Logo, company name

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Presented by: -

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# SECTION 1- INTRODUCTION

# BACKGROUND OF THE STUDY

The application is an administrator program for the Diagnostic Lab Reporting System, which allows a variety of analytical functions while working on the internet. Victims are first allowed to register on the site and then log in using their approved credentials. Once the patient has provided their deal with and contact information, they will be able to see a broad selection of examinations done by the lab, as well as the costs associated with them. Individuals may book appointments for CBC, Blood Sugar, KFT, and LFT exams using the service. In addition, parameters such as haemoglobin, white blood cell count, and so on are taken into consideration. Customers may now arrange whatever kind of analysis they need via the program. After a successful reservation, the software calculates expenditures and enables clients to make payments online. To make the most of a state's assets, all this data must be handled in an effectual and cost-effective manner. Now a days most of health provider do Online Diagnostic Lab Review System creating a more efficient and error-free Its goals include data standardization, consolidation, the integrity of data, and the reduction of errors.

# PURPOSE OF THE PROJECT

According to the project description, the goal of the project is to develop an online diagnostic laboratory management application with the potential to show a variety of different online diagnostics in real-time. Its principal goal is to consolidate a wide variety of diagnostic procedures and investigations into a single online platform that is simple to access and navigate. The way our website streamlines time-consuming tasks, users may be able to save both time and money because of their usage of our service. It is generally agreed that automated work is more dependable, trustworthy, and accurate than manual labor. According to the authors of the proposal, the online system that is being considered should comprise both a website and a content management system. The goal of this project is to deliver a more dependable and timely service when compared to the manual technique currently in use. If diagnostic laboratories use this method, they will be able to boost their revenue significantly. The primary reason for the efficient implementation of many mechanisms and the creation of an efficient leadership scheme is new tech

Because of its user-friendly and dynamic interface design, any user will have no issue moving through and around the program. To utilize the lab, patients and users must first complete an online form with basic information about themselves and then choose the tests they want to have performed at the lab before submitting the completed form. While functioning in the natural environment, the system is easy to use, dependable, and well-maintained. Pathology, biochemistry, serology, hematology, and other laboratory specialties benefit from the advancement of this technology. In terms of power, it is a behemoth that can do a variety of jobs at the same time.

OBJECTIVES

* Creating the system has the capability of automating the diagnosing system.
* To make the System possible to provide speedier service.
* To help the diagnostic laboratories to enhance their sales and earnings using this system.
* Create a simple and user-friendly graphical user interface.

PROJECT SCOPE AND LIMITATIONS

One of the project's goals is to provide patients with test results in the shortest amount of time possible. The system is comprised of three actors: the super administrator, the lab administrator, and the patient, who all play different roles. Patients must first create an account on the website before they may check-in using their credentials (email and password).

Patients may now explore the different tests available at the lab and the related prices after registering with their address and contact information. Patients may use the system to schedule standard blood tests such as CBCs, blood glucose tests, KFTs, and LFTs, as well as other procedures. In addition, indices such as hemoglobin, white blood cell count, and others are measured. Users will be able to make payments using the system's online payment system starting today.

When the patient's payment is confirmed, the lab schedules the patient's test. An email confirmation is sent to the patient's registered email address, allowing the lab to collect samples from the patient's registered address on the day of the test. Following a successful test, the user will get an email with the results. Administrators may submit report data and instantly send an email message to the patient who has been chosen, enabling him or her to see the report after logging into the system. The system's ultimate purpose is to construct an online diagnostic laboratory, which is currently under development. The system's goal is to provide patients with easy-to-use, interactive software that allows them to arrange tests on their own time without any assistance. With this technique, it is feasible to do an automated diagnostic. It helps diagnostic labs provide faster service and make more money at the same time.

# 

# ASSUMPTIONS

* To schedule a test or package, the system requires that you pay in full at the time of scheduling.
* The system does not allow for the addition of tests or packages to a cart by the user. When arranging a test, the test and packages must be selected, and payment must be provided as soon as the test is scheduled.
* The doctor's employment does not serve a completely functional purpose. Only physicians are permitted to sample the tests and sign the resulting documentation.
* There is a single super admin who is in charge of overseeing all the lab managers.
* A separate lab administrator is also in charge of each branch.
* The test and its parameters have already been pre-programmed into the system.
* Labs make all tests and products available to the public via the system.

