BENGUET STATE UNIVERSITY (BSU) STUDENT HEALTH

CONSULTATION RECORD MANAGEMENT

SYSTEM (SHCRMS)

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SUBMITTED TO THE DEPARTMENT OF INFORMATION TECHNOLOGY

BENGUET STATE UNIVERSITY, LA TRINIDAD, BENGUET

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

2023

ABSTRACT

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Adviser: Maria Teresa T. Cachero,

Students of Benguet State University (BSU) are rapidly growing in numbers. Students, on the other hand, need to have a medical record for them to be fully admitted to the University. Technology these days is continuously developing which makes work easier. Previous researchers stated that hospital clinicians spent more time on documentation and clerical work, which reduces time with patient interaction and other important work. With the current manual process of the BSU medical clinic in adding student health consultation records, and the growing number of students, it would take up a lot of the staff's time with giving medical attention to students.

The Benguet State University - Student Health Consultation Record Management System (BSU - SHCRMS) was developed to improve the current system of the University Medical Clinic. Likewise, solve the problems they encountered in the consultation process, especially in locating the students' consultation records that have no backup. Six staff from the clinic were given questionnaires to determine the difficulties they encountered with the current system. Based on the results, the developed BSU-SHCRM addressed their difficulties. The questionnaires were also used to determine both functional and non-functional requirements for the system. As a limitation, the study only covered the medical records of the students and the university staff while community records, outside the university, were not included. The BSU-SHCRMS was developed and maintained using the Rapid Application Development (RAD) model which prioritizes rapid prototyping and feedback over lengthy development and testing cycles. The participation of the staff made iterations in the system possible during the demonstration which is a part of the prototype cycle of the said methodology. This strategy lets developers easily generate several software versions and update them without starting a new development cycle. The researchers also used test case which includes unit testing, integration testing, and user interface testing to determine the credibility of the system functions when it comes to different fields. Black-box testing was also used by the researchers to test the software functionalities to make BSU-SCHRMS better.

After months of developing the system and multiple iterations, the respondents conducted a usability analysis on the BSU-SHCRMS using Post-Study System Usability Questionnaire (PSSUQ). Results painted a complete picture of the system's usefulness and advantages. All of the results gathered were treated using mean and weighted mean. Overall, the results show that BSU-SHCRMS is a useful tool with an average mean of 2.45. In terms of usability, BSU-SHCRMS is straightforward and simple to use, making data entry, searching, and patient consultation less time-consuming and more efficient for users

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## INTRODUCTION

This chapter provides an overview of the study. It includes the background of the study, a review of related literature, objectives of the study, conceptual framework, and importance of the study.

Background of the study

Management information systems were among the most important tools for storing information. It has two types which include the manual way of filing papers through the use of pen and paper. However, it is not reliable as it might be destroyed by natural elements such as getting wet and torn. It also takes a significant amount of time for staff to search for information as they have to go through a large number of files. Over the last two decades, hospital clinicians have spent more time on documentation and clerical tasks, reducing the time available to them for direct patient care and communication with patients and relatives (Baumann, et al., 2018). Another type was a computer-generated management information system as people nowadays tend to rely more on technology. This type makes tasks and data management easier and more convenient (Maguire, 2019).

A study conducted by Zhang (2016) stated that the implementation of the Electronic Health Record (EHR) system has resulted not only in fundamental changes in the clinical workflow but also in a rapid proliferation of electronic clinical texts. Another function of the EHR system is to reduce the time spent on the process of documenting multiple encounters with the same patient. Implementing such a system would most probably improve patient care and provide better job satisfaction for all the relevant stakeholders involved, although paper-based systems still get the job done (Allen, 2009).

Meanwhile, many different kinds of management information systems have been used by different industries. One of these is a consultation record that is mostly used in the medical industry. The consultation records contain the history of the patient’s illness or disorder and examinations as the basis of the consultation. Thus, the consultation record is accurate, legible, and appropriate for every doctor-patient encounter.

According to Cayachen (2020), record-keeping was a systematic procedure by which the records of an organization are created, captured, maintained, and disposed of. In healthcare services, patient medical records had become large and the complexity to exchange patient records such as prescription details, referral data, diagnosis status, and appointment schedules between various clinic units had become a problem without a fully integrated system (Muhammad and Garba, 2019). Harman, et al. (2012), also stated that a limitation of the paper-based medical record is the lack of security. Access was controlled by doors, locks, identification cards, and tedious sign-out procedures for authorized users. Nevertheless, unauthorized access to patient information in a paper-based medical record no alerts, nor the information that had been viewed was difficult to determine.

Facing these problems, Public Health Record Management System (PHRMS) was created. It aims to elevate the current state of record management of the public health center by incorporating technology to further enhance productivity, security, and a faster way of data processing to save time and serve more patients (Batoon et. al., 2022). With the importance of proper record keeping, Reinhardt University used the Medicat, a college Electronic Health Record (EHR) system which aims to improve the quality and care of student success and allows effective collaboration between areas of care, enhanced productivity, maintains compliance surrounding all health records, and upholds the highest level of security and privacy (Reinhardt University, 2019).

Aside from the study conducted at Reinhardt University, St. Paul University also used a Health Information System which was intended for the clinic personnel to store the health information of their clients, particularly the students, faculty, staff, parents, and alumni. Through the system, all information needed in the clinic was easily stored, organized, and retrieved. Furthermore, the health record of every client is easily tracked (Maguire, 2019).

The presence of technology is very important in which according to Tabasa (2015), different Information Communication Technology (ICT) interventions were conducted in the Philippines to support and help the Department of Health (DOH). Electronic e-Field Health Service Information System (FHSIS) was an example to address the present demands for a health information system that produces an accurate, reliable, and timely reporting system, especially in setting health priorities during planning for health at different levels. This system was for the use of Regional and different Local Government Units (LGUs) in the Philippines. According to Codio et al., (2016), the Online Field Health Services Information System (e-FHSIS) of La Trinidad Municipal Health Services Office (MHSO) was a study that aimed to help the municipality with their FHSIS. In the study, rapid application development was used as its methodology. It is a software development methodology that focused on building applications in a very short amount of time- traditionally with compromises in usability, features, and/or execution speed. Another example is the i-ClinicSys of DOH-CHD Caraga which is a computer-based system that enables entry and management of the patient's medical history, diagnoses, treatments, and other test examinations and results.

Under the Philippines Department of Health, Unified Health Management Information System (UHMIS) was used as an online monitoring system. In improving health services efficiency and effectiveness, the system aimed to integrate data collection, processing, reporting, and use of information. In connection, the Philippine Department of Health developed and integrated the Unified Health Management Information System (UHMIS) which was a convergence of all DOH information systems and data to facilitate the execution of systems, processing of data, report generation, and presentation of reports and it provides a central venue to access all information systems and reports to facilitate access (DOH-IMS, 2011). With the help of monitoring and information systems, recording and updating patient information became easier, and professionals were able to give diagnoses or recommendations to the patients faster as the reports were generated or updated immediately (Codio et al., 2016). Aside from UHMIS, R4Health or Real-Time Regulator Routine Recording for Health was also developed. It is a variable tool for data capturing and reporting because it utilizes a familiar, widely, and commonly used ICT (Hamoy, et al. 2016). In addition, the users of R4Health perceived it to be useful, easy to use, compatible with work tasks and roles and provides a relative advantage over the current manual and paper-based health information management system.

Another study is the Computerized Medical Record and Monitoring System of Saint Michael College of Caraga, Philippines by Bergado et al. (2020) which was very beneficial for the school in terms of managing medical records. The files on the system were stored with security and added information to both students and personnel, including their consultation with the clinic. Moreover, the system was recommended to apply in the school clinic to boost the performance in managing the medical records and improve the security standards, and maintain the privacy and confidentiality of patient data (Bergado, et al. 2020).

Benguet State University has a high number of students and this is reflected in the number of students who visit the University medical clinic for services and consultations. As part of the school requirement, the students get their medical records at the University medical clinic during the enrollment period. The BSU medical clinic, however, still uses the manual way of processing the student medical records. The BSU Medical Clinic is having problems with record keeping and consultation process particularly when it comes to finding the student consultation records that have no backup in case of unforeseen events that can lead to record loss. To address this problem, the Benguet State University (BSU) Student Health Consultation Record Management System was developed.

Objectives of the Study

The main objective of the study is to develop and design a system that is capable of managing, monitoring, and retrieving student consultation records. The system is called Benguet State University Student Health Consultation Record Management System (BSU-SHCRMS).

Specifically, it aims to:

1. determine the existing student health consultation record system of Benguet State University as well as the problems they encountered.
2. determine the functional and non-functional information requirements and features needed for the proposed system.
3. identify the level of usability of the developed BSU-SHCRMS as perceived by the Medical Clinic Staff.

Conceptual Framework

The goal of this study is to automate BSU medical clinic student health records from a manual process. The study also aims to identify the level of usability of the BSU-SHCRMS as perceived by the medical clinic staff.

According to IReseachNet (2016), the input-process-output model has historically been the dominant approach to understanding and explaining team performance and continues to exert a strong influence on group research today. The framework outlines the elements of a systematic framework: Inputs, Process, Outputs, and Outcomes. In this study, the researchers defined Inputs as those elements and factors that are needed in BSU medical clinic student health records. The process is a continuum of logically interrelated transactions that transforms inputs into outputs of BSU medical clinic student health records. Outputs are the results of the transformation of inputs in the BSU medical clinic student health record process. Lastly, Outcomes are considered as the consequences of the Input-Process-Output Model where these factors are not the direct result of the processes, but they are the result of the whole IPO model.

The Input-Process-Output-Outcome (IPOO) model is depicted in Figure 1.0. Within the Input stage of this model, problem statements such as the BSU Medical Clinic's difficulty in locating the student consultation records and the absence of a backup system for these records are shown to be the most significant challenges. At this phase of the process, the system is designed, formulated, and developed. The results of the previous stages, input, and process, may be seen in the output stage which is the Benguet State University (BSU) Student Health Consultation Record Management System (SHCRMS). And last, the outcome stage considers the evaluations provided by the respondents, such as whether or not they are satisfied with the BSU SHCRMS through the use of the Post-Study System Usability Questionnaire (PSSUQ).

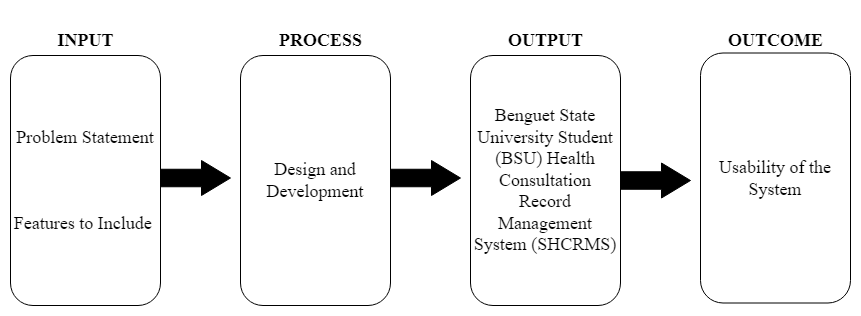


Figure 1.0 Paradigm of the Study

### Importance of the Study

The developed system will be beneficial to the following:

Medical Clinic Staff:The study is believed to be beneficial to medical clinic staff as it will reduce the time they may spend manually retrieving records. It will be easier for them to track and monitor the students' health consultation records. In addition, it will also be easier for them to organize the students' health consultation records.

Researchers:The study would improve the knowledge and skills of the researchers in developing BSU-SHCRMS.

Future Researchers: The study would guide them in their future study in improving or modifying this research and other in-line research.

METHODOLOGY

## 

## This chapter presents the methodology that was used in designing and developing the system. This chapter also includes the population and locale of the study, materials, methods, data-gathering techniques, and sources of data that the researchers used in conducting the study.

### Population and Locale of the Study

The study was conducted at Benguet State University, La Trinidad Campus from the Second Semester of S.Y. 2021-2022 to First Semester of S.Y. 2022-2023. The data was gathered from the six (6) Benguet State University Medical Clinic Staff. The scope of the study is to store, view, and update the information of the student record of the enrolled student from elementary to graduate students in La Trinidad Campus during a transaction of students where their information would be needed and be viewed by the person in charge. The final diagnosis and management of the given medicine to the patient are also included in the system. The users of the system are the staff of UHSI of BSU. The BSU-SHCRMS does not cover the inventory of medicines and supplies. In addition, it will not also cover the Dental Clinic Operations.

### Materials

Different open-source software tools, programming, and markup languages

were used in creating BSU-SHCRMS. This includes the use of Hypertext Mark-up Language (HTML), Cascading Style Sheet (CSS), Hypertext Processor (PHP), MySQL, JavaScript, XAMPP, Sublime Text, Visual Studio Code, FPDF, Ajax, jQuery, and Bootstrap.

HTML enables us to mark up the structure of the interface of this project, such as the login form and registration. CSS would help in the styling and presentation of the interface, such as the background, font style, and colors. JavaScript is used in programming the functionality of the project. According to Vodnik (2020), HTML, CSS, and JavaScript make up the essential building blocks of websites worldwide, with CSS controlling a page's appearance and JavaScript programming its functionality. The HTML document is the providing bones of a webpage, CSS provides the skin, and JavaScript provides the brains. With Ajax and jQuery, the display and behavior of the system with sending and receiving data from a server asynchronously did not encounter problems. jQuerry provides several methods for Ajax functionality in developing the system. Bootstrap helped in developing the design of the system as it is an open-source CSS framework that contains HTML, CSS, and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface opponents.

According to The PHP Group (2001-2023), PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is an HTML-embedded server-side scripting language that is used for developing web-based software applications. It was used to manage dynamic content, databases, session tracking, and even build entire e-commerce sites. It was also integrated with several popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

MySQL is an open-source database management system that will serve as the back-end storage of all the records. According to Pelandiana and Ado (2018), MySQL was the world's most popular open-source database. With its proven performance, reliability, and ease of use, MySQL has become the most popular database for web-based applications, with high-profile web properties such as Facebook, Twitter, YouTube, Yahoo, and many others using it.

The researchers used XAMPP to develop, test, and deploy the system on a local web server. According to Quadri (2021), XAMPP is an open-source tool for locally executing Web applications using a Web server. XAMPP is a popular and free solution for locally running applications on Windows. It is compatible with all major operating systems and is widely used by Windows users to locally develop and test Web applications.

Sublime Text and Visual Studio Code are the two source code editors that were used in developing the system. The researchers utilized two source code editors, as each researcher has distinct preferences. According to Heller (2019), Sublime Text and Visual Studio Code are two of the best multi-language, multi-operating system programming editors, Sublime Text for its speed as well as its convenient editing features, and Visual Studio Code for its superior features and nearly as good speed. Each tool is compatible with Windows, MacOS, and Linux.

In addition, any Operating System such as Windows 7 or newer, MAC OS X v10.7 or higher, or Linux Ubuntu is required for the system to work. A server is also required to connect the personal computers, and if possible, the server to be used will be supported by BSU’s server to better handle workloads and prevent hard drive failures. A server, as defined by Posey (2021), is a computer program or device that provides a service to another computer program and its user, also known as the client. In a data center, the physical computer that a server program runs on is also frequently referred to as a server. That machine might be a dedicated server or it might be used for other purposes. Wireless Wi-Fi adapters will also be used to connect the computers to a wireless Local Area Network (LAN). Furthermore, the date of the system should be updated always as the forms, specifically the archive functions, require an updated system date time.

The study covers minimum hardware requirements such as a Personal Computer or Laptop where the user accesses the system and it is strongly recommended to be fewer than 5 years old, with a 2GHz processor, a 64GB Hard Drive, and a minimum of 4GB RAM.

The researchers also used interviews and survey questionnaires. The questionnaires were divided into two parts, the first part contains possible problems that the researchers may address. The second part of the questionnaire contains suggested system features that the clients may want to see in the proposed system. The interview and survey results served as a guide for the researchers as they created and designed a system that will also address the problems that the medical clinic's current system is experiencing.

### Methods

The researchers used both descriptive research and mixed methods which employed both qualitative and quantitative research designs to be able to conduct this study on answering the given statement of the problem. Descriptive research, according to Johnson (2017), is a type of research design that seeks information to systematically describe a phenomenon, situation, or population. Descriptive research can be used to collect qualitative data through methods such as interviews, which can provide insights into the experiences, attitudes, and perceptions of individuals involved in the phenomenon being studied. Descriptive research can also collect quantitative data, such as survey responses, to provide numerical data that can be statistically analyzed. In the study, the researchers used qualitative methods to investigate end-user experiences and opinions because these are non-numerical data and qualitative methods seek to interpret meaning from them. Furthermore, qualitative methods are holistic approaches that involve discovery, which in this study is the discovery of the BSU Medical Clinic's current means of consultation and record keeping, as well as the challenges encountered and the functional or non-functional information requirements and features required for the proposed system. A semi-structured interview was used by the researchers to accomplish this. The researchers used quantitative methods such as surveys to determine the existing student health consultation record system of the BSU medical clinic, including the problems encountered, functional or non-functional information requirements and features needed for the proposed system, and the level of usability of the developed system. A mixed method is a research approach whereby researchers collect and analyze both quantitative and qualitative data within the same study (Shorten and Smith, n.d.). The mixed method analysis consisted of combining the data gathered from both qualitative and quantitative methods for an interpretation. Mixed methods studies that use quantitative and qualitative approaches in combination provide a better understanding of research problems and complex phenomena than either approach alone (Creswell and Plano Clark, 2007). A study was made by Mannino (2014) where the researcher employed a mixed method and it stated that, in this approach, quantitative instruments were used to measure the relationship between the independent variable of resilience and the dependent variables of physical health, mental health, satisfaction with life, and future orientation. At the same time, the central phenomenon of resilience was explored using qualitative methods of a focus group and interview with a subset of the participants. Overall, the combination of descriptive research and mixed methods can provide a detailed and nuanced understanding of a phenomenon, which can inform decision-making.

