Project 12

Australian Clinical Labs Online Reporting System

INTRODUCTION

The Diagnostic Lab Reporting System administrator program which will provide various analysis working on the internet. Here victims are first able to sign-up on the site and sign in using authorized information. Once authorized with their deal with and contact information, the patient may now see a wide range of assessments performed by the lab along with their expenses. The program allows for CBC, Blood Sugar, KFT, LFT assessments to be reserved by individual. The assessments also comprises of factors like Haemoglobin, WBC, etc. Now the program allows customers to book any analyze needed. After effective reservation program determines expenses and allows customers to pay online.

Objectives

Technology has facilitates human beings in almost every field of life. They turn manual tasks automatic to saves recourses. Automatic works is considered more trustful, reliable, accurate etc. Technology is the main reason, which successfully manages many processes and creates successful management system.

System Specifications

Existing Solution:

It needs employment as the human efforts are being automated by this system.

In this existing Diagnostic Lab Reporting System, the reports are generated either manually or by using computer software in which the details itself needs to be fitted by the employees of the organization. Existing system has greater tendency of having more errors as compared to the automation system. In existing Diagnostic Lab Reporting System, as the chances of errors are greater,

thus the chances of getting information from the reports are more which will indirectly or directly affect the patients and their health only.

Existing Diagnostic Lab Reporting System needs to change asap in order to reduce the errors which affect the patient's report and indirectly patient's health in this way or any other way.

Proposed Solution:

The proposed system is an "Online Diagnostic Lab Reporting System". Its main aim is to bring together various diagnostic working, researches on one single platform that is also online (so that it is accessible for everyone).

- The system allows automate diagnosis system.
- Allows for faster service.
- Allows increased sales and profits for diagnostic labs.
- Easy, user friendly GUI.

OVERALL DESCRIPTION OF THE PROPOSED SYSTEM

Module Description

System Users and Their Functions:

System Features

In the life of the software development, problem analysis provides a base for design and development phase. The problem is analyzed so that sufficient matter is provided to design a new system. Large problems are sub-divided into smaller once to make them understandable and easy for finding solutions. Same in this project all the task are sub-divided and categorized.

System Modules:

- **Admin**
- **Patients**

Module Description:

Registration:

The patients or clients who are using the proposed website have to register them on the website by providing basic details about them, their medical details and contact details. They can set their unique name and password.

Login:

The users (patients or clients) access the system or system features by login into the website by using their username and password.

View Interface:

On main or home page of the proposed website the section of tests conducting is reserved. On that page each test along with their estimated cost is displayed for example CBC, Blood Glucose, KFT etc.

Locate Nearby Lab:

The system locates the nearby lab and their working hours as well the time slots available to them.

Book Test or Reserving:

The client can book certain needed test online. Client can take available slots or in case reserve demanded slots up to requirements.

Cost Calculation and Payment:

After successful booking the system calculates the estimated cost and the user have to pay online.

Lab Receive:

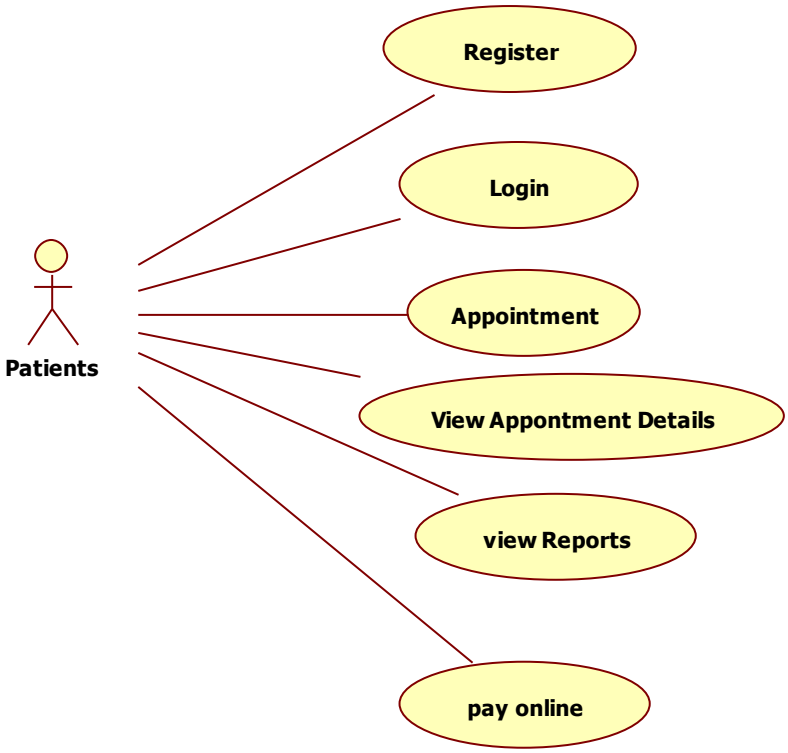
The person's tests are conducted in nearby lab or any unit mentioned by lab and collected from their later.

