Developmnent of a Web-Based School Platform with an Integrated Online Research

Repository for Senior High School at Becuran National High School

A Capstone Project

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BACHELOR OF SCIENCE IN INFORMATION SYSTEM

By

Mark Glen P. Guevarra
Roy D. Juntilla
Llanyell R. Manalang

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APPROVAL SHEET

This Capstone Project entitled “Developmnent of a Web-Based School Platform with an Integrated Online Research Repository for Senior High School at Becuran National High School” proposed and submitted by Llanyell R. Manalang, Roy D. Juntilla, Mark Glen P. Guevarra in partial fulfillment of the requirements for the degree BACHELOR OF SCIENCE IN INFORMATION SYSTEM, has been examined and found in order and is hereby recommended for acceptance and approval for ORAL EXAMINATION.

CAPSTONE PROJECT PROPOSAL COMMITTEE

Jonilo C. Mababa, DIT
Panel Chair

Richmon L. Carabeo, DIT
Panel Member

Eugene S. Perez, MIT
Panel Member

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PANEL OF EXAMINERS

Passed by the PANEL OF EXAMINERS on ORAL EXAMINATION with a grade of _____ on _____.

Jonilo C. Mababa, DIT
Panel Chair

Richmon L. Carabeo, DIT
Panel Member

Eugene S. Perez, MIT
Panel Member

Anthony C. Rivera, MITc
Capstone Adviser

. . . . . .

Accepted and approved in partial fulfillment of the requirements for the Degree BACHELOR SCIENCE IN INFORMATION SYSTEM.

_____
Date

Fernand T. Layug, DIT
Dean

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CHAPTER I

INTRODUCTION

BACKGROUND OF THE STUDY

The researchers were inspired to create a system called Creation of an Online Research Outputs Repository for City College of Tagaytay, which can facilitate quicker and simpler finding and storing of research results. This system will assist the institution's users in managing research papers, and it will act as a resource to support the handling of research manuscript storage. Additionally, it seeks to offer convenient access in locating research works that will assist students in gaining relevant concepts that are helpful for them to construct a larger study..

In the continuous advancement of technology, educational institutions are encouraged to adopt innovative systems that improve the management of academic resources and school operations. Becuran National High School has identified the need to develop a centralized platform that will address the challenges encountered in handling research outputs and essential school information. At present, the absence of a systematic and accessible repository makes it difficult for both students and teachers to store and retrieve research documents efficiently. The traditional methods of managing research papers often lead to disorganization, limited accessibility, and the possible loss of important academic works. As a response, the development of a web-based school platform with an integrated online research repository has been proposed to provide an organized, secure, and accessible solution for the institution.

The proposed system aims to serve as a reliable tool that will support Senior High School students and faculty in the submission, storage, and retrieval of research outputs. Through this platform, users will have convenient access to previous studies that can serve as references for future academic projects and investigations. Additionally, the system is intended to assist teachers and school administrators by providing a streamlined process for monitoring and managing research submissions. This project also seeks to promote research engagement within the institution by preserving completed studies and encouraging knowledge sharing among students. Ultimately, the development of this system is expected to enhance the academic environment of Becuran National High School by fostering efficient research management and supporting educational excellence.

CONCEPTUAL FRAMEWORK

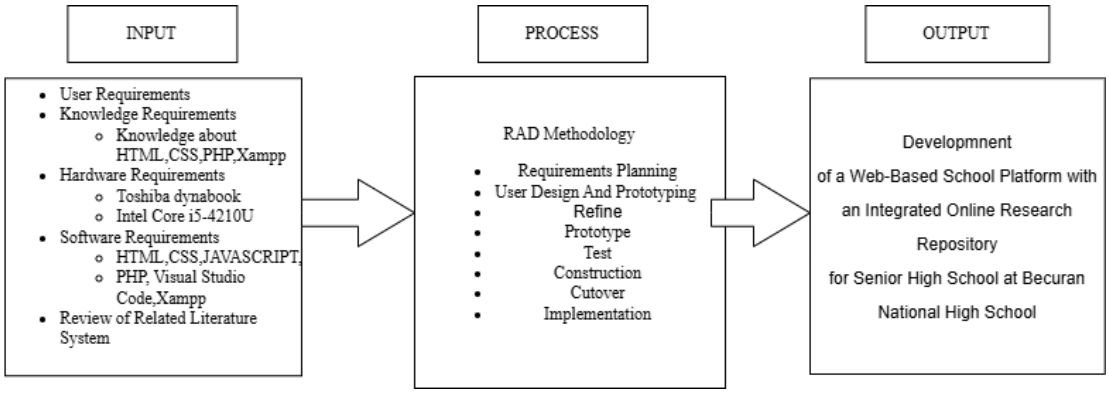

Figure 1: Conceptual Framework of Development of a Web-Based School Platform with an Integrated Online Research Repository for Senior High School at Becuran National High School

Figure 1 illustrates the Conceptual Framework, which consists of three key components: Input, Process, and Output.