The researchers used purposive sampling in which the inclusion criteria for the qualified participants must meet the following: the respondent must be a medical clinic staff and willing to participate without the prospect of compensation. Participants will be excluded from the study if they are on a job order or contract of service. The study will utilize self-administered closed-ended survey questionnaires and a semi-structured interview to determine the existing student health consultation record system processes and problems encountered in the existing student health consultation record system processes of Benguet State University, and the information requirements and appropriate security and control measures needed for a network-based student health consultation record system. The researchers used the Post-Study System Usability Questionnaire (PSSUQ) to determine the usability of the proposed student health consultation record management system. The PSSUQ was used by the researchers because it is a standardized and reliable questionnaire that is widely used in research studies to assess system usability. Using a standardized questionnaire, such as the PSSUQ, the researchers can compare their findings to previous studies and draw accurate conclusions about the system's usability. PSSUQ's high levels of reliability and validity ensure that the questionnaire's results are consistent and accurate. PSSUQ is also a user-based questionnaire that measures user satisfaction with the system's usability, reliability, and interface. This user perspective provides valuable feedback that can assist the researchers in identifying areas for improvement and making changes to the system to better meet the needs of the users. Overall, using PSSUQ to evaluate system usability can provide a standardized, reliable, and valid approach to assessing user satisfaction, as well as assist the researchers in identifying areas for system improvement. The PSSUQ is a 16-item standardized questionnaire with seven response options for respondents; from Strongly agree to Strongly disagree and it is widely used to measure users' perceived satisfaction with a website, software, system, or product at the end of a study (Will, 2016). The questionnaires will be given to the medical clinic staff after the system is used by the users. The data gathered from this will be treated statistically and will be used to derive conclusions.

#### Software Development Methodology

Rapid Application Development (RAD) was chosen by the researchers over other software development methodologies because of its benefits such as rapid development, flexibility, collaboration, and testing. With the researchers' limited time to build the system, RAD is the most appropriate methodology because it allows for faster system development and prototyping. Changes and updates can be made quickly and easily with RAD, allowing researchers to adjust the system as needed. RAD also emphasizes close collaboration between developers and end users, which can aid in ensuring that the system meets the end user's needs and requirements. Lastly, the researchers selected RAD because it incorporates testing and feedback cycles throughout the development process, which can aid in identifying and addressing issues early on. This can assist in ensuring that the final system is of high quality and meets the needs of the end users.

RAD is a methodology that focuses on, as the name indicates, developing rapidly through frequent iterations and continuous feedback (Chien, 2020). According to Deshpande (n.d.), RAD helps to rapidly develop prototypes for testing functions and features without having to worry about any effects on the end product. RAD ensures the high quality of the product by regularly involving users in the whole lifecycle. Each prototype was reviewed by the user, which helped in identifying any major issues (Rana, 2021).

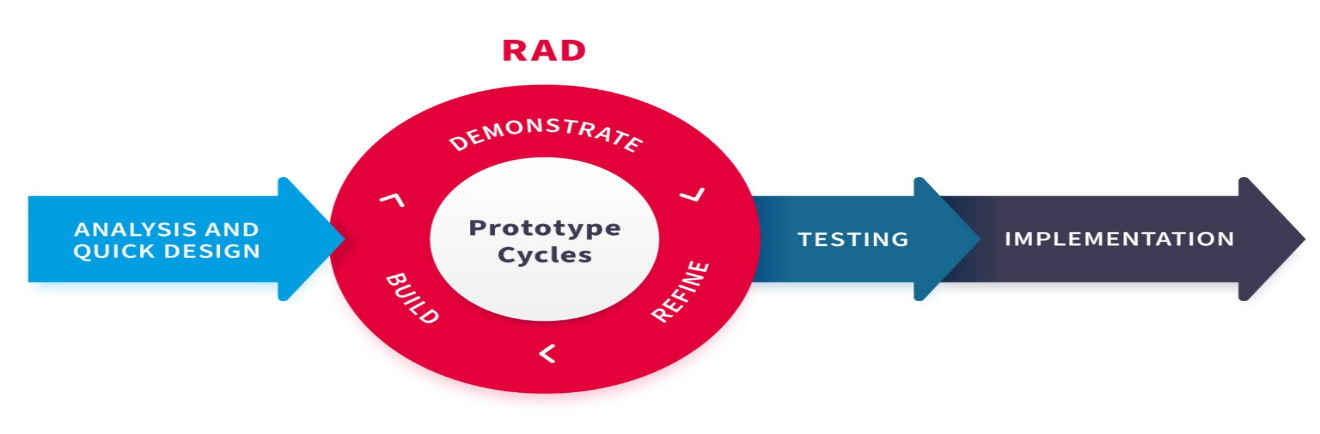


Figure 2.1: Phases of RAD Model

Adapted from Cox (2019), figure 2.1 is the RAD model that illustrates the phases involved in creating the BSU-SHCRMS. The following are the processes of how the researchers developed the Student Health Consultation Record Management System based on RAD methodology.

Analysis and Quick Design: System analysis and quick design involve analyzing the current system's performance and the quality of its output. It is a process that is used to evaluate particular problems and develop ways to improve them through more optimal methods. Moreover, it typically emphasizes how systems act, their relationship to other subsystems, and the ability of both to meet a specific goal (Indeed Editorial Team, 2022). According to Cox (2022), this is the phase in which project requirements such as project goals, expectations, timelines, scope, and budget are defined and finalized.

The researchers gathered information about the current problems of the existing system at Benguet State University La Trinidad Campus Medical Clinic only. With the information gathered, the researchers then defined the requirements for the proposed system.

Prototype Cycle: It is a repetition of the prototype development phase, namely build, demonstrate, and refine. Designers and developers will work closely with clients to create and improve upon working prototypes until the final product is ready. Following that, developers collect user feedback to tune and improve prototypes and create the best possible product (Cox, 2022). Each prototype develops into a part of the future system. Thus, more complete and useful information is transmitted to the next phase. This is the development stage for the prototype where the researchers can test each prototype at each stage to try and meet the expected output.

The researchers started the development of the prototype which allowed the clients to give comments, suggestions, and possible changes to the system. From the client's suggestion, the researchers were able to modify and refine the prototype. This phase allowed the iteration of the system to fulfill the client's expectations/suggestions.

Testing:The purpose of the testing phase is to put the system's functionalities to the test. The BSU-SHCRMS was subjected to three tests: unit testing, integration testing, and user interface (UI) testing. In general, the rapid application development testing phase includes unit testing, integration testing, and user interface testing (Shah, 2022).

Unit testing is a type of software testing in which individual software units or components are tested. The goal is to ensure that each component of the system works as intended (Software Testing Fundamentals, 2022). This testing technique was used by the researchers to ensure that each functional component of the system complied with the requirements specification.

The BSU-SHCRMS components were tested collectively using integration testing. Integration testing is a type of testing in which one or two unit-tested modules are combined and verified to see if the integrated modules work as expected (Software Testing Help, 2023). Integration testing is performed by researchers to identify defects in interactions between system components that may not have been detected during unit testing.

User Interface (UI) testing was also performed to ensure the functionality and usability of the system's graphical user interface. This type of testing is essentially a mechanism for testing the aspects of any system with which a user will come into contact. This usually entails testing the visual elements to ensure that they are functioning properly in terms of functionality and performance. UI testing ensures that UI functions are free of bugs (Bose, 2022). The researchers performed manual UI testing, in which they interacted with the system's user interface to ensure that it functioned as intended. This contributes to the system's user interface being intuitive and simple to use, which can improve the user experience and, as a result, lead to higher user satisfaction.

When performing the three types of testing on the BSU-SHCRMS, the researcher used black-box testing, which is one of the functional testing techniques. According to Hamilton (2023), black-box testing is a software testing method in which the functionalities of software applications are tested without knowing the internal code structure, implementation details, and internal paths. Black-box testing mainly focuses on the input and output of software applications and it is entirely based on software requirements and specifications. Also, the researchers used manual testing during each type of testing. According to Bartlett (2016), manual testing is the process of using an application's functions and features as an end user would verify the system's behavior. When testing software, the tester runs tests against predefined test cases and records the results. Manual testing, according to Adekanmi (2019), can be an effective test approach because it can be performed on every component of the software system and it is simple to document test results and provide feedback.

Implementation:The researchers in this phase implemented the system after all system functionalities have been validated.

In this phase, the researchers launched the proposed system and handed out a Post-Study System Usability Questionnaire (PSSUQ) to the client to gather data regarding the usability and benefits of the new system. The BSU-SHCRMS is deployed and implemented at the BSU Clinic. The researchers installed the system on the three PCs at the medical clinic including the server. The connection to the primary server was accomplished through the use of network-based applications. Only the BSU medical clinic staff were given demonstrations since they are the only ones that have access to the BSU-SHCRMS. Moreover, it is only accessible on the BSU clinic computers and BSU-SHCRMS is a project that is only accessible within the university’s communication network.

### Treatment of Data

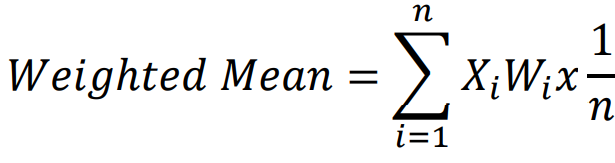
Descriptive statistical analysis is used in this study. The data will be summarized in tabular form of charts and graphs for summing up data, assuming it is for the whole population.

The data to be gathered in this study will be subjected to the following statistical treatment:

Mean **-** the researchers utilized this because it is one of the easiest and simplest ways of evaluating the proposed system where: x̄ = Average of the total respondents rating in each criterion; x = average of respondents’ responses and n = total number of respondents (Pelandiana & Ado, 2018). This would be represented by x̄ = x/n where x is the average of respondents' responses and n is the total number of respondents who attended the data-gathering procedure. The mean was applied to the data collected from the PSSUQ survey to assess the system's usability.

Weighted mean **-** The data collected from the survey were treated using weighted means to assess the level of problems encountered with Benguet State University Medical Clinic's present approach in a student health consultation. This was also utilized to determine the level of the required data and features for the proposed system, as well as the level of its usefulness and benefits.

Formula:



Xi  = Frequency of Answers in **n** respondents

Wi = Weight Factors

n = Total Respondents

For the interpretation of the computed weighted mean, the researchers used the following scales:

The table below shows the five-point Likert scale in which responders specify their level of agreement to a statement typically in five points: (1) No problem; (2) Minor Problem; (3) Moderate Problem; (4) Serious Problem; (5) Severe Problem. This will be the basis to determine the security and control measures needed in the student health consultation record management system with the level of problems encountered with the current system.

#### Table 2: Five-Point Likert Scale Range and their Descriptive Equivalence for Problems Encountered

|  |  |  |
| --- | --- | --- |
| SCALE | RANGE | VERBAL INTERPRETATION |
| 1 | 1.00 - 1.80 | Not a Problem |
| 2 | 1.81 - 2.60 | Minor Problem |
| 3 | 2.61 - 3.40 | Moderate Problem |
| 4 | 3.41 - 4.20 | Serious Problem |
| 5 | 4.21 - 5.00 | Severe Problem |

Table 2.1 also shows the five-point Likert scale in which responders specify their level of agreement to a statement typically in five points: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree (Manuel, n.d.). This will be the basis to determine the features to include in the student health consultation record management system.

Table 2.1: Five-Point Likert Scale Range and their Descriptive Equivalence for Features Needed

|  |  |  |
| --- | --- | --- |
| SCALE | RANGE | VERBAL INTERPRETATION |
| 1 | 1.00 - 1.80 | Strongly Disagree (SD) |
| 2 | 1.81 - 2.60 | Disagree(D) |
| 3 | 2.61 - 3.40 | Neutral / Uncertain (N/U) |
| 4 | 3.41 - 4.20 | Agree(A) |
| 5 | 4.21 - 5.00 | Strongly Agree (SA) |

#### 

PSSUQ - The PSSUQ survey was used to assess the usability and benefits of the BSU-SHCRMS. Lower PSSUQ scores for health technologies indicate higher/better usability. The PSSUQ is a questionnaire to assess the perceived usability and benefits of the technology, which has been demonstrated to be valid and reliable even for small sample sizes (Tahsin et al., 2021). This questionnaire includes 16 items on a 7-point Likert scale (+ NA option), yielding an overall score as well as three subscales: system usefulness (six items), information quality (six items), and interface quality (three items). The overall result is calculated by averaging the scores of questions 1 to 16. System Usefulness (SYSUSE) is calculated by getting the average scores of questions 1 to 6. Information Quality (INFOQUAL) is calculated by getting the average scores of questions 7 to 12. While Interface Quality (INTERQUAL) is calculated by getting the average scores of questions 13 to 15.

The table below shows the seven-point Likert scale in which the respondents specify their level of agreement to a statement typically in seven points: (1) Strongly agree; (2) Agree; (3) Somewhat agree; (4) Neutral; (5) Somewhat disagree; (6) Disagree; and (7) Strongly Disagree. It was utilized to treat the response scale on the PSSUQ.

Table 2.2: PSSUQ Seven- Point Likert Scale Range and their Descriptive Equivalence

|  |  |  |
| --- | --- | --- |
| SCALE | RANGE = 0.8571428571 | VERBAL INTERPRETATION |
| 1 | 1.00 - 1.85 | Strongly Agree |
| 2 | 1.86 - 2.71 | Agree |
| 3 | 2.72 - 3.57 | Somewhat Agree |
| 4 | 3.58 - 4.24 | Neutral |
| 5 | 4.25 - 5.28 | Somewhat Disagree |
| 6 | 5.29 - 6.14 | Disagree |
| 7 | 6.15 - 7.00 | Strongly Disagree |
| N/A |  |  |

## RESULTS AND DISCUSSION

This chapter discusses the current operations of the project and the results concerning the objectives of the study. It also includes the results gathered by the researchers in conducting the study.

RAD Prototype Cycle, Testing, and Implementation

Summary of Iterations for RAD Prototype Cycle Phase

During the prototype cycle, a series of iterations were made to satisfy the BSU medical clinic staff with BSU-SHCRMS. The table below shows the iterations, problems identified, and changes made to address the problems found in the creation of BSU-SHCRMS. All iterations involve the modification of the BSU-SHCRMS based on end-user feedback, wherein end-user involvement leads to a more effective, efficient, and can contribute to the system's success.

Table 3.0 shows the problems identified during each iteration and the solutions devised to address these problems. All iterations involve the modification of the BSU-SHCRMS based on end-user feedback, wherein end-user involvement leads to a more effective, efficient, and can contribute to the system's success.