# SECTION 2- PROJECT DELIVERABLE

**Need:** The system was implemented to simplify the task of storing patient information, which has been formerly done manually. The technology relieved the office that was responsible for keeping records of patient reports and documentation of a large amount of work. In a nutshell, this invention was implemented to digitalize the time-consuming manual process of preparing patient reports.

**Team and responsibilities:**

|  |  |  |
| --- | --- | --- |
| Task | Participants | Role |
| Prototype | Chameera | Design the prototype of the system |
| Documentation | Vedant Panchal | Making the documentation of the report |
| Coding | Lakmal and Arastu | Developing the front and the backend of the system |
| Maintenance | Rohit Patel | Keeping the system up-to-date |

**Methodology:**

Agile growth is more of an idea than a technology. It's an iterative software development process that builds and implements many features rather than delivering the final product near the deadline. This strategy is straightforward and adjustable, with the option to make changes as needed. Making planning, creating, establishing, checking, and reviewing your program, then repeating the cycle until it is ready to launch, looks to be how Agile works from a high-level overall perspective.

Business Requirements

## Modules of the system

Admin: By signing in, the User can manage his own account. Admins have access to the system's data and may add/edit it. Admins have access to the system's laboratory information and can update it. Admins can edit or add information to the laboratory system in the system. Set and Add a Time Table: The administrator is in charge of setting and adding the timetable. Fee Paid/Unpaid: The fee information is entered into a system by the administration. Admin enters information about the occasion into the system. Admins may keep an eye on and delete book requests from the database. The administrator has access to all of the records in the dataset.

Patient: patient can manage the account by logging in to the system. They can view their respective profile. The patient can go through the report sent by the laboratories. They can also view the schedule for the appointment. Patients can download reports also they can make payments.

Laboratory: laboratories can log into the system and view the profile of their own as well as the patient who has requested an appointment (Horvath, 2013). Reports can be created by laboratories and also is uploaded for the client or patient.

Receptionist: can log in to the system and create an appointment for the patient with the laboratories. Receptionist also can view the payment status and take the payment.

### Hardware Requirements

System                        :  Intel3core

Hard Disk                    :  8GB

Monitor                       :  15’Colo Monitor

Mouse                          :   Optical Mouse

### Software Requirements:

Front End: HTML5, CSS3

Back End: PHP, MYSQL

### Development Tools:

    IDE: Notepad++, Atom, Eclipse/Mars

    Web Emulator

    XAMPP Server

**PHP Tools:**

XAMPP

# SECTION 3- System requirements

## 3.1 Functional Requirements

|  |  |  |
| --- | --- | --- |
| NO | FUNTIONAL REQUORMENT | COMMENTS |
| FR1 | LOGIN | It is used by the all participant as admin, laboratory, receptionist, and patient, to login the system and can excess functions |
| FR2 | SIGNUP | Need for all to have a profile and login onto the system. With sign up it is very much easy to access after it just must mention login details. |
| FR3 | Update information | Admin have access to updated information of schedule and events. Like report profile, Name, Mobile number etc. |
| FR4 | Appointment request | Patient requests for test apportionment. Like Which test they have to conduct and book the appointment. |
| FR5 | Add staff | If any new staff member came to the organization than admin can add him/her to the system. |
| FR6 | Remove staff | It is used to remove the staff accounts from the organization. |
| FR7 | Schedule appointment | Receptionist scheduled the appointment for a patient. Like schedule time and date. |
| FR8 | Accept payment | Receptionist accepts the payment from the patient. |
| FR9 | View payment | Receptionist can view the payments details of patients in the system that how they made a payment. i.e., credit card, debit card and cash |
| FR10 | View profile | Every participant in the system can view their profile, which shows what test they made? and how much it cost? etc. |
| FR11 | View reports | Patient views their reports by downloading from the receiving email. |
| FR12 | Download report | Patient can download their report. |
| FR13 | Nearby Laboratory | Patent can search laboratory within their km radius. It shows the nearest branch near to their location. |
| FR14 | Generate report | Laboratories can generate report after conducting the test. |
| FR15 | Upload report | Laboratories can upload report once it gets generated so patents can see the report. |
| FR16 | Take sample | Laboratories can take sample of patents like blood, saliva, and urine. |
| FR17 | View appointment | Laboratorist can view the appointment. That what time the appointment is made when it is. |
| FR18 | Update test information | Admin can update test information if any changes in the report. |
| FR19 | Create test item | Admin can create test item. |
| FR20 | Delete test item | Admin can delete test item from the list |