Input:

The input phase consists of the necessary requirements for system development:

- **User Requirements:** Understanding the needs of students, teachers, and administrators regarding research submission, approval, and access.
- **Knowledge Requirements:** Familiarity with web development technologies, including HTML, CSS, JavaScript, PHP, and XAMPP.
- **Hardware Requirements:** A Toshiba Dynabook laptop with an Intel Core i5-4210U processor to support system development and testing.
- **Software Requirements:** Development tools such as PHP, Visual Studio Code, and XAMPP for programming, debugging, and database management.
- **Review of Related Literature:** Analysis of existing research repositories and school management systems to identify best practices and system improvements.

Process:

The Rapid Application Development (RAD) Methodology is applied to ensure an efficient and iterative development process. The phases include:

1. **Requirements Planning** – Gathering system requirements from stakeholders.
2. **User Design and Prototyping** – Creating an interactive prototype for early feedback and refinement.
3. **Refinement** – Enhancing the prototype based on feedback to improve system functionality.
4. **Prototype Development** – Constructing a working version of the system with essential features.

5. **Testing** – Conducting multiple test phases to ensure system reliability and security.
6. **Construction** – Implementing the full system with all validated features.
7. **Cutover and Implementation** – Deploying the system for real-world use, followed by training and maintenance.

Output:

The final output is a Web-Based School Platform with an Integrated Online Research Repository, designed to facilitate research submission, storage, and access for Senior High School students at Becuran National High Schoo**l**. This platform will enhance research management, improve collaboration, and provide a centralized and organized system for academic research.

STATEMENT OF THE PROBLEM

The primary purpose of this study is to develop a web-based school platform with an integrated online research repository for Senior High School at Becuran National High School. Specifically, the study aims to address the following problems:

SPECIFIC PROBLEM

1. How to design and develop a user-friendly web-based school portal that provides easy access to information, resources, and updates for senior high school students at Becuran National High School?

2. How to create a system using the features and functionalities discussed with the locale of the study, ensuring that it meets the needs of senior high school students, teachers, and researchers at Becuran National High School?

3. What are the benefits of the proposed system in terms of improving information accessibility, research management, and communication within the senior high school community at Becuran National High School

4. How to evaluate the system based on the ISO 25010 standards with the following criteria?

a. Functional Suitability
b. Performance Efficiency
c. Compatibility
d. Interaction Capability
e. Reliability
f. Security
g. Maintainability
h. Flexibility
i. Safety

OBJECTIVES OF THE STUDY

The main objective of this study is to design and develop a web-based school platform with an integrated online research repository for Senior High School at Becuran National High School.

The following are the study team's precise objectives:

1. To design and develop a user-friendly web-based school portal that provides easy access to academic resources, school updates, and important information for students.

2. Integrate system features and functionalities that meet the academic and research needs of Senior High School students, teachers, and researchers within the institution.

3. Evaluate and identify the benefits of the system in enhancing information accessibility, efficient research management, and improved communication within the school community.

4. To evaluate the system based on ISO 25010 with the following criteria:

   a. Functional Suitability
   b. Performance Efficiency
   c. Compatibility
   d. Interaction Capability
   e. Reliability
   f. Security
   g. Maintainability
   h. Flexibility
   i. Safety

SIGNIFICANCE OF THE STUDY

This study will modernize academic research management by developing a web-based platform that allows users to easily access and interact with the research repository. The Result of the Study will be great benefit to the following:

School Administrators- The system will help administrators efficiently manage and oversee the admission research repository, ensuring accessibility and organization.

Teachers and Students- They will be able to access research materials through the web platform, enhancing their academic studies and supporting learning.

Researchers - This system will serve as a valuable resource for researchers in gathering, storing, and retrieving relevant studies.

Future Researchers - The developed research repository will serve as a guide for future researchers, providing a foundation for expanding knowledge and improving academic research methodologies.

SCOPE AND DELIMITATION OF THE STUDY

This research centers on designing a school web-based platform with an online research repository integrated especially for Senior High School learners, instructors, and scholars at Becuran National High School. The system will ensure that it has features to enable users to upload, store, retrieve, and manage research outputs effectively. The research also includes the design of modules offering easy access to school announcements, academic materials, and crucial updates. In addition, the system is also meant to assist teachers in tracking research submissions and overseeing the process of research in the

Senior High School department. The system will be run using the school's current technological framework to make it accessible through internet-enabled devices like computers, tablets, and mobile phones.