Table 3.0 Identified Problems and Solutions Per Iteration

|  |  |  |
| --- | --- | --- |
| ITERATION | COMMENTS/SUGGESTIONS/PROBLEMS IDENTIFIED | CHANGES IMPLEMENTED |
| First | Label and Textbox alignment | Made all text boxes (Label and Textbox fall in 1 line) |
|  | List of Courses | Created a dropdown button for a list of all courses, the track offered, year, and grade level and allow to add a new course |
|  | Define Required fields | Included asterisk (\*) beside the label of all required fields |
|  | Birthdate and Age | Auto compute Age after birthday input |
|  | Login | When staff logs in, it will fetch the user account |
|  | Rank and Position Label | Interchanged the two labels |
|  | Access Level Label | Removed access level in add staff account form |
|  | Staff accounts summary | Added Staff accounts table |
|  | User Account | Set user account deactivated not blocked once 3 failed Login attempts were done. |
| Second | Background | Changed background design |
|  | Navigation Bar Message | Changed "Hello" message to logged-in medical staff name |
|  | University Logo and Clinic Logo | Interchanged the location of the two logos and make the University logo bigger |
|  | Input Names in user accounts and student record | Can accept dash (-) |
|  | All contact number input | Limit to 13 numbers and automatically start with +63 |
|  | Password | Confirm password input is included to see if passwords match and minimum requirements such as its length, upper and lower cases, and symbols |
|  | Input field background color | Input fields' background colors change when it is active for editing or disabled. |
|  | Age Validation | Accepted age, when computed, must be 5 years old and above and limited to 90 years old. |
|  | Contact Person | Added a new contact person button |
|  | Date and Time | Automatically fetch the date and time from the system |
|  | Height, Weight, BMI, Temperature | Included height, weight, and temperature units. Also, automatically compute student BMI |
|  | ID number and Name fields in Medical Information | Remove the Id number and name text inputs in medical information and change it into label form. |
|  | Consultation Page student name | Students' names can be fetched from the Record created once the ID number is entered. |
|  | Vaccination Brand | Included Vaccination brand given to a patient as a dropdown |
|  | Edit button | Created edit button, print and Export to PDF/Excel file button on the consultation page |
| Third | Not Required fields | Made Complaints, Diagnosis, Diagnostic Test Needed, and Medicine Given not required |
|  | Staff positions | Add other staff positions such as Medical Technologist and Triage officer |
|  | Individual Student Record Form Printing | Added print button to print individual student record form of students |
|  | Archive | The created page where archived records can be seen and viewed. Also, records are automatically archived after 7 years |
| Fourth | 2x2 ID picture | Included placeholder “Paste 2x2 Image here” inside the image box |
|  | Print Output | Minimized text field spaces when printing and limited output to 2 pages only |
|  | ISO in printed documents | Included ISO format at the top of the form and make the text fields editable |
|  | With Findings field in of medical information | Made the field editable when “with findings” is chosen |
|  | Required Fields | Removed required attribute in Recommendation and Remarks text boxes. |
| Fifth | Admin Level | Removed account level status in the form and made it static with the user account. |
|  | Staff Account Id number | Once the ID number is entered, the name of the staff is fetched, if it exists. |
|  | Student Record form printing error | Decreased the logo size so that it will not overlap with the ISO. |
|  | Medical Information and Consultation Dates | Restricted the form to accept future dates. |
|  | Help Manual | Created a help manual button to show specific user manuals in pdf form. |
|  | Incomplete Contact Number length | Created promptly when the contact number is incomplete. |
|  | Archive Button | Fixed the archived button in the LOGS navigation bar and remove the edit, print, and export buttons. |
| Sixth | Medical Information table | Removed excess table borders of the table. |
|  | ISO | Included ISO in consultation record form. |
|  | Super Admin Account | Created Super Admin account. |
| Seventh | Required button | Removed required attributed an asterisk (\*) for Guardian/Parent Information, School Year, Height, Weight, and BMI. |
|  | Pulse Rate and Temperature | Interchanged position of pulse rate and temperature. |
|  | Required fields | Removed all required fields in the medical information table. |
|  | Name of Physician | Added charted by and examined below the table and the name of the logged-in user account will be fetched. |
|  | ISO in form | Removed ISO in a consultation form. |
|  | Age, sex, course, and year of the student are always entered | Age, sex, year, and course are fetched from the student record once the ID number is entered. |
|  | Physical Findings and Remarks text field | Inserted new text field for Physical Findings below complaints and also with Remarks field label and removed treatment label. |
|  | Medicine Given text field | Decreases text field size and makes it into 1 line. |
|  | Examined by label | Created a label below for “charted by” and “examined by” |
|  | Update User manual | Inserted updated user manual |
| Eighth | Text fields for name | Last name, first name, and middle name should not accept the same records such as John J. John and should also accept ñ, -, number |
|  | All user actions | Made System Logs record all user actions not just adding, login, editing, and many more. |
|  | Student signature and physician signature | Added label for student signature and physician signature to be signed when the document will be printed. |
|  | Limited Age | Changed the maximum age limit to 90 years old. |
| Ninth | Id Picture Size | Decreased Id picture size |
|  | Physical Examination Format | Updated the Physical Examination printing format because of the new form |
|  | Required fields | Removed required attribute for some questions in consultation record such as a) Are you a smoker; b) Are you an alcohol drinker; and c) Vaccine Status as required fields |
|  | “Edited by” order | Reverse order of the edited by: drop-down function |
|  | Date and time | The consultation date will fetch the connected time in the follow-up form |

First Iteration

The following problems were discovered during the first iteration: the alignment of labels and textboxes is disorganized, users cannot add new courses, there is no symbol to determine whether a field is required or not, age is not auto-computed, the position and name of the user are not displayed when the user logins, rank and position is incorrectly placed, the user can change their access level, there is no table to summarize all the user accounts, and there is a wrong label when three failed login attempts are made. To address these problems, specific changes were implemented, such as making all input fields fall in one line, creating a dropdown button for a list of all courses, the track offered, year, and grade level, and allowing to add of a new course, included an asterisk (\*) beside label of all required fields, auto compute age after birthday input, when staff logs on, it will fetch the user account information, interchanged the two labels, removed access level in add staff account form, added staff accounts table, and set user account deactivated not blocked once 3 failed login attempts were done.

Second Iteration

During the second iteration, problems were discovered with the background design, navigation bar message, university and clinic logo, input names in user accounts and student records, all contact number input, password, input field background color, age validation, contact person, date and time, height, weight, temperature, and BMI, ID number and name fields in medical information, consultation page student name, vaccination brand, and edit button. As a result, more changes were made to address these problems, such as changing the background design, changing the "Hello" message into the name of the logged in medical staff, swapping the location of the two logos and making the University logo bigger, Contact number can accept dash (-), limit to 13 numbers(including +63) and automatically start with +63, confirm password input is included to see if passwords match and minimum requirements such as its minimum of eight (8) characters length, minimum of one (1) upper, one (1) lower cases, and one (1) symbol, input fields background colors change when it is active for editing or disabled, accepted age when computed must be five (5) years old and above and limited to 99 years old, added new contact person button, automatically fetch date and time from the system, included height, weight and temperature units and also automatically compute for student BMI, remove the ID number and name text inputs in medical information and change it into label form, students name can be fetched from the Record created once Id number is entered, included Vaccination brand given to a patient as a dropdown, and created edit button, print and Export to PDF or Excel file button in the consultation page.

Third Iteration

The problems identified for the third iteration are that not all fields must be required, there are only a few staff positions to choose from, no individual student record form printing, and no page to view archive records. To address these problems, specific changes were implemented, such as making complaints, diagnosis, the diagnostic test needed, and medicine given not required, adding other staff positions such as Medical Technologist and Triage officer, adding a print button to print individual student record form of students, and creating a page where all archive records can be seen and viewed, with records automatically archived after seven (7) years.

Fourth Iteration

The following problems were discovered during the fourth iteration: the box where a 2x2 image picture can be placed is completely blank when a record does not have an image associated with it, text fields are too large when printing a record, no ISO format at the top in printed documents, no option to choose from when a patient has a finding or none, and some fields are required. To address these problems, specific changes were made, such as including a placeholder "Paste 2x2 Image here" inside the image box, minimizing text field spaces when printing and limiting output to two pages only, including ISO format at the top of the form and making the text fields editable, giving users the option of Unremarkable or With Findings and making a field editable when "With Findings" is selected, and removing the required attribute in Recommendation and Remarks.

Fifth Iteration

During the fifth iteration, there were problems with the admin level, staff account id number, student record form printing, medical information and consultation dates, help manual, contact number length, and archive buttons were discovered. As a result, additional changes were made to address these problems, such as removing account level status in the form and making it fixed with the user account; once the Id number is entered, the name of the staff is fetched if it exists; decreasing the logo size so that it does not overlap with the ISO; restricting the form to not accept future dates; creating a help manual button to show specific user manuals in pdf form; created a prompt when contact number is incomplete; and fixed archived button in System Logs Page navigation bar and remove edit, print, and export buttons.

Sixth Iteration

During this iteration, suggestions were made to include an ISO standard and a new user role of "Super Admin," as well as fixing medical information tables. The extra borders around the Medical Data table need to be removed. Users proposed adding ISO to the form as it is a crucial piece of information that should be included with the documents. Furthermore, the addition of a super admin is the answer to the problem of user access conflicts.

Seventh Iteration

This is the iteration in which it focuses on the required inputs and buttons, text fields, fetched data, labels, and removal of ISO in the consultation form. The Changes were to remove the required-on inputs and buttons, adjust text fields, interchange and adding of labels, and data fetched when entering the ID number of students so that users don't have to enter the data many times.

Eighth Iteration

The system does not permit users to have the same last name, first name, and middle name all at the same time. This is one of the suggestions that have been made in this iteration, along with accepting symbols such as "ñ" and "-". It is also suggested that the super admin page and the admin page include system logs so that the actions of the user can be monitored while they are using the system. Age restrictions were also proposed. If the user's age is greater than 90, an error will be shown.

Ninth Iteration

During this iteration, the comments and difficulties that were discovered related to the following topics: the size of the ID picture, the format of the physical examination, required fields, order of "Edited by," date, and four (4) time because it overlaps some of the other information on the form, the size of the ID image will need to be adjusted. As there is a new format for the form, the Physical Examination Print Format will be changed to reflect the change. Some required fields on the consultation will no longer be required to fill out. The current time and date will be used to determine what time and date to fetch.

In every iteration, the researchers consulted with their clients and advisers or advisors for corrections. The researchers have polished the system's adjustments and made some modifications.

Test Case Results for RAD Testing Phase

To identify the effectiveness of the system, a series of Test Case testing were done such as Unit Testing, Integration Testing, and User Interface Testing. The below table shows the result of the test cases that the researchers performed on each type of testing. The design of the test case was based on the specific needs of each type of testing. It is important to tailor the design to the specific requirements of each testing type to ensure that the test cases effectively address the testing objectives and requirements.

Table 3.1: Test Case Results for Unit Testing, Integration Testing, and User Interface Testing

|  |  |  |  |
| --- | --- | --- | --- |
| TEST CASE ID | TEST CASE DESCRIPTION | TEST PRIORITY | TEST RESULTS |
| UT1.1 | Verify view data privacy policy/notice | Medium | Pass |
| UT2.1 | Verify login functionality with valid credentials | High | Pass |
| UT2.2 | Verify login functionality with invalid credentials | High | Pass |
| UT3.1 | Verify view user account functionality | High | Pass |
| UT4.1 | Verify add user account functionality with valid inputs | High | Pass |
| UT4.2 | Verify add user account functionality with invalid inputs | High | Pass |
| UT5.1 | Verify edit user account functionality with valid inputs | High | Pass |
| UT5.2 | Verify edit user account functionality with invalid inputs | High | Pass |
| UT6.1 | Verify search user account functionality with valid criteria | High | Pass |
| UT6.2 | Verify search user account functionality with invalid criteria | High | Pass |
| UT7.1 | Verify archive user account functionality | High | Pass |
| UT8.1 | Verify restore user account functionality | High | Pass |
| UT9.1 | Verify print of user account functionality | High | Pass |
| UT10.1 | Verify print report functionality of user list table | High | Pass |
| UT11.1 | Verify export to pdf functionality of user list table | High | Pass |
| UT12.1 | Verify export to Excel functionality of user list table | High | Pass |
| UT13.1 | Verify view student physical examination functionality | High | Pass |
| UT14.1 | Verify add student physical examination functionality with valid inputs | High | Pass |
| UT14.2 | Verify add student physical examination functionality with invalid inputs | High | Pass |
| UT15.1 | Verify edit student physical examination functionality with valid inputs | High | Pass |
| UT15.2 | Verify edit student physical examination functionality with invalid inputs | High | Pass |
| UT16.1 | Verify search physical examination functionality with valid criteria | High | Pass |
| UT16.2 | Verify search physical examination functionality with invalid criteria | High | Pass |
| UT17.1 | Verify archive physical examination functionality | High | Pass |
| UT18.1 | Verify restore physical examination functionality | High | Pass |
| UT19.1 | Verify print of physical examination functionality | High | Pass |
| UT20.1 | Verify print report functionality of the physical examination table | High | Pass |
| UT21.1 | Verify export to pdf functionality of physical examination table | High | Pass |
| UT22.1 | Verify export to Excel functionality of physical examination table | High | Pass |
| UT23.1 | Verify view student consultation functionality | High | Pass |
| UT24.1 | Verify add student consultation functionality with valid inputs | High | Pass |
| UT24.2 | Verify add student consultation functionality with invalid inputs | High | Pass |
| UT25.1 | Verify edit student consultation functionality with valid inputs | High | Pass |
| UT25.2 | Verify edit student consultation functionality with invalid inputs | High | Pass |
| UT26.1 | Verify search student consultation functionality with valid criteria | High | Pass |
| UT26.2 | Verify search student consultation functionality with invalid criteria | High | Pass |
| UT27.1 | Verify archive student consultation record functionality | High | Pass |
| UT28.1 | Verify restore student consultation functionality | High | Pass |
| UT29.1 | Verify print of student consultation functionality | High | Pass |
| UT30.1 | Verify print report functionality of student consultation table | High | Pass |
| UT31.1 | Verify export to pdf functionality of student consultation table | High | Pass |
| UT32.1 | Verify export to Excel functionality of student consultation table | High | Pass |
| UT33.1 | Verify view student follow-up consultation functionality | High | Pass |
| UT34.1 | Verify add student follow-up consultation functionality with valid inputs | High | Pass |
| UT34.2 | Verify add student follow-up consultation functionality with invalid inputs | High | Pass |
| UT35.1 | Verify edit student follow-up consultation functionality with valid inputs | High | Pass |
| UT35.2 | Verify edit student follow-up consultation functionality with invalid inputs | High | Pass |
| UT36.1 | Verify search student follow-up consultation functionality with valid criteria | High | Pass |
| UT36.2 | Verify search student follow-up consultation functionality with invalid criteria | High | Pass |
| UT37.1 | Verify archive student follow-up consultation record functionality | High | Pass |
| UT38.1 | Verify restore student follow-up consultation functionality | High | Pass |
| UT39.1 | Verify print of student follow-up consultation functionality | High | Pass |
| UT40.1 | Verify print report functionality of student follow-up consultation table | High | Pass |
| UT41.1 | Verify export to pdf functionality of student follow-up consultation table | High | Pass |
| UT42.1 | Verify export to Excel functionality of student follow-up consultation table | High | Pass |
| UT43.1 | Verify view student medical certificate functionality | High | Pass |
| UT44.1 | Verify add student medical certificate functionality with valid inputs | High | Pass |
| UT44.2 | Verify add student medical certificate functionality with invalid inputs | High | Pass |
| UT45.1 | Verify edit student medical certificate functionality with valid inputs | High | Pass |
| UT45.2 | Verify edit student medical certificate functionality with invalid inputs | High | Pass |
| UT46.1 | Verify search student medical certificate functionality with valid criteria | High | Pass |
| UT46.2 | Verify search student medical certificate functionality with invalid criteria | High | Pass |
| UT47.1 | Verify archive student medical certificate functionality | High | Pass |
| UT48.1 | Verify restore student medical certificate functionality | High | Pass |
| UT49.1 | Verify print of student medical certificate functionality | High | Pass |
| UT50.1 | Verify print report functionality of student medical certificate table | High | Pass |
| UT51.1 | Verify export to pdf functionality of student medical certificate table | High | Pass |
| UT52.1 | Verify export to Excel functionality of student medical certificate table | High | Pass |
| UT53.1 | Verify view homepage functionality | Medium | Pass |
| UT54.1 | Verify view dashboard functionality | High | Pass |
| UT55.1 | Verify the "Generate My Report" functionality in the dashboard | High | Pass |
| UT56.1 | Verify the "Generate All Reports" functionality in the dashboard | High | Pass |
| UT57.1 | Verify view student summary functionality | High | Pass |
| UT58.1 | Verify search student summary functionality with valid criteria | High | Pass |
| UT58.2 | Verify search student summary functionality with invalid criteria | High | Pass |
| UT59.1 | Verify view user logs functionality | Medium | Pass |
| UT60.1 | Verify backup functionality | High | Pass |
| UT61.1 | Verify restore functionality | High | Pass |
| UT62.1 | Verify access manual functionality | Medium | Pass |
| UT63.1 | Verify logout functionality by clicking logout | Medium | Pass |
| UT63.2 | Verify logout functionality by closing the system tab | Medium | Pass |
| IT1.1 | Verify student's physical examination record is properly linked to the student consultation record | High | Pass |
| IT2.1 | Verify student consultation and follow-up consultation records are properly linked | High | Pass |
| IT3.1 | Verify student consultation and medical certificate records are properly linked | High | Pass |
| IT4.1 | Verify record history functionality | High | Pass |
| IT5.1 | Verify system archive and restore functionality in the physical examination and archived student records table | High | Pass |
| IT6.1 | Verify system archive and restore functionality in the student consultation and archived consultation records table | High | Pass |
| IT7.1 | Verify system archive and restore functionality in the student follow-up consultation and archived follow-up records table | High | Pass |
| IT8.1 | Verify system archive and restore functionality in the student medical certificate and archived medical certificates table | High | Pass |
| IT9.1 | Verify system archive and restore functionality in the system logs and archived system logs table | High | Pass |
| IT10.1 | Verify user logs are generated when records are created, modified, archived, back uped, and restored. | High | Pass |
| IT11.1 | Verify user logs are generated when staff successfully change his/her password using the forgot password functionality | High | Pass |
| IT12.1 | Verify user logs are generated when admin/super admin successfully changes his/her password using the forgot password functionality | High | Pass |
| IT13.1 | Verify staff forgot password functionality and that user account records are properly linked | High | Pass |
| IT14.1 | Verify admin/super admin forgot password functionality and user account records are properly linked | High | Pass |
| IT15.1 | Verify system backup and restore functionality | High | Pass |
| UIT1.1 | User Interface Consistency | Medium | Pass |
| UIT2.1 | Page Layout | High | Pass |
| UIT3.1 | Responsive Design | High | Pass |
| UIT4.1 | Navigation Menu | Medium | Pass |
| UIT5.1 | Font and Text Size | Medium | Pass |
| UIT6.1 | Button Visibility | Medium | Pass |

BSU-SHCRMS Flowchart for RAD Implementation Phase

The implementation phase is where the system was used by the BSU medical clinic staff. Below is the flow of the system whenever a specific button is clicked.