## 

## 3.2 NON-FUNCTIONAL REQUIREMENTS

**Security:**

|  |  |  |
| --- | --- | --- |
| NO | NFR | COMMENTS |
| NFR1 | SECURITY | Patient Recognition: The patient must be able to identify themselves in the system.  Login ID: every patient should have a login id to login into the system.  Administrator rights: any modification and then updated in the system can only be done by the admin.  Front Door Personnel Privileges: he/she has the ability to examine any data in the DLRS, as well as add new patients’ information to the online system but they would not have the ability to change any data (Wardynski, 2020). |
| NFR2 | performance | When the 'patient's data is verified, the system offers an acknowledgment in less than a second.  Capacity: Our system should be able to accommodate at least 750 individuals at the same time.  User-Interface: Inside 4s, the up responds.  Subservience: The system must verify that the Microsoft accessibility rules are followed. |
| NRF3 | maintainability | Back-up: This solution is efficient when it comes to data backup.  Errors: The program would keep records of all mistakes and keep a log of them |
| NRF4 | Accessibility | This system is always accessible. |
| NRF5 | Usability | All participants of a system can use the system easily. |

# 5- User interface design

**Login**Graphical user interface, application

Description automatically generated

Figure 1: Login page

Login pages allow patients to enter the online system, patients who have existing accounts can login using unique username and password. If the user forgot the password, they can reset the password using click here option it will redirect the page to password reset page. New patients can register online account from register now tab it will redirect the page to new user registration page.

**Registration**

Graphical user interface, application

Description automatically generated

Figure 2: New user registration page

Figure 2 shows new user registration form this page allow patients to create an account for the online system, patients need to fill this form by providing name, email, age, phone number, address and gender. Also, patient need to enter a unique username and password before tick privacy terms and click register button. Once registration complete user will get confirmation email

Graphical user interface, text, application

Description automatically generated

Figure 3: Password reset page

This page allows users to find their unique username if they forget it, user need to type the registered email address then click generate code to get the verification code, then user can type verification code and click email username, then user will receive email with Username details.

Also, this page allows users to reset password, user needs to enter registered mobile number or email address generate verification code which will send after click generate button. Then user can enter verification code and reset the password

**View Interface**

A picture containing graphical user interface

Description automatically generated

Figure 4: View Interface

This page clearly shows the Test types that providing in Dorevitch Ediagnostic lab and which Lab locations are providing which test type. Also, this page shows estimated cost for Test types

**Locate Nearby Lab:**

Graphical user interface, text

Description automatically generated

Figure 5: Locate nearby lab

Locate nearby lab page allow patients to find a lab by typing their suburb or post code, once the patient type and search, results will show nearest lab. Patient can refine the search by filtering from test type they are looking for it allow users to get the labs nearby providing the selected service. Search result will visible lab name, address, contact number, working hours and available time slots for the week.

**Book Test or Reserving**

Graphical user interface

Description automatically generated

Figure 6: Book tests and reserving

Book Test or reserving page allow patients to view tests, select date, view available slots and location before making the booking, then user can click book now button to process to the payment page to complete the booking. If specific tests need reservation user can click reserve now and process.

**Cost Calculation and Payment**

Graphical user interface

Description automatically generated

Figure 7: Payment page

Once the user process from book now button, they will redirect to the payment page, payment page shows little summary of booking details such as Test type, Date, Time slot and location and follows the total cost. Then customer can review the details and go on to type the credit or debit card details for process the payment. Once all information filled out user can click pay now button. Then user will receive automatic email with booking confirmation.