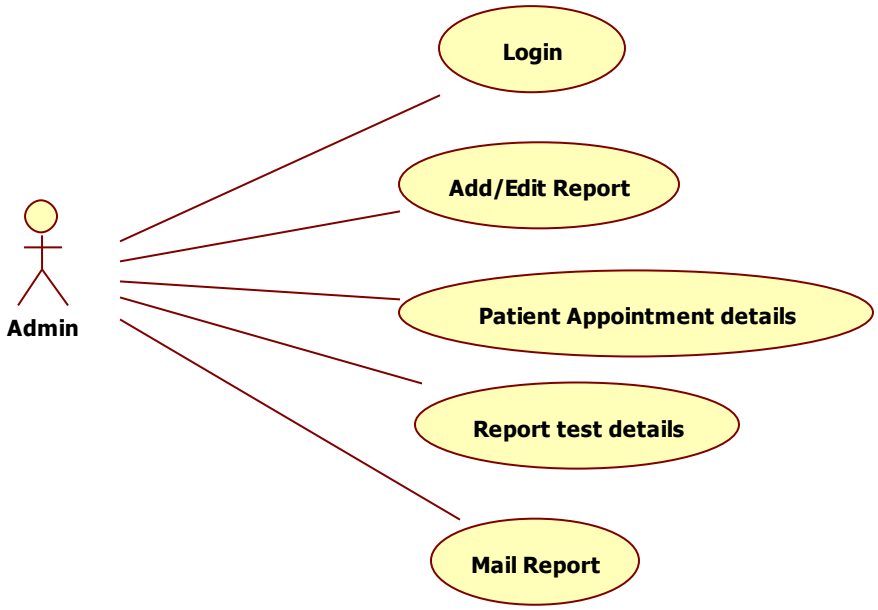
Test Results:

After the test is conducted and samples are examined the patient gets reports results of their test with the help of notification. The users can immediately view their reports and can collect hard copy of reports from diagnostic center later.

Use case Diagrams:

Use case diagrams model behaviour within a system and helps the developers understand of what the user require. The stick man represents what's called an actor. Use case diagram can be useful for getting an overall view of the system and clarifying who can do and more importantly, what they can't do.





Use case diagram consists of use cases and actors and shows the interaction between the use case and actors.

- The purpose is to show the interactions between the use case and actor.
- To represent the system requirements from user's perspective.
- An actor could be the end-user of the system or an external system

Detailed Breakdown of Functional Requirements

Find below detailed breakdown of functional requirements:

Secure Patient Data Storage:

- The system must securely store and manage patient information, including demographic data, medical history, and lab results, adhering to privacy regulations like HIPAA.
- Data encryption at rest and in transit is crucial to protect sensitive patient information.

Secure Report Transmission:

- The system must facilitate secure transmission of lab reports to authorized healthcare providers and patients.

- Secure login and authentication mechanisms are essential to prevent unauthorized access to patient data.

User-Friendly Interface:

- The system should provide a user-friendly interface for healthcare providers to access, view, and manage lab results.
- The interface should be intuitive and easy to navigate for both technical and non-technical users.

Result Display and Interpretation:

- The system should display lab results in a clear and concise manner, including reference ranges and any relevant clinical interpretations.
- The system should allow for easy filtering and searching of lab results based on various criteria, such as patient ID, test type, and date.