In the system, users could log into their accounts as a super admin, admin, or standard account, as seen in Figure 3.0 below. If a super admin, admin, or standard account user forgets their password, they can click the Forgot Password button. The user would see a prompt asking for the legitimate email address used to create their account, which is where the code would be sent. The user must input the code in the corresponding prompt before being prompted to create a new password and log in once more using the newly created password. Users would be redirected to the Admin Homepage after logging in. As for the standard account, in case the user tries to enter three incorrect passwords, their account will be blocked, and has to request a code provided by the admin. Once they succeed in entering the code, they can change their password. Once they log in, they would be immediately redirected to Standard Users' Homepage. On the other hand, all users can access the Help button where the Help Manual in PDF format is shown. After all the transactions such as adding a user account, adding a student record, adding a consultation record, and many more, the user has to log out of their account using the Logout button.

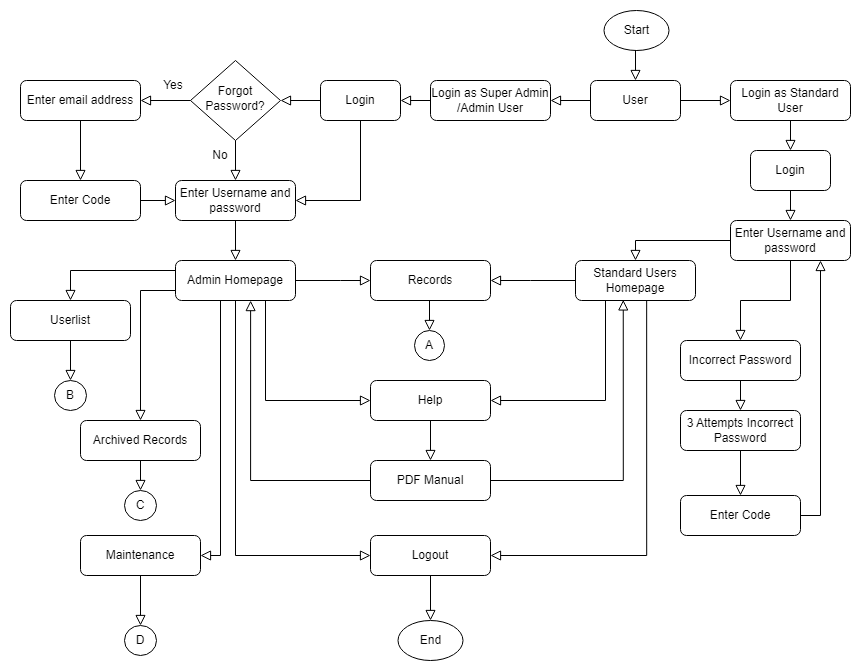


Figure 3.1: BSU-SHCRMS Flowchart

In the Student Records shown in Figure 3.1.1, users can add a new student record by clicking first the New Record button. The student's personal information and medical information would then be entered. If all the required fields are filled out and the values are valid, the record will be added to the list and the user will be redirected to the student page; otherwise, the page will revert to the medical record page, where the user should verify that all the information, they have entered is accurate. Also, a PDF or Excel file containing a list of every student's records can be downloaded and exported. The list can also be filtered so that just particular files are downloaded and exported. Moreover, a search option is accessible to help users quickly find a certain file and filter the list which the user only needs. By selecting the View button next to the selected student record, the user can view a specific record. After clicking, Personal and Medical Information is displayed, allowing the user to make edits, save their changes, export a file to PDF format, download it, and print it. The Archive button is also available for the user to manually archive a record, and if the Archived button is clicked, a confirmation prompt for the record to be archived is displayed. If Ok is selected, the record would be transferred to Archived student records, else it stays on the same page.

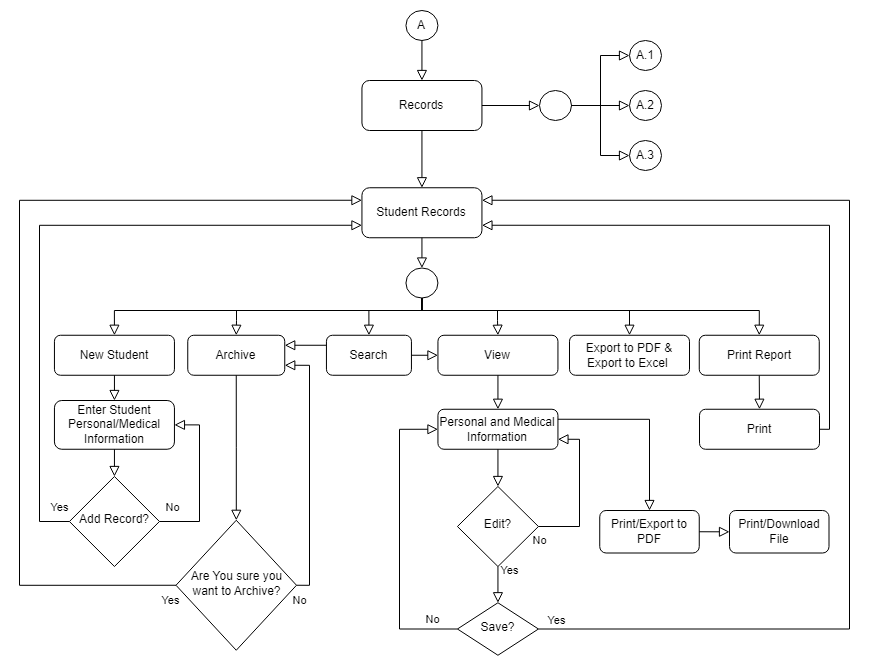


Figure 3.1.1: BSU-SHCRMS Flowchart Student Page

There is another directory of Records, the Consultation Record. It has the following features. This includes Adding new Consultations, Exporting the Consultation list to PDF or Excel format, Print Consultation List and Specific consultation records, Search records, View and Archiving specific consultation records as shown in Figure 3.1.2.

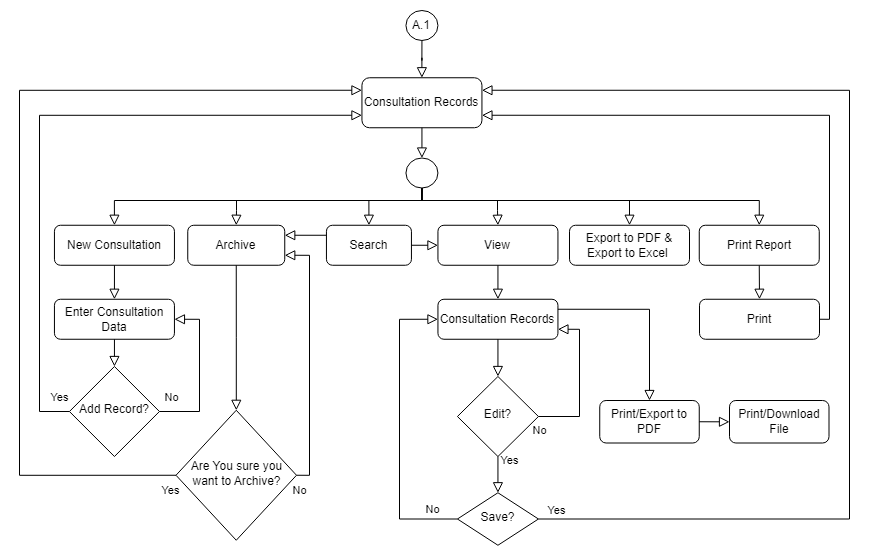


Figure 3.1.2: Continuation of BSU-SHCRMS Flowchart Medical New Consultation Record Page

Figure 3.1.3 shows the Follow-up Consultation process if the user has to add a follow-up consultation record of a student. To add a record, the user has to click first the Record button in the navigation bar and then select the Follow-up Consultation button in the dropdown list. Then click on the New follow-up button and enter the needed information in the form such as Id Number. Having a consultation record is required to access the follow-up consultation. If a consultation record is found, the user has to select which consultation dates and times the student has been consulted. From then the user can continue to add a follow-up record. It is very similar to the Consultation; however, some of the fields in this one such as vices and vaccine status have been removed. Moreover, the print form has been incorporated into the consultation form.

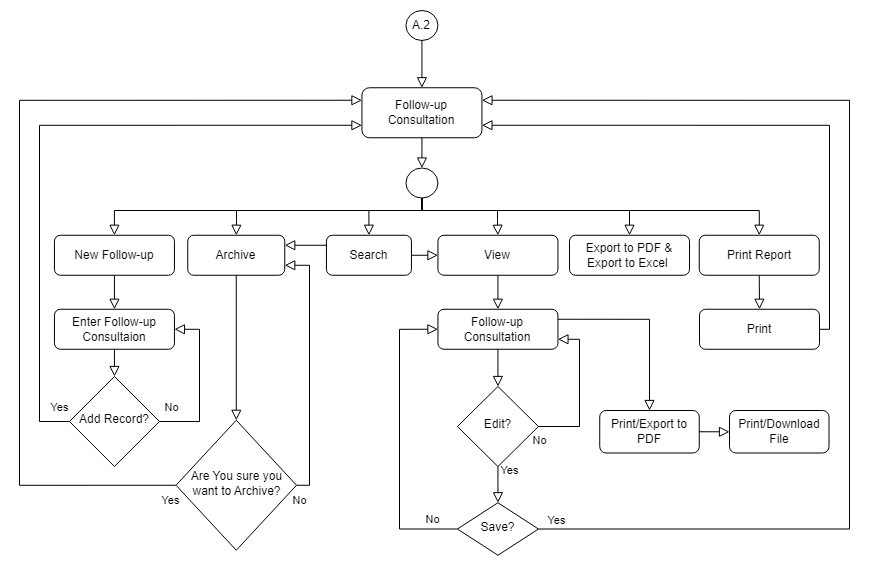


Figure 3.1.3: Continuation of BSU-SHCRMS Flowchart Follow-up Consultation Record Page

To add a new consultation record of a student, the user needs to click first the New Consultation button and then enter all needed information properly. The same is when adding a New Medical Certificate which was depicted in Figure 3.1.4, the user needs to click first the New Certificate button and then enter all needed information properly. If all information is entered and the required fields have values, the record would be saved and the user would be directed to the list of all students who requested a Medical Certificate, else it would go back to the consultation form. However, the consultation record and medical certificate can only be created if a student record is created first. To View a specific consultation record and medical certificate, the user has to click the View button beside the selected record. Once the View button is clicked, users can create changes in the consultation record and then save and print the record. The archive button is also available below the view button. Once the Archive button is clicked, a prompt would show to confirm if the user manually wants to archive the consultation record and medical certificate, if Ok is clicked, the consultation record would be transferred to the archived consultation record and the medical certificate would be transferred to the archived medical certificate else, the record would stay on the list of consultation records and medical certificate.

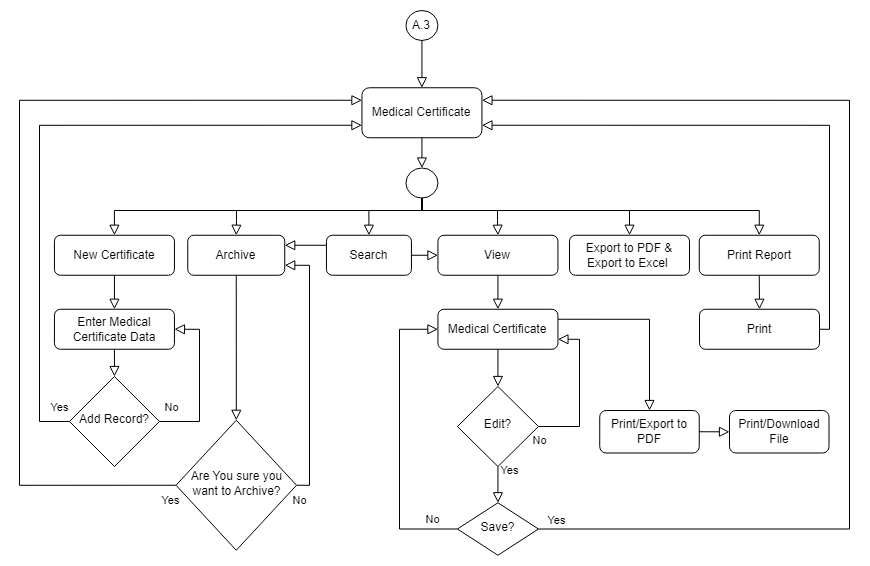


Figure 3.1.4: Continuation of BSU-SHCRMS Flowchart Medical Certificate

In the Userlist Table page, as shown in Figure 3.1.5, Super Admin and Admin accounts can add a New user account however, the standard account does not have access to Userlist Table. To add a user account, they have to click on the New User button and then Enter User Information. If all the information is accurate and the required fields have values, the user account would be saved and the user is redirected to the User list page; else, it would go back to the user information page. A PDF and Excel version of the user list table can be downloaded and exported. Users can print the table and a particular user account as well. In order to limit the information presented in the table to what is necessary, the Search button is also accessible for the selected list to be shown.By selecting the View button next to the desired user account, you can view a specific user account. Information about the user account will be shown if the view button is pressed along with editing, saving, and exporting to PDF format the selected user account. Aside from the view button, the selected user account also has an archive button. If the archive button is clicked, a prompt confirming for the account is to be manually archived will be displayed. If Ok is selected, the user account will go to the list of archived staff accounts and will be redirected to the same page.

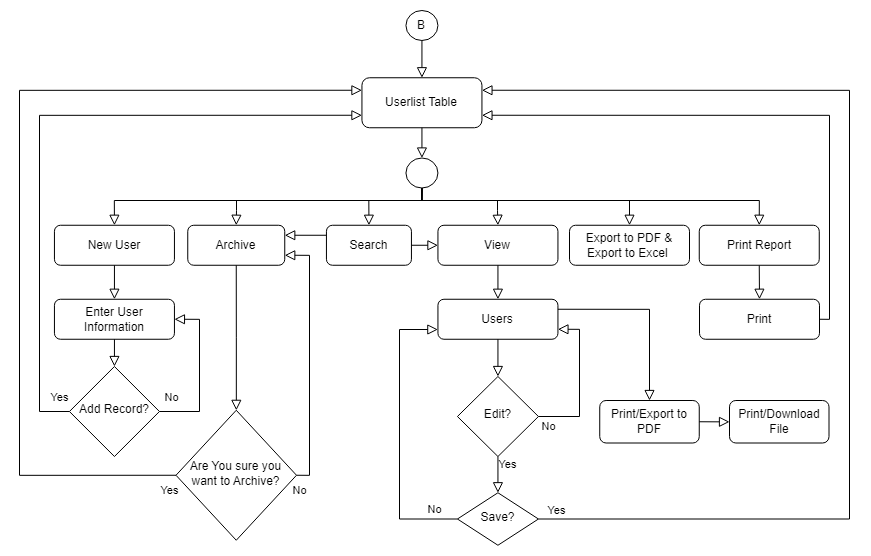


Figure 3.1.5: Continuation of BSU-SHCRMS Flowchart Userlist Page

Figure 3.1.6 shows the different Archived Records which were only accessible with Super Admin and Admin accounts. To access the list of all archived Records, users need to click the Archived Record in the navigation bar then click the Archived Students Records for all student records that were archived, Archived Medical Certificates for the requested certificates that were archived, Archived Consultation Records to show the list of archived consultation records, Archived Staff Accounts to display the list of all user list accounts that were archived and Archived System Logs for the user actions that were archived. All archived records and accounts can be viewed and restored by clicking the view and restore buttons respectively, besides the specific staff account or student record, the user wishes to view or restore. A search button is also available to display chosen records based on the keyword entered.

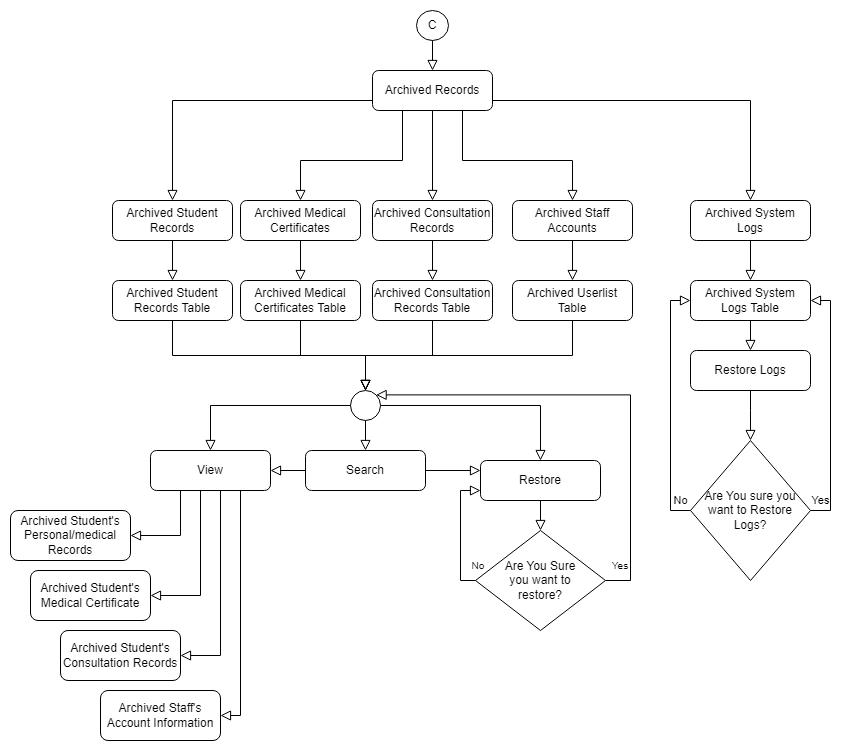


Figure 3.1.6: Continuation of BSU-SHCRMS Flowchart Archived Page

As depicted in Figure 3.1.7 which is only available in the Super admin and Admin accounts the Maintenance page is where the user would be able to see the system logs, backup, and restore features. Once the Logs button is clicked, all user actions will be displayed and to archive all actions made, the user has to click on the Archive Logs and a prompt will show if it is clicked. If Ok is clicked on the prompt, Logs will be transferred to Archived System Logs else, logs would stay. A Search function is also available to filter only the information a user need. Meanwhile, to back up a record, the user has to click the backup button on Maintenance and download the file. To restore a record, the user has to upload the file downloaded during the backup.

