficult assignment because the workload might not be allocated fairly, which could lead to the organization's demise. A certain number of nurses would be needed to oversee and care for the patients, which might have a negative effect on the healthcare sector. The number of newly qualified nurses has been increasing recently, increasing at an annual pace of 9.8 percent, which is faster than the anticipated growth in demand of 2.12 percent.

Because it directly affects the caliber and continuity of the profession, low nurse recruitment costs and high turnover rates are causing concern in many parts of the world. The goal of initiatives to improve professional training and hire new employees through marketing campaigns has been to increase the recruitment rate. The focus of contemporary study, in contrast, has switched to investigating the different elements that may influence a nursing staff member's decision to quit their organization, their position, or even their profession. These factors are crucial to understanding why nursing personnel is retained [2].

Professionally speaking, the likelihood that a nursing staff member will leave their position is related to their general level of job satisfaction [3], which is frequently influenced by the following factors: pay, opportunities for advancement, workload, and anxiety [4], satisfaction with their supervisor, and organization. One author's research explicitly summarizes the relationship between the concept of job satisfaction and the intention to leave [5], noting that the current nursing staff shortage did result in a busy schedule for the remaining staff, which is a direct cause of stress and burnout for other staff members and consequently leads to low job satisfaction. [6] claims that a restructuring of the Canadian healthcare system left nurses with a severe workload and a sense of betrayal towards their organization. From a demographic standpoint, several research have discovered relationships between age, identity, family status, educational attainment, and the nurses' intention to leave. According to [7], younger nurses who are not married are more likely to want to leave.

Regarding intentions to depart, nursing management may have a variety of effects. Despite socioeconomic and societal inequalities, it was determined that the creation of a networking infrastructure was crucial [8]. Therefore, implementing such a system in the hospital is essential for boosting the nursing staff's retention rate. The majority of nurse practitioners complain about their compensation, and it is regularly noted that the earnings they are now receiving do not accurately reflect their task responsibilities.

One of the most important factors to take into account when conducting a literature review is the method utilized to extract the material. For this thesis, we employed a five-step comprehensive literature technique. The following figure displays the steps listed in the methodology:



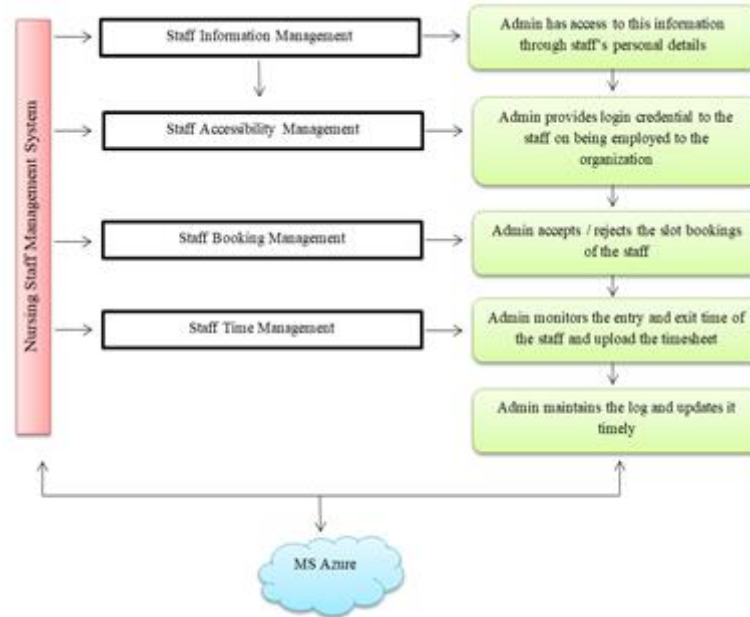
**Figure 1: Workflow of the Proposed System**

In order to effectively handle and transparently monitor nursing staffs, the paper's main goal is to address the staff management issue on the admin side and install an Android app on the client side. To do this, the authors must first recognize the difficulties that are currently encountered in the same field and then apply technical analysis to focus on the problems. As a result, the writers have thoroughly investigated comparable work being done by other research academics and evaluated it based on user experience and the interface offered for user-admin contact. However, this section of the paper provides a brief overview of the execution strategy needed to carry out the experiment successfully.

### **Requirements And Specifications**

The main goal of the article as it has been presented is to create a staff management model that may be used by both the administration and the workforce. On the server and client sides, respectively, web apps and Android apps are utilized. Through the conducted literature study, it was discovered that U.K. job applicants were paid on an hourly and weekly basis. The authors were inspired to contribute their work in this field after this element was taken into account. While developing the model, a number of additional admin and staff-related elements were also taken into consideration.