Reporting and Analytics:

- The system should generate reports and analytics on lab data, enabling healthcare providers to track trends and identify areas for improvement.
- The system should allow for customization of reports and export of data in various formats.

Integration with Existing Systems:

- The system should be able to integrate with existing electronic health records (EHR) systems and other relevant healthcare applications.
- The system should facilitate seamless data exchange between different systems.

Audit Trail:

- The system must maintain a comprehensive audit trail of all user actions and data modifications, ensuring accountability and traceability.

Data Validation and Quality Control:

- The system should include mechanisms for data validation and quality control, ensuring the accuracy and reliability of lab results.
- The system should provide alerts for any data anomalies or discrepancies.

Access Control:

- The system should implement robust access control mechanisms to ensure that only authorized users can access sensitive patient data.
- User roles and permissions should be clearly defined and managed.

Mobile Access:

- The system should provide mobile access to lab results, allowing healthcare providers to access data on the go.
- The mobile interface should be secure and user-friendly.

Alerting and Notifications:

- The system should provide alerts and notifications for critical lab results, such as abnormal values or urgent test results.
- Alerts should be configurable and customizable based on user preferences.

Data Export and Import:

- The system should allow for easy export and import of data in various formats, facilitating data sharing and collaboration.

Scalability and Performance:

- The system should be scalable and able to handle a large volume of data and users.
- The system should provide fast and reliable performance.

Compliance:

- The system should comply with relevant regulations and standards, such as HIPAA, ISO 15189, and other relevant standards in Australia.

Functional requirements are product features or functions that developers must implement to enable users to accomplish their tasks. So, it's important to make them clear for the stakeholders. Generally, functional requirements describe system behavior under specific conditions.

The developers of this system must enhance the performance and efficiency of the system by adding 15 to 20 more functional requirements. Students need to do their own research to find how they can improve the system and which FRs need to added. The group must need a prior approval from the stakeholders/project supervisor before finalizing these Functional Requirements.

These enhanced FRs must be reflected separately in Final SRS Report after the approval.

Non Functional Requirements

There are a lot of software requirements specifications included in the non-functional requirements of the system, which contains various processes, namely Security, Performance, Maintainability, and Reliability.

Security:

- Patient Identification: The system needs the patient to recognize herself or himself using the phone.
- Logon ID: Any users who make use of the system need to hold a Logon ID and password.
- Modifications: Any modifications like insert, delete, update, etc. for the database can be synchronized quickly and executed only by the ward administrator.
- Front Desk Staff Rights: The staff at the front desk can view any data in the system, and add new patients record to the HMS but they don't have any

rights to alter any data in it.

- Administrator rights: The administrator can view as well as alter any information in the system.
- Cybersecurity Implementation: Identify ethical risks in database design and implement the actions of mitigation.
- Cybersecurity Implementation: Provide evidence that you have implemented the data encryption and anonymization of data.
- Cybersecurity Implementation: Perform ‘Data Protection Impact assessment’ to help ensure compliance, facilitate a privacy by-design approach and identify better practice.
- Cybersecurity Implementation: Implement the secure methods for data encryption, data security and data breach to maintain the privacy of end users.

Performance:

- Response Time: The system provides acknowledgment in just one second once the 'patient's information is checked.
- Capacity: The system needs to support at least 1000 people at once.
- User-Interface: The user interface acknowledges within five seconds.
- Conformity: The system needs to ensure that the guidelines of the Microsoft accessibilities are followed.

Maintainability:

- Back-Up: The system offers efficiency for data backup.
- Errors: The system will track every mistake as well as keep a log of it.

Reliability:

- Availability: The system is available all the time.

  Project should aim at Business process automation.

  - In computer system the person has to fill the various forms & number of copies of the forms should be easily generated at a time.
  - In computer system, it is not necessary to create the manifest but we can directly print it, which saves time.
  - To assist the staff in capturing the effort spent on their respective working areas.

- To utilize resources in an efficient manner by increasing their productivity through automation.
- The system should generate types of information that can be used for various purposes.
- It satisfy the user requirement
- Be easy to understand by the user and operator
- Be easy to operate
- Have a good user interface
- Be expandable
- Delivered on schedule within the budget.

Hardware Requirement: Should be recommended by the developers.
Software Requirement: Should be recommended by the developers.