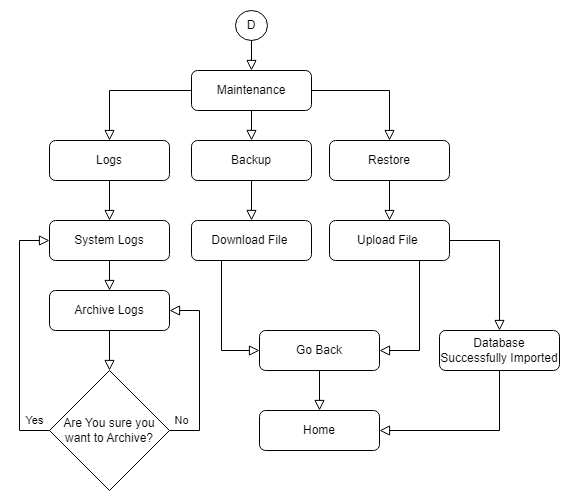


Figure 3.1.7: Continuation of BSU-SHCRMS Flowchart Maintenance Page

Survey Results on Determining the Existing Student Health Consultation Record System of Benguet State University which also includes the Problems Encountered

Table 3.2 displays the results of the survey responses used to determine the current student health consultation record management system. When it comes to difficulty locating or accessing the student's health consultation record, four respondents rate it as a Severe Problem, while the remaining two rate it as a Serious Problem. In terms of the difficulty in manually adding the student's health consultation record (using a pen and paper), the survey results show that two respondents rated it as a Severe Problem, three as a Serious Problem, and one as a Moderate Problem. When it comes to the privacy of the student's personal and health information, which can be easily viewed and accessed, the survey results show that two respondents rate this as a Severe Problem, two as a Serious Problem, and the remaining two as a Moderate Problem. In terms of the amount of time spent processing a student's health record, three respondents rated it as a Severe Problem, two as a Serious Problem, and one as a Moderate Problem. Misplacing student health consultation records is rated as a Severe Problem by three respondents and a Serious Problem by three others. In terms of the amount of room or space required for the current process, five respondents rated it as a Severe Problem, while one rated it as a Serious Problem. In terms of the current student health consultation record process's data security, the survey results show that five respondents rated it as a Severe Problem and one as a Serious Problem. When it comes to record duplication, two respondents rate it as a Severe Problem, while the remaining four rate it as a Serious Problem. In terms of report delays, the survey finds that three respondents rate this as a Severe Problem, while the remaining three rate it as a Serious Problem. When it comes to backing up files in case they are lost, damaged, or gone, the six respondents rated this as a Severe Problem. One respondent rated the lack of consultation forms as a Severe Problem, three as a Serious Problem, and two as a Moderate Problem. In terms of the readability of student records and consultations, one respondent rated it as a Severe Problem, while five others rated it as a Serious Problem. Finally, keeping track and disposing of previous (graduated/dropped) students' health records was rated as a Severe Problem by four respondents and a Serious Problem by two.

Table 3.2: Problems Encountered with the Existing Student Health Consultation Record Management System

|  |  |  |
| --- | --- | --- |
| Problems Encountered | Weighted Mean | Interpretation |
| 1. Difficulty in locating or accessing the student’s health consultation record | 4.67 | Severe Problem |
| 2. Difficulty in manually adding the student's health consultation record (by using a pen and paper). | 4.17 | Serious Problem |
| 3. Privacy of the student's personal and health information which can be viewed and accessed easily. | 4 | Serious Problem |
| 4. Processing a student's health record is time-consuming. | 4.33 | Severe Problem |
| 5. Misplacing of student health consultation records. | 4.5 | Severe Problem |
| 6. The amount of room or space needed for the current process. | 4.83 | Severe Problem |
| 7. Data security of the current student health consultation record process. | 4.83 | Severe Problem |
| 8. Duplication of records. | 4.33 | Severe Problem |
| 9. Delays in receiving and sending reports. | 4.5 | Severe Problem |
| 10. Backup of files in case it is lost, damaged, or gone. | 5 | Severe Problem |
| 11. Lack of Consultation Forms | 3.83 | Serious Problem |
| 12. Readability of student records and consultations | 4.17 | Serious Problem |
| 13. Keeping track and disposing of previous (graduated/dropped) students' health records. | 4.67 | Severe Problem |

Survey Results on Determining the Functional and Non-Functional Information Requirements and Features Needed for the Proposed System

Table 3.3 displays the result of the survey for the functional requirements needed for the proposed system. The result shows that three respondents strongly agreed that there should be a database to store users' information and students' personal information and health consultation records while three others agreed. Three respondents strongly agreed to a feature that allows the user to print records like prescriptions, and health records of students with their consultation history, etc., and three others agreed. Three respondents strongly agreed to have a feature that displays a student's personal/medical information recorded in a database and three others agreed. Four respondents strongly agreed to have a password encryption security feature on the login page so that only authorized users can access the files and the other two agreed. Four respondents strongly agreed to have a regular backup for the database in case of system error while two respondents agreed. Four respondents strongly agreed to a feature where the system authenticates the user when he/she tries to log in while the other two agreed. Five respondents strongly agreed to a feature where the system should have a registration feature for new users, and one respondent agreed. All respondents strongly agreed that the system has a search feature that allows faster retrieval of student/staff records. All respondents strongly agreed to the following features; the system should have an additional feature allowing a user to add student consultation records, data, and information; the system should have an update feature that allows the user to edit and update a record; and the system would be able to generate reports for the administration/staff. Four respondents strongly agreed to have a feature where a system pop-up will be shown when an error occurs and two respondents agreed. Five respondents strongly agreed to have a feature where the system should be consistent and accurate in showing relevant information and one respondent agreed. All respondents strongly agreed that the admin has access and control of the entire system, such as adding, deleting, searching, and updating user and patient records (old and new records). Four respondents strongly agreed to a feature where the system will record all the actions/activities of the users such as staff and two respondents agreed. Five respondents strongly agreed to a password recovery feature and one respondent agreed. Finally, five respondents strongly agreed to a log-in and Logout feature and one agreed.

Table 3.1: Functional Requirements needed for the proposed system

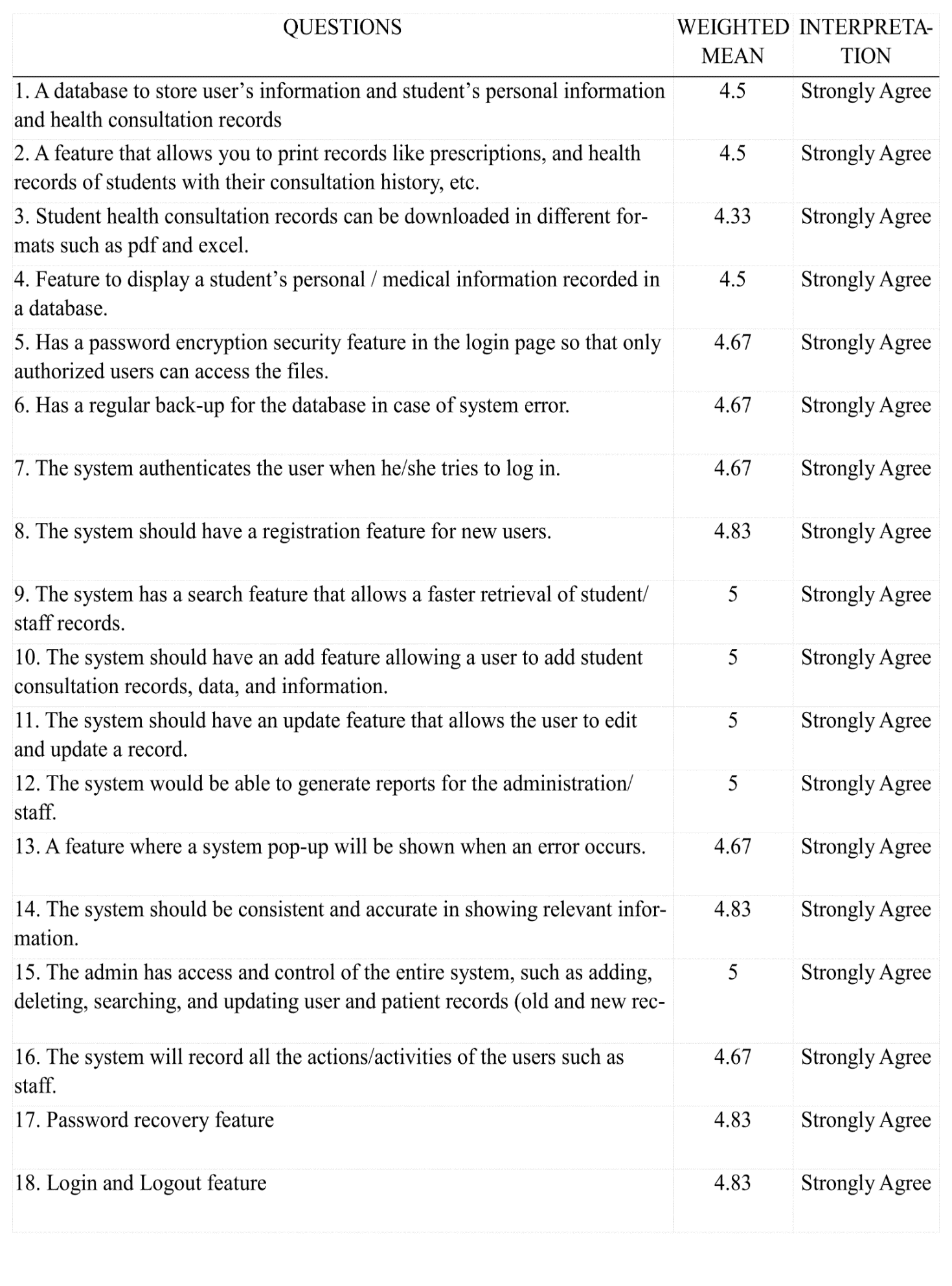


Table 3.4 displays the results of the survey for the non-functional requirements needed for the proposed system. The table showed that three respondents strongly agreed that there should be a feature in the system where records can be updated automatically (the real-time update), while the three others only agreed. When it comes to including system terms and conditions, four respondents rated it as strongly agreed and two of them agreed. There are three respondents strongly agreed to have a feature where the system should have a low failure rate, access restrictions, and available disaster recovery while three others agreed. Four respondents strongly agreed to a feature that displays the user's name when he/she signs in, and two others agreed. Lastly, five respondents strongly agreed to a feature that the records should be clearly shown on the screen by the system while the remaining one agreed.

Table 3.4: Non-Functional Requirements needed for the proposed system

|  |  |  |
| --- | --- | --- |
| QUESTIONS | WEIGHTED MEAN | INTERPRETATION |
| 1. A feature in which records can be updated automatically (the real-time update). | 4.5 | Strongly Agree |
| 2. Includes system terms and conditions. | 4.67 | Strongly Agree |
| 3. The system should have a low failure rate, access restrictions, and available disaster recovery. | 4.5 | Strongly Agree |
| 4. A feature that displays the user's name when he/she signs in. | 4.67 | Strongly Agree |
| 5. The records should be clearly shown on the screen by the system. | 4.83 | Strongly Agree |

Survey Results on Identifying the Level of Usability of the Developed BSU-SHCRMS as Perceived by the Medical Clinic Staff

Below, the usability and benefits of the BSU-SHCRMS are measured using PSSUQ which has four (4) response items, namely overall, system usefulness (SYSUSE), information quality (INFOQUAL), and interface quality (INTERQUAL).

Overall is an assessment of the entire PSSUQ questionnaire that demonstrates overall user satisfaction - the average overall assessment results get a value of 2.458, indicating the level of approval of the user's overall satisfaction with the BSU-SHCRMS. This shows that the overall use of the BSU-SHCRMS is good. According to Will (2016), the PSSUQ questionnaire is good because it follows the principle of a lower score, and higher usability, which indicates that the lower the score is, the better performance and satisfaction. Furthermore, data demonstrates that respondents generally agreed that the method was effective.

System Usefulness is a PSSUQ item that determines whether the BSU-SHCRMS is useful and meets user needs. The average System Usefulness assessment score is 2.389.

Information Quality is a PSSUQ assessment item that evaluates the quality of the BSU-SHCRMS information in terms of ease of use, accuracy, suitability with needs, and accuracy in presenting the information. The Information Quality assessment has an average score of 2.528.

Interface Quality is a PSSUQ item that assesses the quality of the BSU-SHCRMS interface in terms of its attractive appearance and ease of operation. The average Interface Quality assessment score is 2.444.

Table 3.5: Result for the Usability of the BSU-SHCRMS Using PSSUQ

|  |  |  |  |
| --- | --- | --- | --- |
| SUBSCALES | QUESTIONS | AVERAGE MEAN | INTERPRETATION |
| System Usefulness (Questions 1-6) | 1. Overall, I am satisfied with how easy it is to use this system | 2.33 | AGREE |
| 2. It was simple to use this system | 2.33 | AGREE |
| 3. I was able to complete the tasks and scenarios quickly using this system | 2.33 | AGREE |
| 4. I felt comfortable using this system | 2.5 | AGREE |
| 5. It was easy to learn to use this system | 2.33 | AGREE |
| 6. I believe I could become productive quickly using this system | 2.5 | AGREE |
| SYSTEM USEFULNESS | | 2.39 | AGREE |
| Information Quality (Questions 7-12) | 7. The system gave error messages that told me how to fix problems | 2.33 | AGREE |
| 8. Whenever I made a mistake using the system, I could recover easily and quickly | 2.66 | AGREE |
| 9. The information (such as online help, on-screen messages, and other documentation) provided with this system was clear | 2.66 | AGREE |
| 10. It was easy to find the information I needed | 2.33 | AGREE |
| 11. The information was effective in helping me complete the tasks and scenarios | 2.83 | SOMEWHAT AGREE |
| 12. The organization of information on the system screens was clear | 2.33 | AGREE |
| INFORMATION QUALITY | | 2.53 | AGREE |
| Interface Quality (Questions 13-15) | 13. The interface of this system was pleasant | 2.16 | AGREE |
| 14. I liked using the interface of this system | 2.5 | AGREE |
| 15. This system has all the functions and capabilities I expect it to have | 2.66 | AGREE |
| INTERFACE QUALITY | | 2.44 | AGREE |
|  | 16. Overall, I am satisfied with this system | 2.5 | AGREE |
| OVERALL | | 2.46 | AGREE |

Table 3.3 shows the Result for the Usability of the BSU-SHCRMS Using PSSUQ. The data gathered was treated by using means. It shows that the overall result in using the system has an average mean of 2.46 which is interpreted as Agree. This shows that the respondents were satisfied with the overall function of the system. As for the System Usefulness (SYSUSE) which covers the questions from numbers 1 to 6 having an average mean of 2.39 shows that the respondents see the system as useful for them. Having an average mean of 2.53 from computing the average mean of questions from numbers 7 to 12 and interpreted as Agree, respondents are satisfied with the Information Quality Of the BSU-SHCRMS. On the other hand, Interface quality was computed by getting the average mean of questions from numbers 13 to 15 with an average mean of 2.44 and interpreted as Agree, respondents were satisfied with the display, color, fonts, and contents of BSU-SHCRMS.