**Lab Receive:**

Graphical user interface, text

Description automatically generated

Figure 8: Lab Receive

This page shows the patient summary of the current booking it shows test type, booking date/Time and location as well as where to collect the hard copy of the test report

**Tests Results**Graphical user interface

Description automatically generated

Figure 9: Test Results

Test results page allow patients to view their all the bookings and reports online, also this page allow patients to view previous test reports online. Once the lab releases the test results patient will receive notification right top corner as the figure shows. Same time patient will receive confirmation email about Test result available to view online and date for the hard copy collection.

**Admin login**

Graphical user interface, application

Description automatically generated

Figure 10: Admin Dashboard

This page is for the admin dashboard which laboratorist can access to the system, entering unique user name and password allows them to log in to the system. Account creation for the admin dashboard will be done by us.

**Patient Appointment details**

Graphical user interface

Description automatically generated

Figure 11: Patient Appointment details

This page shows all the existing bookings and information provided by the patient, information includes, patient name, gender, booking reference, email, address, phone number, date/time and location.

**Add/Edit Report**

Graphical user interface, application

Description automatically generated

Figure 12: Add/Edit report

This page allows laboratorist to generate the reports by input test details, also this page allow changes to the existing report if there are any mistake made in previous completion of the report

**Report Test details**

Graphical user interface

Description automatically generated

Figure 13: Report Test details

Once the report generation complete laboratorist can see a summary of details before email the report, then laboratorist submit the test results by clicking email report.

# Section 6 Use case Diagrams

Diagram

Description automatically generated

Fig: use a case diagram

A use case diagram is a sort of behavioral drawing specified by and constructed from a use-case analysis in UML (Cinergix, 2022). The objective is to offer a pictorial depiction of a project in general in terms of actors, objectives (expressed as use cases), as well as any relationships among these use cases. UML and the systems modeling language both incorporate use case diagrams in their formal definitions (sysML).

# Section 7 Context diagram

Diagram

Description automatically generated

Fig: context diagram

# Section 8 Data Flow Diagram

The DFD examines a system from an input-process-output perspective, in which data objects enter the program, are changed by processing components, and the resulting data objects exit the software. Labeled arrows indicate data items, whereas circles, often known as bubbles, represent modifications (Chi, 2021). The DFD is organized in a hierarchical manner, with the initial data flow model representing the whole system. The context diagram (level 0 DFD) is refined by successive DFDs, which provide more details for each tier.

**DFD level 0**

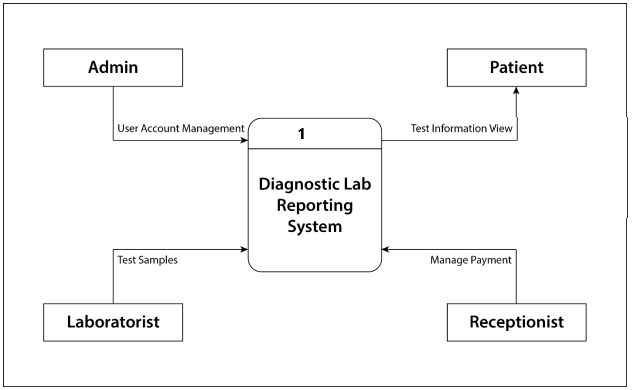


Fig: level 1 DFD

**DFD level 2**

Diagram

Description automatically generated

Fig: level 2 data flow diagram

# **Section 9 ERD- ER Diagram:**

Diagram

Description automatically generated

Fig: ER Diagram

In the above er diagram, we can see there are four entities and five relationships among them. Also, there are many attributes. We can see the entities in here are patient, staff, test, and admin. Now let’s talk about the relationship present here. There are one too many relationships between admin to staff. Admin controls all the staff, and can view and alter their details. There are one too many relationships between the admin to test. As admin can see all patient tests results and control them. There are many too many relations between staff to patients. Many staff can coordinate with many patients. There are also many too many relationships with a patient to as shown in the ERD. So, ERD represents the relationship among the several entities of the online lab reporting system having significant attribute