This application paradigm, which is solely based on DBMS principles, was created with the specific goal of reducing and doing away with manual staff record keeping and processing. The manual labour appears to be laborious in nature and prone to mistakes made by humans. This may result in improper personnel management, which would lower overall organisation efficiency. Through the provided summary, it is evident that the proposed thesis will contribute to the field of health care by helping to manage nursing personnel effectively. The concept also improves an open workplace that allows employees to interact with one another amicably, minimising future staff retention.



**Figure 2: Architecture of the Proposed System**

The staff management system that is being demonstrated is a desktop programmed that links users to the data file, which has all of the information, utilizing Microsoft SQL Server as the database. Using this application, the administrator can enter, save, and record personnel information. The application can also be used to reserve timeslots based on the availability of the applicant, and it also keeps track of the staff's reserved dates and times. As a result, information can be retrieved quickly without the need for human intervention, and admin is able to manage staff absences and keep track of their start dates. It will also do away with the paper/file system issue, which will fix the issues with the current system. It's crucial to decide which tools and methods to use when carrying out a certain project. This decision to employ particular methods is made following a thorough examination of the tasks at hand. Because creating a model that could be deployed on the admin side, client side, and cloud is the main goal of the presented paper.

A requirement is a set, unchanging, and clearly stated physical or functional need that is intended to be addressed by a particular design, thing, or technique. It is a broad idea that might apply to any crucial system component that a business or organization needs in order to be useful. In order to successfully perform the project, the tools, approaches, methodologies, algorithms, databases, and software and hardware requirements must be evaluated and determined. Requirement engineering is another name for this aspect of requirement analysis. In order to complete and optimize a system model, it also entails the process of examining all the related goals, objectives, and tasks.

The programming language that will be used must be chosen before the system model can be implemented. This is done in order to optimize the development of the software. Additionally, the C sharp programming language was employed to guarantee that a typical object-oriented programmed is used to manifest this desktop application. The database, which was created using Microsoft SQL Server, was then connected to using Microsoft Asp.Net.

**Table 1: System Requirements**

WEB APPLICATION	
Category	Software Used
Operating System	Windows
Programming Language	C Sharp
IDE	Visual Studio
Framework	Asp.Net
Database	Microsoft SQL Server
ANDROID APPLICATION	
Category	Software Used
Operating System	Windows
Programming Language	JAVA
IDE	Android Studio
Framework	JSON
Database	JSON

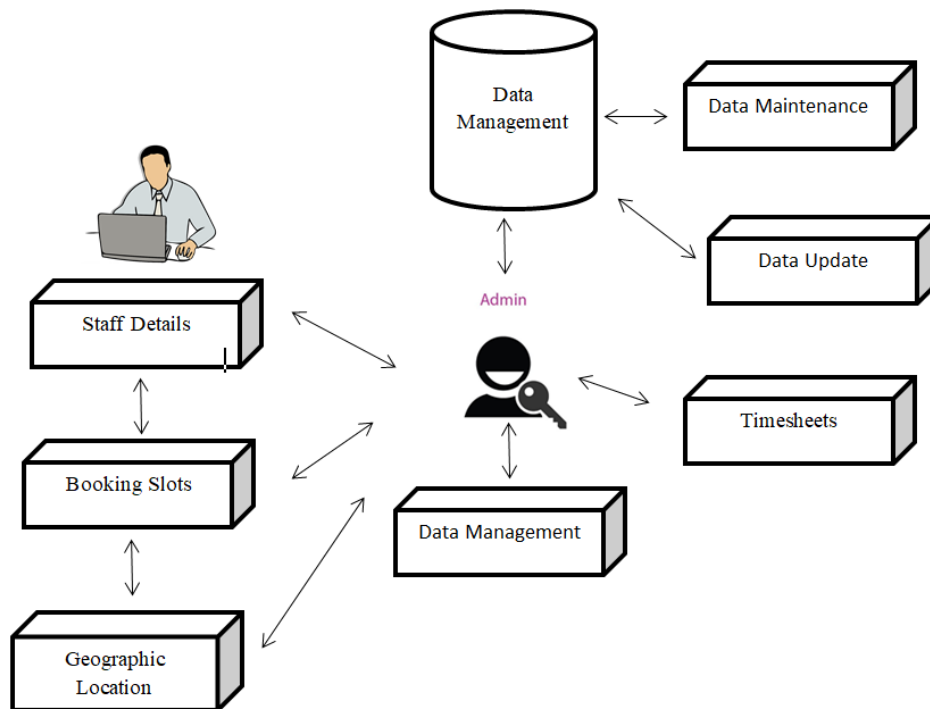
The implementation made advantage of the C#.Net Framework. Additionally, the programmed will make Google Email Address available as a third-party API, enabling users to send email updates and log in using their Google email credentials. The software will also allow the user to send emails. The Windows 10 operating system was used to construct the application, and a solid graphical user interface created in Visual Studio was used for all functionalities.