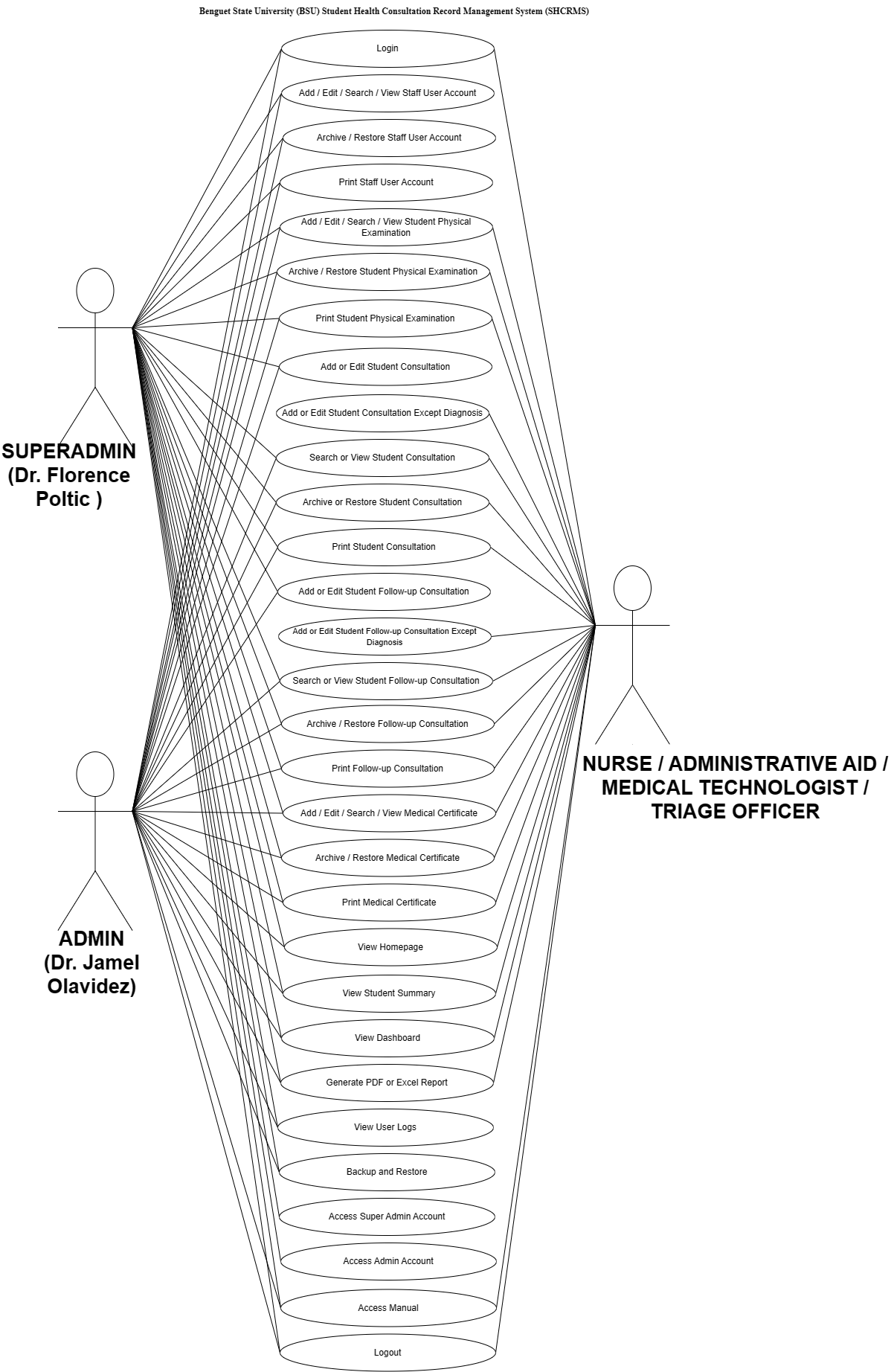


Figure 3.2: Use Case Diagram of Benguet State University (BSU) Student Health Consultation Record Management System (SHCRMS)

The proposed system's use case diagram depicts the actions performed by each actor. It defines a series of system activities that will create a quantifiable value for an actor. The person who will utilize, operate, and interact with the system is known as an actor. A line will be constructed from the actor to the process to depict an actor's role in the system. Stickman represents an actor and the system's operations and processes are enclosed in an oblong which represents the system. Use case diagram provides a high-level description of what the system should be able to do and what/who will interact with it. It's a technique for specifying functional requirements.

#### Super Admin

Dr. Florence Poltic, who is the Super Administrator has complete access to and control over all aspects of the BSU-SHCRMS. The Super Admin can log in, add / edit/search/view/archive / restore/print a record of a staff user account, student physical examination, student consultation, student follow-up consultation, and medical certificate, view the homepage, view student summary, view dashboard, generate pdf or excel report, view user logs, backup and restore, access manual, and log out of the system. Furthermore, the Super Admin can access an Admin/Super Admin account by editing, searching, viewing, archiving, restoring, or printing it.

#### Admin

Dr. Jamel Cardona-Olavidez, the Admin, has limited access and control over the BSU-SHCRMS features. The Admin can log in to the system, add / edit/search/view/archive / restore/print a record of a staff user account, student physical examination, student consultation, student follow-up consultation, and medical certificate, view the homepage, view student summary, view dashboard, generate pdf or excel report, view user logs, backup and restore, access manual, and logout. In terms of control, the Admin is restricted from adding a medical certificate unless he is the one who provides the consultation to a specific student. Also, the Admin cannot manipulate his account, nor can the Super Admin's account.

#### Staff

The staff, which includes nurses, administrative aids, medical technologists, and triage officers, also has limited access to the BSU-SHCRMS, where they can log in, add / edit/search/view/archive / restore/print a record of a student physical examination, student consultation, student follow-up consultation, and medical certificate, view homepage, view student summary, view dashboard, generate pdf or excel report, access manual, and log out of the system. In terms of adding and editing the student consultation and follow-up consultation record, the Staff can enter data in all fields except the diagnosis fields. The Staff, like the Admin, is prohibited from adding a medical certificate unless he or she is the one who provides the consultation to a specific student. Furthermore, the Staff cannot manipulate his account, nor the accounts of the other Staff, Admin, or Super Admin.

SUMMARY, CONCLUSIONS, AND RECOMMENDATION

SUMMARY

The objective of the study was to develop a Student Health Consultation Record Management System for the Medical Clinic Staff at Benguet State University that will assist them in managing their manual transactions by employing modern technology in recording their operations. Specifically, the study aimed to determine the existing student health consultation record system of Benguet State University, as well as the problems encountered, the functional and non-functional information requirements and features needed for the proposed system, and the level of usability and perceived benefits of the BSU-SHCRMS as perceived by the Medical Clinic Staffs.

With the current process, the university medical clinic faces significant challenges in managing the health records of its students. These challenges include difficulties in locating and accessing records, manual record-keeping, concerns over privacy and security of personal and health information, time-consuming processes, misplaced records, lack of storage space, data security risks, duplicated records, delayed report processing, absence of backup files, insufficient consultation forms, difficulty in reading student records, and challenges in tracking and disposing of records for graduated or dropped students.

To address these challenges, the clinic requires a comprehensive database that can store both user and student records. The system should allow for the printing and downloading of records in various formats, such as Excel and PDF. The system should also display a student's personal/medical information recorded in a database. To ensure data security, the system should include password encryption and regular database backups. User authentication and registration features should also be included, along with a search feature for faster retrieval of records. The system should enable users to add, edit, and update records, and generate reports for administration and staff. The system should show a pop-up when an error occurs. It should also display consistent and accurate information, with the admin having access and control of the entire system. To track the activities happening in the system, it should also record all important actions and activities of a user. Other key features that the system should include are password recovery, login, and logout features, and automatic real-time updates. The system should also display the user's name upon sign-in and present records clearly on the screen. Additionally, the system should have low failure rates, access restrictions, and disaster recovery options, and include system terms and conditions. Incorporating these features into the system will help the university medical clinic to efficiently manage its student health records.

With this, the study used the systems development method called Rapid Application Development (RAD) as a basis for developing and maintaining the BSU-SHCRMS. The development approach of Rapid Application Development emphasizes fast prototyping and receiving swift feedback rather than lengthy development and testing cycles. By using this method, developers can quickly create multiple versions of the software and make frequent updates without having to initiate a new development cycle each time.

After the usability analysis conducted on the BSU-SHCRMS at Benguet State University Medical Clinic, a comprehensive picture of the BSU-SHCRMS in terms of usability was provided. According to the findings, the BSU-SHCRMS as a whole is good, and in terms of usability, the BSU-SHCRMS is simple and easy to use in a way that storing, locating, and retrieving information and consultation of patients became easier, so users become more productive, effective, and efficient in using the system, and the quality of the BSU-SHCRMS information can be well received by users, assisting them in completing work.

In this regard, the BSU-SHCRMS was developed to assist and increase the productivity, effectiveness, and efficiency of the university medical clinic in delivering its services to the students. The construction of a Benguet State University Student Health Consultation Record Management System (BSU-SHCRMS) using a computer network-based system reduces the hardship and ensures efficient task management. Furthermore, the BSU-SHCRMS network-based can help schools overcome the gap. Not only will it facilitate greater security compliance and privacy requirements than paper documents, but it also provides improved data gathering, and control, and makes it easy for the user to update and share patient records.

CONCLUSIONS

Based on the analyzed results of the study, the following conclusions were drawn.

1. The BSU medical clinic encounters challenges with the current student health consultation record management system, such as difficulty in locating or accessing health consultation records, difficulty in manually adding the student's health consultation record (by using a pen and paper), the privacy of the student's personal and health information in which it can be viewed and accessed easily, processing a student's health record is time-consuming, misplacing of student health consultation records, the amount of room or space needed for the current process, data security of the current student health consultation record process, duplication of records, delays in receiving and sending of reports, backup of files in case it is lost, damaged or gone, lack of consultation forms, readability of student records and consultations, and keeping track and disposing of previous (graduated/dropped) students' health records.
2. The functional, non-functional requirements, and features for the proposed system include a database to store users and student records, a feature to print records, student health consultation records can be downloaded in different formats such as excel and pdf, a feature to display a student personal / medical information recorded in a database, a password encryption security feature, a regular back-up for the database, authentication feature when a user login, a registration feature for new users, a search feature for faster retrieval of student/staff records, an add feature allowing a user to add student consultation records, data, and information, an update feature that allows the user to edit and update a record, a feature to generate reports for the administration/staff, a system pop-up when an error occurs, consistent and accurate in showing relevant information, the admin has access and control of the entire system, the system will record all actions/activities of the users, password recovery feature, login and logout feature, a feature in which records can be updated automatically (real-time update), includes system terms and conditions, a low failure rate, access restrictions, and available disaster recovery, a feature that displays the user's name when he/she signs in, and a feature where records should be clearly shown on the screen by the system.
3. The results of the post-study system usability survey indicate that the Benguet State University - Student Health Consultation Record Management System is well-received by its users. High scores for overall, system usefulness, information quality, and interface quality indicate the system's impact and utility for users.

RECOMMENDATIONS

Based on the aforementioned findings, the researchers recommend that the Medical Clinic at Benguet State University implement the developed system in order to improve student services. Not only can it make the Medical Clinic's services more efficient and convenient, but it can also reduce the work and time required by users and students.

The researchers recommend to future researchers expand the BSU-SHCRMS sample size and scope so that BSU employees and community can be included in the system, not just students. Make BSU-SHCRMS responsive to a variety of platforms, including mobile devices. Incorporate e-signature into the system for faster consultation.

The utilization of the system strongly suggests using external storage devices such as external hard drives, flash drives, or CDs to store system database backup files.

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APPENDIX A

### Definition of Terms

Cascading Style Sheet (CSS) - used in designing the webpages of the system.

Consultation - the act of seeking assistance from health care professional/s for diagnostic

studies or services that may benefit the patient.

Diagnosis - the process of determining which disease or condition explains a student's symptoms and signs and who is seeking assistance in the medical clinic.

End-user - a person or other entity that makes use of the system (BSU-SHCRMS) produced by

the researchers.

Health Record - data and information provided by the patient.

Hypertext Markup Language (HTML) - the markup language that was used in creating the structure of the BSU-SHCRMS

Hypertext Preprocessor (PHP) - used for connection into the database as well as system functionality.

Javascript - used for the functionality of the BSU-SHCRMS.

Likert Scale - used to determine the overall average of a certain question.

MySQL - used as the database of the System.

Rapid Application Development (RAD) Methodology - the methodology used by the researchers in developing and implementing the system.

Post-Study System Usability Questionnaire (PSSUQ) - used in determining the usability of the BSU-SHCRMS.

APPENDIX B

Problems Encountered with Current System Questionnaire Items

**SURVEY QUESTIONNAIRE**

**Name** (optional): **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Position: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Age: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Gender: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Length of Service: \_\_\_\_\_\_\_\_\_\_\_**

**Level of Education:**

Certificate   Diploma   Degree Masters PhD

**Direction:**  The following are some factors that could be a problem in the current Student Health Consultation Process. Please check the appropriate column based on the degree of the problem using the scale below:

|  |  |
| --- | --- |
| **Scale** | **Descriptive Equivalence** |
| 5 | Severe Problem |
| 4 | Serious Problem |
| 3 | Moderate Problem |
| 2 | Minor Problem |
| 1 | Not a Problem |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Problems encountered in the current Student Health Consultation System** | **5** | **4** | **3** | **2** | **1** |
| 1. Difficulty in locating or accessing the student’s health consultation record |  |  |  |  |  |
| 1. Difficulty in manually adding the student's health consultation record (by using a pen and paper). |  |  |  |  |  |
| 1. Privacy of the student's personal and health information which can be viewed and accessed easily. |  |  |  |  |  |
| 1. Processing a student's health record is time-consuming. |  |  |  |  |  |
| 1. Misplacing of student health consultation records. |  |  |  |  |  |
| 1. The amount of room or space needed for the current process. |  |  |  |  |  |
| 1. Data security of the current student health consultation record process. |  |  |  |  |  |
| 1. Duplication of records. |  |  |  |  |  |
| 1. Delays in receiving and sending reports. |  |  |  |  |  |
| 1. Backup of files in case it is lost, damaged, or gone |  |  |  |  |  |
| 1. Lack of Consultation Forms |  |  |  |  |  |
| 1. Readability of student records and consultations |  |  |  |  |  |
| 1. Keeping track and disposing of previous (graduated/dropped) students' health records. |  |  |  |  |  |

**Direction:**  The following are some features that you would like to see in a student health consultation system if one were to be created. Please check the appropriate column based on the degree of the problem using the scale below:

|  |  |
| --- | --- |
| **Scale** | **Descriptive Equivalence** |
| 5 | Strongly Agree |
| 4 | Agree |
| 3 | Neutral/Uncertain |
| 2 | Disagree |
| 1 | Strongly Disagree |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Features that you would like to see in a Student Health Consultation System** | **5** | **4** | **3** | **2** | **1** |
| 1. A database to store user’s information and student’s personal information and health consultation records |  |  |  |  |  |
| 1. A feature that allows you to print records like prescriptions, and health records of students with their consultation history, etc. |  |  |  |  |  |
| 1. A feature in which records can be updated automatically (the real-time update). |  |  |  |  |  |
| 1. Student health consultation records can be downloaded in different formats such as PDF, Excel, and Word |  |  |  |  |  |
| 1. Feature to display a student's personal/medical information recorded in a database. |  |  |  |  |  |
| 1. Has a password encryption security feature on the login page so that only authorized users can access the files. |  |  |  |  |  |
| 1. Includes system terms and conditions. |  |  |  |  |  |
| 1. Has a regular backup for the database in case of system error. |  |  |  |  |  |
| 1. The system authenticates the user when he/she tries to log in. |  |  |  |  |  |
| 1. The system should have a registration feature for new users. |  |  |  |  |  |
| 1. The system has a search feature that allows faster retrieval of student/staff records. |  |  |  |  |  |
| 1. The system should have an additional feature allowing a user to add student consultation records, data, and information. |  |  |  |  |  |
| 1. The system should have an update feature that allows the user to edit and update a record. |  |  |  |  |  |
| 1. The system would be able to generate reports for the administration/staff. |  |  |  |  |  |
| 1. A feature where a system pop-up will be shown when an error occurs. |  |  |  |  |  |
| 1. The system should have a low failure rate, access restrictions, and available disaster recovery. |  |  |  |  |  |
| 1. The system should be consistent and accurate in showing relevant information. |  |  |  |  |  |
| 1. The admin has access and control of the entire system, such as adding, deleting, searching, and updating user and patient records (old and new records). |  |  |  |  |  |
| 1. The system will record all the actions/activities of the users such as staff. |  |  |  |  |  |
| 1. A feature that displays the user's name when he signs in. |  |  |  |  |  |
| 1. The records should be clearly shown on the screen by the system. |  |  |  |  |  |
| 1. Password recovery feature |  |  |  |  |  |
| 1. Login and Logout feature |  |  |  |  |  |

APPENDIX C

### The Post-Study System Usability Questionnaire Items

**SURVEY QUESTIONNAIRE**

**Name** (optional): **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Position: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Age: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Gender: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Length of Service: \_\_\_\_\_\_\_\_\_\_\_**

**Level of Education:**

Certificate Diploma Degree  Masters PhD

**Direction:**  The following statements are to determine the usability of the proposed Benguet State University (BSU) Student Health Consultation Record Management System (SHCRMS). Please shade the circle that corresponds to your degree of agreement.

|  |  |  |
| --- | --- | --- |
| **Subscales** | **System Usability** | **1   2   3   4   5   6   7                    NA** |
| System Usefulness (Questions 1-6) | 1. Overall, I am satisfied with how easy it is to use this system | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. It was simple to use this system | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. I was able to complete the tasks and scenarios quickly using this system. | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. I felt comfortable using this system. | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. It was easy to learn to use this system | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. I believe I could become productive quickly using this system. | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| Information Quality (Questions 7-12) | 1. The system gave error messages that told me how to fix problems. | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. Whenever I make a mistake using the system, I recover easily and quickly | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. The information (such as online help, on-screen messages, and other documentation) provided with this system was clear | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. It was easy to find the information I needed. | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. The information is effective in helping me complete the tasks and scenarios | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. The organization of information on the system screens is clear | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| Interface Quality (Questions 13-15) | 1. The interface of this system is pleasant | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. I like using the interface of this system | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
| 1. This system has all the functions and capabilities I expect it to have | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |
|  | 1. Overall, I am satisfied with this system | https://lh3.googleusercontent.com/BPQZ8VRATDLW8wP-Aa5Ue7pKVmkRLJd2sgcsApqFqJdrRApXso1fm02eMmCsQrWTGqXbpK00dOsjbSgkY95irmG1TUhu3ccS47Ffdhj6vaRduV2QsCCoxk4g7hvdTiM-Bdv1nqUyDN88qgQKMRuHeQ |