# **Section 10 Sequence diagram**

A sequence diagram is a sort of interaction figure that illustrates how a set of items interacts and under what ratio. Software engineers and corporate executives use these images to comprehend the system requirements or to describe a current process. Event diagrams and context diagrams are other names for sequence diagrams

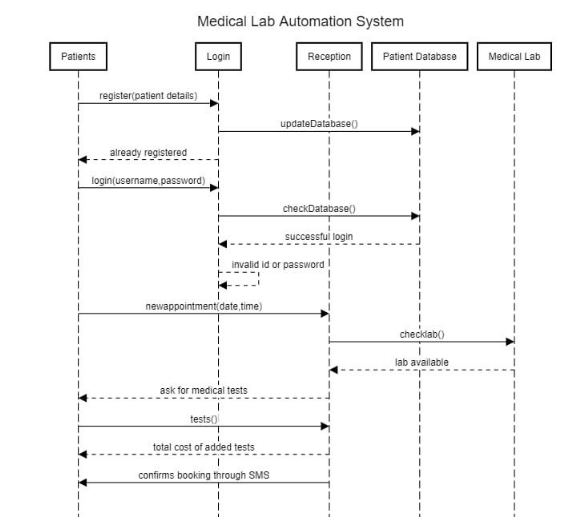


Fig: sequence diagram

# 

# **Conclusion**

In this project, we tried to create an efficient, powerful, and easy online system which is: an online Diagnostic Lab reporting system that can reach to as many patients and serve them. This model was created with a certain diagnostic center in mind. But here's the kicker: this model may be scaled up to include several diagnostics sites. Because it is an online application, it may be accessed anywhere in Australia. the dataset was created in such a way that it may be linked to other diagnostic facilities and utilized on a broad scale. We create the several diagrams for completing this project as use case diagrams first. That represents the works of the actors. Then the DFD that shows the data flow in the system. We have also shown the relationship among the entities with help of ERD, which makes it easy in creating an online system. Also have shown the interfaces from the admin side and user or patient side which they can access easily and navigate easily. User Interface is user friendly, and patients can easily book online appointments, make payments, review test results online.

# References

Chan, E.S.K. (2001) eBusiness and Information Systems : Academic Programs in Australia and New Zealand in the e-Age. *Methodology*, (6), pp.117–142. Available from: <<https://resource.acu.edu.au/elchan/pub/2001-2.pdf>

Kosack, C.S., Page, A.-L. & Klatser, P.R. (2017) A guide to aid the selection of diagnostic tests. *Bulletin of the World Health Organization*, 95 (9), pp.639–645. Available from: <https://pubmed.ncbi.nlm.nih.gov/28867844>.

Cinergix (2022) Use Case Diagram Tutorial ( Guide with Examples ) [Internet]. Available from: <https://creately.com/blog/diagrams/use-case-diagram-tutorial/>.

Chi, C. (2021) A Beginner’s Guide to Data Flow Diagrams [Internet]. Available from: https://blog.hubspot.com/marketing/data-flow-diagram

Creately (2022) Ultimate Entity Relationship Diagram Tutorial (ER Diagrams) [Internet]. Available from: <https://creately.com/blog/diagrams/er-diagrams-tutorial/>.

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**Student Group Work Guidelines**

**Purpose:**

The following guideline is designed to help you organise and manage your group assessment task.

**Group work – Getting started:**

Once your group is formed, the group work guideline can be useful to set up effective group work.

1 **Introduction**:

Spend some time getting to know each other, exchange preferred contact details.

1. **Outcomes**:

Look at the assessment together and discuss:

* + What do we need to achieve / what is our outcome?
  + Break the assessment into individual tasks/steps from start to finish. For each task / step, discuss how long it would take.
  + Based on the tasks / steps and timing, create a timeline or diagram showing who will do what and when. You will need some mini-deadlines so tasks are completed on time and in sequence.