The requirement specification contains all the specifications needed to build or develop a project. The software system is fully described, the system's intended purpose is captured, and a connection is made between admin/finance and staff members so that they can take part in the development. Functional requirements are additional categories for requirement specifications.

#### *A Functional Requirements*

Requirement Number	Description	Type
1	The proposed system model would include a user interface for admin and the staff	Functional
2	The system would provide the staff with user credential and password through mail	functional
3	The system shall be responsible to update staff data at regular intervals of time	Functional
4	User logins of the staff would be managed by the admin	Functional
5	The admin can hire/fire the staff based on their performance	Functional
6	The admin can monitor every activity of the staff through the inbuilt feature of GPS	Functional
7	The admin can have access to staff's personal details	Functional
8	The admin can upload and update staff's work on the respective timesheet	Functional
9	The user can book his shift as per his feasibility	Functional
10	The admin can manage logs, booking slots and update booking status	functional

Using Visual Studio 2019 as the IDE, the web application is created on Windows 10. The database is developed using MYSQL, and the staff members' records are kept up to date using this system. The admin, who has the power to oversee and regulate every action of the hired employees, can access this database. The MYSQL database that was established has a number of tables, including ones for job openings, applications, and reservations, among others. Using HTML, CSS, and JVA Script, these labels are further incorporated in the system model. The user can view the labels that have been so categorized on the front end. To increase the responsiveness of the interface, various database libraries are used. The suggested system's ER model is as follows:



**Figure 3: ER Model**

The thesis' main goal is to implement two models for staff management.

- The first model concentrates on developing a user-accessible Android-based app. The end user can use this app to look for job openings using the GPS feature, register with the organization of his choice, book a time slot that works for him, see the progress of his booking, and upload his entry and exit times
- The second model focuses on creating a web application that can be accessed by the administrator and is run on a website. The administrator can manage the applied positions, recruit personnel, manage their booking slots, approve or reject the applied booking slots, manage logs, and update staff activity on the timesheet using this web app

In this way, the administration side handles personnel management while the user side handles job searching. Transparency is enabled and communication between the parties is improved as a result. As is typical, difficulties with gender discrimination, pay equity, and the marital status of female nurses affect nursing staffs. Due to the app's built-in GPS tracking feature, everyone has an equal chance at receiving job allocation and is also kept under the admin's monitoring.

## System Testing And Analysis

The main goal of the paper is to create a personnel management system and grant admin and employees' access to it. As a result, the complete implementation was done on two apps, a Web app and an Android app, using various IDEs, databases, and programming languages. The implementation testing and analysis that are being done on both of the developed apps are briefly discussed in this section of the research paper.

### Staff Management

**Sign in**

Select User :