### APPENDIX D

### Test Cases for Unit Testing

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT1 | | | Test Case ID | | UT1.1 | |
| Test Case Description | | Verify view data privacy policy/notice | | | Test Priority | | Medium | |
| Prerequisite | | N/A | | | Post Requisite | | User should be able to view the data privacy policy/notice of the system | |
| Test Executions Steps: | | | | | | | | |
| S.No | Action | | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Data Privacy Policy / Notice” | | N/A | The user should be redirected to the data privacy policy/notice of the system | The user is redirected to the data privacy policy/notice of the system | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
|  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT2 | | Test Case ID | | UT2.1 | |
| Test Case Description | | Verify login functionality with valid credentials | | Test Priority | | High | |
| Prerequisite | | A user account is created and the system is running | | Post Requisite | | The user should be able to log in successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter valid credentials | Username and password | The user should be redirected to the homepage | The user is redirected to the homepage | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT2 | | Test Case ID | | UT2.2 | |
| Test Case Description | | Verify login functionality with invalid credentials | | Test Priority | | High | |
| Prerequisite | | A user account is created and the system is running | | Post Requisite | | The user should not be able to log in with invalid credentials | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid credentials | Invalid username and password | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT3 | | Test Case ID | | UT3.1 | |
| Test Case Description | | Verify view user account functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to view a user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button | N/A | The user should be able to view a user account record | The user can view a user account record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT4 | | Test Case ID | | UT4.1 | |
| Test Case Description | | Verify add user account functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to add a user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new user" button | Valid user account details | User account details should be added successfully | User account details are added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT4 | | Test Case ID | | UT4.2 | |
| Test Case Description | | Verify add user account functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should not be able to add a user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new user" button | Invalid user account details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT5 | | Test Case ID | | UT5.1 | |
| Test Case Description | | Verify edit user account functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the user account record exists | | Post Requisite | | The user should be able to edit an existing user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Valid user account details | The user account should be updated successfully | The user account is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT5 | | Test Case ID | | UT5.2 | |
| Test Case Description | | Verify edit user account functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the user account record exists | | Post Requisite | | The user should not be able to edit an existing user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Invalid user account details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT6 | | Test Case ID | | UT6.1 | |
| Test Case Description | | Verify search user account functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the user account record exists | | Post Requisite | | The user should be able to search an existing user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant user account records should be displayed | Relevant user account records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT6 | | Test Case ID | | UT6.2 | |
| Test Case Description | | Verify search user account functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and user account records exist | | Post Requisite | | The user should not be able to search an existing user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No user account records should be displayed | No user account records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT7 | | Test Case ID | | UT7.1 | |
| Test Case Description | | Verify archive user account functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to archive a user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Archive" button | Reason for archiving | User account records should be moved to an archive | The user account record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| Test Scenario ID | | UT8 | | Test Case ID | | UT8.1 | |
| Test Case Description | | Verify restore user account functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record is archived | | Post Requisite | | The user should be able to restore an archived user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Restore" button | N/A | User account records should be restored from the archive | The user account record is restored from the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT9 | | Test Case ID | | UT9.1 | |
| Test Case Description | | Verify print of user account functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print a user account record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print" button | N/A | User account records should be printed successfully | User account record is printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT10 | | Test Case ID | | UT10.1 | |
| Test Case Description | | Verify print report functionality of user list table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print all records listed in the user list table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print Report" button | N/A | All user account records should be printed successfully | All user account records are printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT11 | | Test Case ID | | UT11.1 | |
| Test Case Description | | Verify export to pdf functionality of user list table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate a pdf report containing all records listed in the user list table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to PDF" button | N/A | PDF report of all user account records should be generated | PDF report of all user account records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT12 | | Test Case ID | | UT12.1 | |
| Test Case Description | | Verify export to Excel functionality of user list table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate an Excel report containing all records listed in the user list table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to Excel" button | N/A | An Excel report of all user account records should be generated | An Excel report of all user account records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT13 | | Test Case ID | | UT13.1 | |
| Test Case Description | | Verify view student physical examination functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | Users should be able to view a student's physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button | N/A | Users should be able to view a student's physical examination record | The user can view a student's physical examination record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT14 | | Test Case ID | | UT14.1 | |
| Test Case Description | | Verify add student physical examination functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to add a student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new record" button | Valid physical examination details | Physical examination details should be added successfully | Physical examination details are added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT14 | | Test Case ID | | UT14.2 | |
| Test Case Description | | Verify add student physical examination functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should not be able to add a student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new record" button | Invalid physical examination details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT15 | | Test Case ID | | UT15.1 | |
| Test Case Description | | Verify edit student physical examination functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student's physical examination record exists | | Post Requisite | | The user should be able to edit an existing student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Valid physical examination details | Physical examination should be updated successfully | Physical examination is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT15 | | Test Case ID | | UT15.2 | |
| Test Case Description | | Verify edit student physical examination functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student's physical examination record exists | | Post Requisite | | The user should not be able to edit an existing student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Invalid physical examination details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT16 | | Test Case ID | | UT16.1 | |
| Test Case Description | | Verify search physical examination functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student's physical examination record exists | | Post Requisite | | User should be able to search an existing student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant physical examination records should be displayed | Relevant physical examination records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT16 | | Test Case ID | | UT16.2 | |
| Test Case Description | | Verify search physical examination functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and student physical examination records exist | | Post Requisite | | User should not be able to search an existing student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No physical examination records should be displayed | No physical examination records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT17 | | Test Case ID | | UT17.1 | |
| Test Case Description | | Verify archive physical examination functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to archive a student's physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Archive" button | Reason for archiving | Student physical examination records should be moved to an archive | Student physical examination record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT18 | | Test Case ID | | UT18.1 | |
| Test Case Description | | Verify restore physical examination functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record is archived | | Post Requisite | | The user should be able to restore an archived student physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Restore" button | N/A | Student physical examination records should be restored from the archive | Student physical examination record is restored from the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT19 | | Test Case ID | | UT19.1 | |
| Test Case Description | | Verify print of physical examination functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print a student's physical examination record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print" button | N/A | Student physical examination records should be printed successfully | Student physical examination record is printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT20 | | Test Case ID | | UT20.1 | |
| Test Case Description | | Verify print report functionality of the physical examination table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print all records listed in the physical examination table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print Report" button | N/A | All student physical examination records should be printed successfully | All student physical examination records are printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT21 | | Test Case ID | | UT21.1 | |
| Test Case Description | | Verify export to pdf functionality of physical examination table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate a pdf report containing all records listed in the physical examination table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to PDF" button | N/A | PDF report of all student physical examination records should be generated | PDF report of all student physical examination records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT22 | | Test Case ID | | UT22.1 | |
| Test Case Description | | Verify export to Excel functionality of physical examination table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate an Excel report containing all records listed in the physical examination table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to Excel" button | N/A | An Excel report of all student physical examination records should be generated | An Excel report of all student physical examination records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT23 | | Test Case ID | | UT23.1 | |
| Test Case Description | | Verify view student consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | User should be able to view a student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button | N/A | User should be able to view a student consultation record | The user can view a student consultation record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT24 | | Test Case ID | | UT24.1 | |
| Test Case Description | | Verify add student consultation functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to add a student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new consultation" button | Valid student consultation details | Student consultation details should be added successfully | Student consultation details are added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT24 | | Test Case ID | | UT24.2 | |
| Test Case Description | | Verify add student consultation functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should not be able to add a student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new consultation" button | Invalid student consultation details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT25 | | Test Case ID | | UT25.1 | |
| Test Case Description | | Verify edit student consultation functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student consultation record exists | | Post Requisite | | The user should be able to edit an existing student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Valid student consultation details | Student consultation should be updated successfully | Student consultation is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT25 | | Test Case ID | | UT25.2 | |
| Test Case Description | | Verify edit student consultation functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student consultation record exists | | Post Requisite | | The user should not be able to edit an existing student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Invalid student consultation details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT26 | | Test Case ID | | UT26.1 | |
| Test Case Description | | Verify search student consultation functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student consultation record exists | | Post Requisite | | User should be able to search an existing student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant student consultation records should be displayed | Relevant student consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT26 | | Test Case ID | | UT26.2 | |
| Test Case Description | | Verify search student consultation functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and student consultation records exist | | Post Requisite | | The user should not be able to search an existing student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No student consultation records should be displayed | No student consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT27 | | Test Case ID | | UT27.1 | |
| Test Case Description | | Verify archive student consultation record functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to archive a student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Archive" button | Reason for archiving | Student consultation records should be moved to an archive | Student consultation record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT28 | | Test Case ID | | UT28.1 | |
| Test Case Description | | Verify restore student consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record is archived | | Post Requisite | | The user should be able to restore an archived student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Restore" button | N/A | Student consultation records should be restored from the archive | Student consultation record is restored from the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT29 | | Test Case ID | | UT29.1 | |
| Test Case Description | | Verify print of student consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print a student consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print" button | N/A | Student consultation records should be printed successfully | Student consultation record is printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT30 | | Test Case ID | | UT30.1 | |
| Test Case Description | | Verify print report functionality of student consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print all records listed in the student consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print Report" button | N/A | All student consultation records should be printed successfully | All student consultation records are printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT31 | | Test Case ID | | UT31.1 | |
| Test Case Description | | Verify export to pdf functionality of student consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate a pdf report containing all records listed in the student consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to PDF" button | N/A | PDF report of all student consultation records should be generated | PDF report of all student consultation records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT32 | | Test Case ID | | UT32.1 | |
| Test Case Description | | Verify export to Excel functionality of student consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate an Excel report containing all records listed in the student consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to Excel" button | N/A | An Excel report of all student consultation records should be generated | An Excel report of all student consultation records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT33 | | Test Case ID | | UT33.1 | |
| Test Case Description | | Verify view student follow-up consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | User should be able to view a student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button | N/A | User should be able to view a student follow-up consultation record | The user can view a student follow-up consultation record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT34 | | Test Case ID | | UT34.1 | |
| Test Case Description | | Verify add student follow-up consultation functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to add a student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "New Follow-up" button | Valid student follow-up consultation details | Student follow-up consultation details should be added successfully | Student follow-up consultation details are added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| Test Scenario ID | | UT34 | | Test Case ID | | UT34.2 | |
| Test Case Description | | Verify add student follow-up consultation functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should not be able to add a student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "New Follow-up" button | Invalid student follow-up consultation details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT35 | | Test Case ID | | UT35.1 | |
| Test Case Description | | Verify edit student follow-up consultation functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to edit an existing student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Valid student follow-up consultation details | Student follow-up consultation should be updated successfully | Student follow-up consultation is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT35 | | Test Case ID | | UT35.2 | |
| Test Case Description | | Verify edit student follow-up consultation functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should not be able to edit an existing student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Invalid student follow-up consultation details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT36 | | Test Case ID | | UT36.1 | |
| Test Case Description | | Verify search student follow-up consultation functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to search an existing student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant student follow-up consultation records should be displayed | Relevant student follow-up consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT36 | | Test Case ID | | UT36.2 | |
| Test Case Description | | Verify search student follow-up consultation functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should not be able to search an existing student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No student follow-up consultation records should be displayed | No student follow-up consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT37 | | Test Case ID | | UT37.1 | |
| Test Case Description | | Verify archive student follow-up consultation record functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to archive a student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Archive" button | Reason for archiving | Student follow-up consultation records should be moved to the archive | Student follow-up consultation record is moved to the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT38 | | Test Case ID | | UT38.1 | |
| Test Case Description | | Verify restore student follow-up consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and a record is archived | | Post Requisite | | The user should be able to restore an archived student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Restore" button | N/A | Student follow-up consultation records should be restored from the archive | Student follow-up consultation record is restored from the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT39 | | Test Case ID | | UT39.1 | |
| Test Case Description | | Verify print of student follow-up consultation functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print a student follow-up consultation record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print" button | N/A | Student follow-up consultation records should be printed successfully | Student follow-up consultation record is printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT40 | | Test Case ID | | UT40.1 | |
| Test Case Description | | Verify print report functionality of student follow-up consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print all records listed in the student follow-up consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print Report" button | N/A | All student follow-up consultation records should be printed successfully | All student follow-up consultation records are printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT41 | | Test Case ID | | UT41.1 | |
| Test Case Description | | Verify export to pdf functionality of student follow-up consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate a pdf report containing all records listed in the student follow-up consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to PDF" button | N/A | PDF report of all student follow-up consultation records should be generated | PDF report of all student follow-up consultation records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT42 | | Test Case ID | | UT42.1 | |
| Test Case Description | | Verify export to Excel functionality of student follow-up consultation table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate an Excel report containing all records listed in the student follow-up consultation table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to Excel" button | N/A | An Excel report of all student follow-up consultation records should be generated | An Excel report of all student follow-up consultation records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT43 | | Test Case ID | | UT43.1 | |
| Test Case Description | | Verify view student medical certificate functionality | | Test Priority | | High | |
| Prerequisite | | User logged-in records exist | | Post Requisite | | User should be able to view a student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button | N/A | User should be able to view a student medical certificate record | The user is able to view a student medical certificate record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT44 | | Test Case ID | | UT44.1 | |
| Test Case Description | | Verify add student medical certificate functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to add a student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new certificate" button | Valid student medical certificate details | Student medical certificate details should be added successfully | Student medical certificate details are added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT44 | | Test Case ID | | UT44.2 | |
| Test Case Description | | Verify add student medical certificate functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should not be able to add a student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "new certificate" button | Invalid student medical certificate details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT45 | | Test Case ID | | UT45.1 | |
| Test Case Description | | Verify edit student medical certificate functionality with valid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student medical certificate record exists | | Post Requisite | | The user should be able to edit an existing student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Valid student medical certificate details | Student medical certificate should be updated successfully | Student medical certificate is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT45 | | Test Case ID | | UT45.2 | |
| Test Case Description | | Verify edit student medical certificate functionality with invalid inputs | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student medical certificate record exists | | Post Requisite | | The user should not be able to edit an existing student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "edit" button | Invalid student medical certificate details | An error message should be displayed | An error message is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT46 | | Test Case ID | | UT46.1 | |
| Test Case Description | | Verify search student medical certificate functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the student medical certificate record exists | | Post Requisite | | The user should be able to search an existing student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant student medical certificate records should be displayed | Relevant student medical certificate records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT46 | | Test Case ID | | UT46.2 | |
| Test Case Description | | Verify search student medical certificate functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and student medical certificate records exist | | Post Requisite | | The user should not be able to search an existing student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No student medical certificate records should be displayed | No student medical certificate records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT47 | | Test Case ID | | UT47.1 | |
| Test Case Description | | Verify archive student medical certificate functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to archive a student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Archive" button | Reason for archiving | Student medical certificate records should be moved to an archive | Student medical certificate record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT48 | | Test Case ID | | UT48.1 | |
| Test Case Description | | Verify restore student medical certificate functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record is archived | | Post Requisite | | The user should be able to restore an archived student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "Restore" button | N/A | Student medical certificate records should be restored from the archive | Student medical certificate record is restored from the archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT49 | | Test Case ID | | UT49.1 | |
| Test Case Description | | Verify print of student medical certificate functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print a student medical certificate record | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print" button | N/A | Student medical certificate records should be printed successfully | Student medical certificate record is printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT50 | | Test Case ID | | UT50.1 | |
| Test Case Description | | Verify print report functionality of student medical certificate table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to print all records listed in the student medical certificate table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Print Report" button | N/A | All student medical certificate records should be printed successfully | All student medical certificate records are printed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT51 | | Test Case ID | | UT51.1 | |
| Test Case Description | | Verify export to pdf functionality of student medical certificate table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate a pdf report containing all records listed in the student medical certificate table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to PDF" button | N/A | PDF report of all student medical certificate records should be generated | PDF report of all student medical certificate records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT52 | | Test Case ID | | UT52.1 | |
| Test Case Description | | Verify export to Excel functionality of student medical certificate table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and the record exists | | Post Requisite | | The user should be able to generate an Excel report containing all records listed in the student medical certificate table | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click the "Export to Excel" button | N/A | An Excel report of all student medical certificate records should be generated | An Excel report of all student medical certificate records is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT53 | | Test Case ID | | UT53.1 | |
| Test Case Description | | Verify view homepage functionality | | Test Priority | | Medium | |
| Prerequisite | | The user is logged in | | Post Requisite | | User should be able to view the homepage | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Home” | N/A | The homepage should be displayed | Homepage is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT54 | | Test Case ID | | UT54.1 | |
| Test Case Description | | Verify view dashboard functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to view the dashboard | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Dashboard” | N/A | The dashboard should be displayed | Dashboard is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT55 | | Test Case ID | | UT55.1 | |
| Test Case Description | | Verify the "Generate My Report" functionality in the dashboard | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to generate a report based on his/her created records | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Generate My Report” | N/A | User reports should be generated | User report is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT56 | | Test Case ID | | UT56.1 | |
| Test Case Description | | Verify the "Generate All Reports" functionality in the dashboard | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to generate a report based on all the user's created records | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Generate All Reports” | N/A | All user reports should be generated | All user report is generated | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT57 | | Test Case ID | | UT57.1 | |
| Test Case Description | | Verify view student summary functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to view the student summary | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Student Summary” | N/A | Student summary should be displayed | Student summary is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT58 | | Test Case ID | | UT58.1 | |
| Test Case Description | | Verify search student summary functionality with valid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to search a student summary | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter search criteria | Valid search criteria | Relevant student summaries should be displayed | Relevant student summary is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT58 | | Test Case ID | | UT58.2 | |
| Test Case Description | | Verify search student summary functionality with invalid criteria | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should not be able to search a student summary | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter invalid search criteria | Invalid search criteria | No student summary should be displayed | No student summary is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT59 | | Test Case ID | | UT59.1 | |
| Test Case Description | | Verify view user logs functionality | | Test Priority | | Medium | |
| Prerequisite | | The user is logged in and logs exist | | Post Requisite | | The user should be able to view the user logs | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the user logs | N/A | User logs should be displayed | User logs are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT60 | | Test Case ID | | UT60.1 | |
| Test Case Description | | Verify backup functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | The user should be able to back up the data | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Enter a filename and click the "Download" button | Filename | Data should be backed up successfully | Data is backed up successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT61 | | Test Case ID | | UT61.1 | |
| Test Case Description | | Verify restore functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and backed-up data exists | | Post Requisite | | The user should be able to restore the data | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Upload the backed-up data and click on the "Restore" button | N/A | Data should be restored successfully | Data is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT62 | | Test Case ID | | UT62.1 | |
| Test Case Description | | Verify access manual functionality | | Test Priority | | Medium | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to access the manual | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "?" icon | N/A | The manual should be displayed | Manual is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT63 | | Test Case ID | | UT63.1 | |
| Test Case Description | | Verify logout functionality by clicking logout | | Test Priority | | Medium | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to log out successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on logout | N/A | The user should be logged out and redirected to the login page | The user is logged out and redirected to the login page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UT63 | | Test Case ID | | UT63.2 | |
| Test Case Description | | Verify logout functionality by closing the system tab | | Test Priority | | Medium | |
| Prerequisite | | The user is logged in | | Post Requisite | | The user should be able to log out successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Close the system tab and open again the system | N/A | The user should be logged out and redirected to the login page | The user is logged out and redirected to the login page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