1. **Student Group Work Guidelines and Individual Contribution Statement**

Please remember that each group member receives a copy of the guideline and, once all responsibilities are assigned, each copy must be the same. This is important as it shows that all group members are aware of their responsibilities to the group. At the end of the completion of the Project Trimester a single hard-copy to be submitted to Lecturer and a soft copy to be uploaded to Moodle link.

1. **What’s next?** Set up a schedule to meet – when/where/how often/how long? Meeting frequently will allow you to keep on track and to resolve any issues you may face over the assignment.

**Tips for group work:**

1. Show respect to other members by
   * Communicating effectively – responding to messages, listening to others, allowing everyone the opportunity to speak and contribute.
   * Sticking to the schedule of meetings and tasks
2. If you have issues with group members not contributing, talk to your lecturer or ALS Coordinator.
3. If you would like assistance with getting started, your ALS Co-ordinator would be happy to help!

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# STUDENT GROUP WORK GUIDELINE

|  |  |
| --- | --- |
| **Unit Title:** | Capstone Project (CPRO306) |
| **Assessment Item Title** | Assessment 3 - Final SRS Report |
| **Assessment Due Date:** | 27 Apr 2022 |
| **Group Members** | **1.** Vedant Samirkumar Panchal (K190759) |
|  | **2.** Tharindu Lakmal Hewawasam (K190943) |
|  | **3.** Arastu Sindhu (K200274) |
|  | **4.** Rohit Patel (K200710) |
|  | **5.** Chameera Duleen Wickramasinghe (K191322) |
|  |  |

|  |  |
| --- | --- |
| **#1 Student Name:** | Vedant Samirkumar Panchal (K190759) |
| **Tasks Responsible for:** | **1.** Project Deliverables and Budget |
|  | **2.** Functional Requirements and non-functional requirements |
|  | **3.** |
|  | **4.** |
|  | **5.** |

|  |  |
| --- | --- |
| **#2 Student Name:** | Tharindu Lakmal Hewawasam (K190943) |
| **Tasks Responsible for:** | **1.** Project Introduction (purpose, objective and Scope, Assumption) |
|  | **2.** |
|  | **3.** |
|  | **4.** |
|  | **5.** |

|  |  |
| --- | --- |
| **#3 Student Name:** | Arastu Sindhu (K200274) |
| **Tasks Responsible for:** | **1.** ER diagram |
|  | **2.** Sequence diagram |
|  | **3.** conclusion |
|  | **4.** |
|  | **5.** |

|  |  |
| --- | --- |
| **#4 Student Name:** | Rohit Patel (K200710) |
| **Tasks Responsible for:** | **1.** Use case diagrams |
|  | **2.** context diagram |
|  | **3.** data flow diagram |
|  | **4.** User interface design |
|  | **5**. |

|  |  |
| --- | --- |
| **#4 Student Name:** | Chameera Duleen Wickramasinghe (K191322) |
| **Tasks Responsible for:** | **1.** User interface design |
|  | **2.** system architecture |
|  | **3.** |
|  | **4.** |
|  | **5**. |

**Individual Contribution Statement Form**

**CONFIDENTIAL**

**Note: To be completed individually on completion of the project. A signed hard-copy to be submitted to your Project Lecturer and a soft copy to be uploaded to the Moodle link.**

Team Name: Team A4

Lecturer Name: Mr. Syed Altaf

(Please respond to the relevant box below)

All work has been equally and fairly distributed and all team members have contributed more or less equally. I think it is fair that we all receive the same team mark for all tasks completed by the team. (Write brief notes in the box below)-



Work equally divided and everyone participated

Work has **NOT** been equally distributed. I would suggest that the individual contribution for each task as listed could be summarised as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Tasks** | **Team member Name** | **Individual**  **Contribution %**  **(Score out of 100 for each task)** | **Comments** |
|  | Member 1 |  | [Assuming 5 member team] |
| Member 2 |  |  |
| Member 3 |  |  |
| Member 4 |  |  |
| Member 5 |  |  |

**Note: Type in, then print and sign.**

**Additional comments/notes- Add here (use additional pages if required)**

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Signed: …………vs. panchal…………………………………………..

Date: 26/04/2022