select

Username

Password

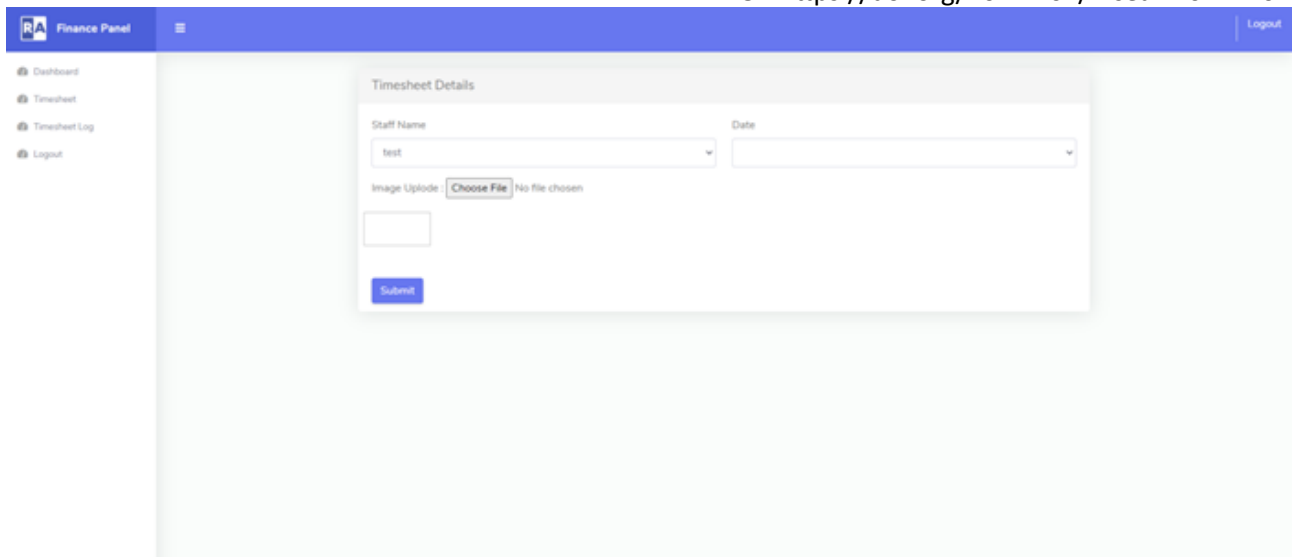
Login

**Snippet 1: Admin/Finance Login**

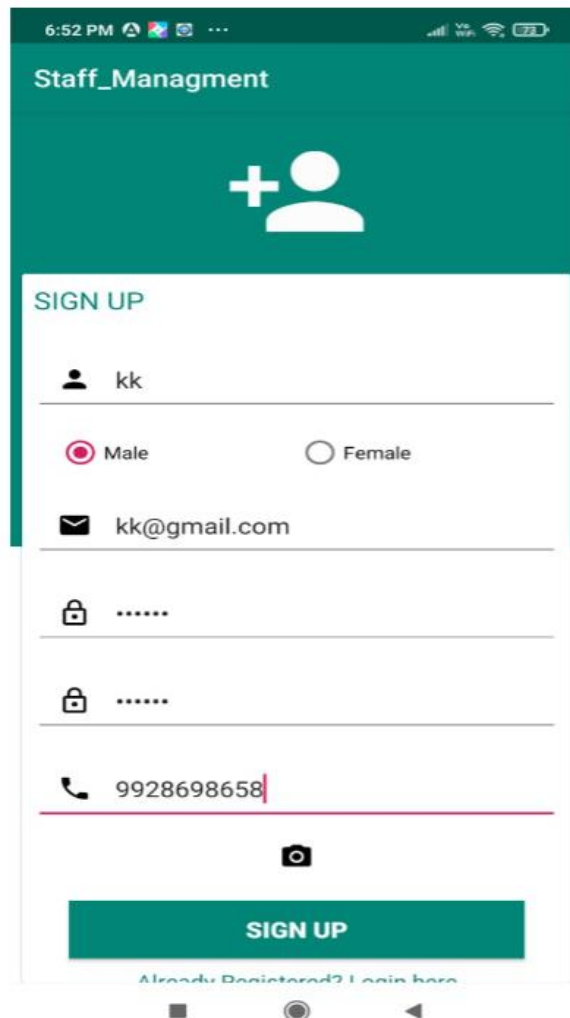
Id	Name	Gender	Email	Phone	View
1	test	male	test@gmail.com	9923965985	View
2	sagar	Male	sagar@gmail.com	9925365632	View
3	asish	Male	asish@gmail.com	9963696536	View
5	abc	Male	abc@gmail.com	9963256852	View
6	rook	Male	rook@gmail.com	9963256369	View
7	shh	Male	shh@gmail.com	9963256986	View
8	kk	Male	kk@gmail.com	9928688658	View

**Snippet 2: List of job seekers who have applied**





**Snippet 3: Timesheet Details**



**Snippet 4: Android App**

## Conclusions

The mobile applications developed for this thesis demonstrate how cross-platform technology, along with Web services and plugins, may be utilised to construct a mobile application for looking for employment in the area and giving the admin the ability to monitor the respective employees. The application has an advantage over other job search and management tools because it allows job seekers to reserve slots, which makes it simpler for companies and recruiters to narrow down the applicant pool. The tool has also proven useful for admins, who can quickly employ candidates and efficiently manage their allocation. Programming languages like JAVA, C#, and MySQL are utilised for the front end and back end of the implementation, respectively. IDEs for Visual Studio and Android Studio are also implemented in addition to this.

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