APPENDIX?

### **Test Cases for Integration Testing**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT1 | | Test Case ID | | IT1.1 | |
| Test Case Description | | Verify student's physical examination record is properly linked to the student consultation record | | Test Priority | | High | |
| Prerequisite | | The user is logged in and no records exist | | Post Requisite | | A student consultation record and a physical examination record should be created and linked successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Create a new student physical examination record | Fill out the necessary information | Student Physical Examination records should be added successfully | Student Physical Examination record is added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Create a new student consultation record | Fill out the necessary information | Some fields on the consultation record should be auto fetched and the consultation record should be added successfully with the associated physical examination record | Some fields on the consultation record are auto fetched and the consultation record is added successfully with the associated physical examination record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| Test Scenario ID | | IT2 | | Test Case ID | | IT2.1 | |
| Test Case Description | | Verify student consultation and follow-up consultation records are properly linked | | Test Priority | | High | |
| Prerequisite | | The user is logged in and no records exist | | Post Requisite | | A student consultation record and a follow-up consultation record should be created and linked successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Create a new student consultation record | Fill out the necessary information and add the record | Consultation record should be added successfully | The consultation record is added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Create a new student follow-up consultation record | Fill out the necessary information | Some fields on the student follow-up consultation record should be auto fetched and the follow-up consultation record should be added successfully with the associated student consultation record | Some fields on the student follow-up consultation record are auto fetched and the follow-up consultation record is added successfully with the associated student consultation record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT3 | | Test Case ID | | IT3.1 | |
| Test Case Description | | Verify student consultation and medical certificate records are properly linked | | Test Priority | | High | |
| Prerequisite | | The user is logged in and no records exist | | Post Requisite | | A student consultation record and a medical certificate record should be created and linked successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Create a new student consultation record | Fill out the necessary information and add the record | Consultation record should be added successfully | The consultation record is added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Create a new student medical certificate record | Fill out the necessary information | Some fields on the student medical certificate record should be auto fetched and the student medical certificate record should be added successfully with the associated student consultation record | Some fields on the student medical certificate record are auto fetched and the student medical certificate record is added successfully with the associated student consultation record | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT4 | | Test Case ID | | IT4.1 | |
| Test Case Description | | Verify record history functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and record histories exist | | Post Requisite | | The user should be able to view a recorded history | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on the "view" button under a record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | N/A | A record should be displayed | A record is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Select a recorded history under edited by | N/A | A recorded history should be displayed | A recorded history is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT5 | | Test Case ID | | IT5.1 | |
| Test Case Description | | Verify system archive and restore functionality in the physical examination and archived student records table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System archive and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Archive a student physical examination record by clicking the “Archive” button | Reason for archiving | Student physical examination records should be moved to an archive | Student physical examination record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Go to the "Archived Student Records" table | N/A | All archived student physical examination records should be displayed | All archived student physical examination records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore a student's physical examination record by clicking the "Restore" button | N/A | Archived student physical examination records should be restored successfully | Archived student physical examination record is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT6 | | Test Case ID | | IT6.1 | |
| Test Case Description | | Verify system archive and restore functionality in the student consultation and archived consultation records table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System archive and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Archive a student consultation record by clicking the “Archive” button | Reason for archiving | Student consultation records should be moved to the archive | Student consultation record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Go to the "Archived Consultation Records" table | N/A | All archived student consultation records should be displayed | All archived student consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore a student consultation record by clicking the “Restore” button | N/A | Archived student consultation records should be restored successfully | Archived student consultation record is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT7 | | Test Case ID | | IT7.1 | |
| Test Case Description | | Verify system archive and restore functionality in the student follow-up consultation and archived follow-up records table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System archive and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Archive a student follow-up consultation record by clicking the “Archive” button | Reason for archiving | Student follow-up consultation records should be moved to an archive | Student follow-up consultation record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Go to the "Archived Follow-up Records" table | N/A | All archived student follow-up consultation records should be displayed | All archived student follow-up consultation records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore a student follow-up consultation record by clicking the “Restore” button | N/A | Archived student follow-up consultation records should be restored successfully | Archived student follow-up consultation record is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT8 | | Test Case ID | | IT8.1 | |
| Test Case Description | | Verify system archive and restore functionality in the student medical certificate and archived medical certificates table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System archive and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Archive a student medical certificate record by clicking the “Archive” button | Reason for archiving | Student medical certificate records should be moved to an archive | Student medical certificate record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Go to the "Archived Medical Certificates" table | N/A | All archived student medical certificate records should be displayed | All archived student medical certificate records are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore a student medical certificate record by clicking the “Restore” button | N/A | Archived student medical certificate records should be restored successfully | Archived student medical certificate record is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT9 | | Test Case ID | | IT9.1 | |
| Test Case Description | | Verify system archive and restore functionality in the system logs and archived system logs table | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System archive and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Archive the system logs by clicking the “Archive Logs” button | Reason for archiving | System logs should be moved to an archive | System logs are moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Go to the "Archived System Logs" table | N/A | All archived system logs should be displayed | All archived system logs are displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore the system logs by clicking the “Restore Logs” button | N/A | Archived system logs should be restored successfully | Archived system logs are restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT10 | | Test Case ID | | IT10.1 | |
| Test Case Description | | Verify user logs are generated when records are created, modified, archived, backuped, and restored. | | Test Priority | | High | |
| Prerequisite | | The user is logged in and no records exist | | Post Requisite | | User logs should be generated when records are created or modified | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Create a new record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | Fill out the necessary information | The record should be added successfully | The record is added successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Click on the user logs | N/A | A user log should be generated for the record creation | A user log is generated for the record creation | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Edit an existing record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | Valid inputs for all fields | The record should be updated successfully | The record is updated successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 4 | Click on the user logs | N/A | A user log should be generated for the record update | A user log is generated for the record update | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 5 | Archive an existing record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | Reason for archiving a record | The record should be moved to an archive | The record is moved to an archive | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 6 | Click on the user logs | N/A | A user log should be generated for the record archived | A user log is generated for the record archived | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 7 | Restore an archived record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | N/A | The archived record should be moved to restore | The archived record is restored | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT11 | | Test Case ID | | IT11.1 | |
| Test Case Description | | Verify user logs are generated when staff successfully change his/her password using the forgot password functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and no records exist | | Post Requisite | | User logs should be generated when staff successfully change his/her password | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Login using Staff account”. | N/A | The login form for the staff should be displayed | The login form for the staff is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Enter valid and invalid credentials 4 times | Enter a valid username and an invalid password | The error message should be displayed informing the user to contact the admin for a code. | The error message is displayed informing the user to contact the admin for a code. | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Click on “Login using Administrator account”. | N/A | The login form for the admin/super admin should be displayed | The login form for the admin/super admin is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 4 | Enter valid credentials | Enter a valid username and password | The user should be redirected to the homepage | The user is redirected to the homepage | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 5 | Click on “User List” | N/A | The user list should be displayed including the code of the user who attempted 3 times in logging in | The user list is displayed including the code of the user who attempted 3 times in logging in | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 6 | Click on logout | N/A | The user should be logged out and redirected to the login page | The user is logged out and redirected to the login page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 7 | Enter again the same valid and invalid credential 1 time | Enter a valid username and an invalid password | The user should be redirected to the Code Verification Page | The user is redirected to the Code Verification Page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 8 | Enter the code shown in the User List table | Enter code | The user should be redirected to the Change Password Page | The user is redirected to the Change Password Page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 9 | Enter valid password | Valid password | The user account password should be changed | The user account password is changed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 10 | Click on “Login using Administrator account”. | N/A | The login form for the admin/super admin should be displayed | The login form for the admin/super admin is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 11 | Enter valid credentials | Enter a valid username and password | The user should be redirected to the homepage | The user is redirected to the homepage | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 12 | Click on the user logs | N/A | A user log should be generated for the successful changing of the password | A user log is generated for the successful changing of the password | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT12 | | Test Case ID | | IT12.1 | |
| Test Case Description | | Verify user logs are generated when admin/super admin successfully changes his/her password using the forgot password functionality | | Test Priority | | High | |
| Prerequisite | | The device has an internet connection and user account records exist | | Post Requisite | | User logs should be generated when the admin/super admin successfully changes his/her password | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Login using Administrator account”. | N/A | The login form for the admin/super admin should be displayed | The login form for the admin/super admin is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Click on “Forgot Password” | N/A | The user should be redirected to a new page where the email address can be entered | The user is redirected to a new page where the email address can be entered | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Enter a valid email address that is registered in the user account and click the "Continue" button | Valid email address | The user should be redirected to a page where a user can enter the code that was sent to the user email or the admin/super admin accounts | The user is redirected to a page where a user can enter the code that was sent to the user's email or the admin/super admin accounts | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 4 | Enter a valid code and click the "submit" button | Valid code | The user should be redirected to a page where the user will enter his/her new password | The user is redirected to a page where the user will enter his/her new password | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 5 | Enter a new password and click the "change" button | New password | A message should appear relaying that the password has been changed | A message has appeared relaying that the password has been changed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 6 | Click on “Login using Staff account”. | N/A | The login form for the staff should be displayed | The login form for the staff is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 7 | Enter valid credentials | Enter a valid username and password | The user should be redirected to the homepage | The user is redirected to the homepage | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 8 | Click on the user logs | N/A | A user log should be generated for the successful changing of the password | A user log is generated for the successful changing of the password | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT13 | | Test Case ID | | IT13.1 | |
| Test Case Description | | Verify staff forgot password functionality and that user account records are properly linked | | Test Priority | | High | |
| Prerequisite | | The device has an internet connection and user account records exist | | Post Requisite | | A staff account password should be changed successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Login using Staff account”. | N/A | The login form for the staff should be displayed | The login form for the staff is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Enter valid and invalid credentials 4 times | Enter a valid username and an invalid password | The error message should be displayed informing the user to contact the admin for a code. | The error message is displayed informing the user to contact the admin for a code. | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Click on “Login using Administrator account”. | N/A | The login form for the admin/super admin should be displayed | The login form for the admin/super admin is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 4 | Enter valid credentials | Enter a valid username and password | The user should be redirected to the homepage | The user is redirected to the homepage | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 5 | Click on “User List” | N/A | The user list should be displayed including the code of the user who attempted 3 times in logging in | The user list is displayed including the code of the user who attempted 3 times in logging in | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 6 | Click on logout | N/A | The user should be logged out and redirected to the login page | The user is logged out and redirected to the login page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 7 | Enter again the same valid and invalid credential 1 time | Enter a valid username and an invalid password | The user should be redirected to the Code Verification Page | The user is redirected to the Code Verification Page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 8 | Enter the code shown in the User List table | Enter code | The user should be redirected to the Change Password Page | The user is redirected to the Change Password Page | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 9 | Enter valid password | Valid password | The user account password should be changed | The user account password is changed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT14 | | Test Case ID | | IT14.1 | |
| Test Case Description | | Verify admin/super admin forgot password functionality and user account records are properly linked | | Test Priority | | High | |
| Prerequisite | | The device has an internet connection and user account records exist | | Post Requisite | | An admin/super admin account password should be changed successfully | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on “Login using Administrator account”. | N/A | The login form for the admin/super admin should be displayed | The login form for the admin/super admin is displayed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Click on “Forgot Password” | N/A | The user should be redirected to a new page where the email address can be entered | The user is redirected to a new page where the email address can be entered | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Enter a valid email address that is registered in the user account and click the "Continue" button | Valid email address | The user should be redirected to a page where a user can enter the code that was sent to the user email or the admin/super admin accounts | The user is redirected to a page where a user can enter the code that was sent to the user's email or the admin/super admin accounts | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 4 | Enter a valid code and click the "submit" button | Valid code | The user should be redirected to a page where the user will enter his/her new password | The user is redirected to a page where the user will enter his/her new password | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 5 | Enter a new password and click the "change" button | New password | A message should appear relaying that the password has been changed | A message has appeared relaying that the password has been changed | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | IT15 | | Test Case ID | | IT15.1 | |
| Test Case Description | | Verify system backup and restore functionality | | Test Priority | | High | |
| Prerequisite | | The user is logged in and records exist | | Post Requisite | | System backup and restore should be completed without errors | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Perform a system backup | N/A | The backup file should be created successfully | The backup file is created successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 2 | Delete a record (User Account, Student Physical Examination, Student Consultation, Student Follow-up Consultation, Student Medical Certificate) | N/A | The record should be deleted successfully | The record is deleted successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |
| 3 | Restore the system from the backup file | N/A | The deleted record should be restored successfully | Deleted record is restored successfully | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

APPENDIX E

### **Test Cases for User Interface Testing**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT1 | | Test Case ID | | UIT1.1 | |
| Test Case Description | | User Interface Consistency | | Test Priority | | Medium | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Navigate to different pages | N/A | All pages should have consistent UI elements (colors, fonts, etc.) | All pages have consistent UI elements (colors, fonts, icons, etc.) | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT2 | | Test Case ID | | UIT2.1 | |
| Test Case Description | | Page Layout | | Test Priority | | High | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Navigate to different pages | N/A | All pages should have a consistent layout (header, main content, etc.) | All pages have a consistent layout (header, main content, etc.) | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT3 | | Test Case ID | | UIT3.1 | |
| Test Case Description | | Responsive Design | | Test Priority | | High | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Resize the browser window | N/A | The system layout should adjust to fit different monitor screen sizes | The system layout adjusts to fit different screen sizes | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT4 | | Test Case ID | | UIT4.1 | |
| Test Case Description | | Navigation Menu | | Test Priority | | Medium | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Click on navigation links | N/A | The system should navigate to the correct pages | The system navigates to the correct pages | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT5 | | Test Case ID | | UIT5.1 | |
| Test Case Description | | Font and Text Size | | Test Priority | | Medium | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Navigate to different pages | N/A | All pages should have consistent font sizes and be easily readable | All pages have consistent font sizes and are easily readable | Microsoft Edge, Brave, Google Chrome | Pass | N/A |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | | UIT6 | | Test Case ID | | UIT6.1 | |
| Test Case Description | | Button Visibility | | Test Priority | | Medium | |
| Prerequisite | | The system is installed and functional | | Post Requisite | | N/A | |
| Test Executions Steps: | | | | | | | |
| S.No | Action | Inputs | Expected Output | Actual Output | Test Browser | Test Results | Test Comments |
| 1 | Navigate to different pages | N/A | All buttons should be easily visible and clickable | All buttons are easily visible and clickable | Microsoft Edge, Brave, Google Chrome | Pass | N/A |