One irremediable limitation is the inability to function perfectly, considering there is a stable internet connectivity requirement that may not be present in areas with poor network capabilities. The platform can only be accessed through web browsers, since it will not provide a standalone mobile application for offline use. The system supports the storage and retrieval of research information but does not include AI-powered automated analysis of research. The people using this system will have to do all kinds of organization and management of research submissions themselves, as this system has no automated tagging or research summary generation. Last but not least, the development and use of the platform will be limited by the resources available, which may compromise scopes for future enhancements and added features.

DEFINITION OF TERMS

1. **Web-Based Platform**– A software application that is accessed and operated through a web browser using an internet connection. In this study, it refers to the online system developed to manage school information, announcements, and research outputs.
2. **Online Research Repository–** A digital storage system where academic research documents, such as manuscripts and studies, are stored, organized, and made accessible to authorized users. It aims to provide easy retrieval and submission of research papers.

3. **User Interface (UI)**– The visual and interactive elements of a system that allow users to navigate, input data, and retrieve information. In this study, it pertains to the layout and design of the school platform to ensure ease of use for students and teachers.
4. **Information Dissemination**– The process of distributing or sharing important announcements, updates, and documents to a group of people. In this research, it involves posting school-related news and research materials on the web-based platform.
5. **Usability**– The degree to which the system can be used easily and efficiently by its intended users. This term in the study measures how simple and accessible the platform is for students, faculty, and researchers..
6. **System Evaluation–** A formal process of assessing the functionality, performance, and reliability of a system through testing and feedback. In this research, it includes collecting data from users to determine the system's effectiveness.
7. **Quantitative Research –** A research method focused on gathering numerical data and analyzing it statistically to draw conclusions. This study uses quantitative research to assess the satisfaction and experience of users with the system.
8. **Database Management–** A systematic way of storing, organizing, and managing large amounts of data in a structured format. For this study, it refers to the management of research files and school documents in the online repository.

9. **Stakeholders –** Individuals or groups who have an interest in the success of the system, such as students, teachers, researchers, and school administrators involved in using or managing the platform.

10. **System Performance Metrics–** Quantitative measures used to evaluate how well a system functions, including speed, accuracy, and reliability. These metrics help determine whether the platform meets technical and user requirements.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

INTRODUCTION

This chapter presents the related literature and studies following the specialists thorough a meticulous study. Any relevant studies or publications should be well understood in order to serve as a foundation and guidance for creating the system.

RELEVANCE OF THE DIFFERENT RELATED STUDIES

Institutional repositories are crucial research infrastructure for research-based universities, as stated by Okon et al. (2020). An appropriately sized institutional repository can boost the effect of research and raise an institution's profile through its academic outputs. Designing and creating a web-based digital repository for academic publications and materials in a postsecondary institution is the study's goal. In order to make study and research work less difficult and stressful for academic staff and students, this project aims to provide a long-term solution to the need for an efficient, dependable, and easily accessible system for storing and retrieving scholarly materials. This will allow them to easily carry out their daily activities, particularly when it comes to obtaining pertinent.

Based on (Chavan et al., 2022), the tremendous technological breakthroughs have led to a plethora of innovative projects. Every project inspection requires a great deal of work. It was noted during the inspection that a web platform was required in order to showcase the project ideas that students from different colleges had submitted. The constraints pertaining to the respondents are ascertained by evaluating the existing systems.

This study offers a platform to go beyond these limits and solve the shortcomings of the current system based on the survey.

In accordance with Ronquillo et al. (2023), the researchers were inspired to create a system called Creation of an Online Research Outputs Repository for City College of Tagaytay, which can facilitate quicker and simpler finding and storing results of research. This system will assist the institution's users in managing research papers, and it will act as a resource to support the guide.handling of research manuscript storage. Additionally, it seeks to offer convenient access in locating research works that will assist students in gaining relevant concepts that are helpful for them to construct a larger study.

In the study by (Tindoc Jr. et al., 2023), the conventional archiving approach is keeping research papers in filing cabinets and folders, which need a large, roomy space to hold the volume of research papers. This issue has persisted throughout all of the colleges on campus, and in comparison to a web-based archiving system, this approach uses a lot of space and has a short archival capacity. That is the purpose of the research archiving system project called ASSET. The system is made to record more quickly through file uploads and in a more structured way.

Research is one of the essential duties required in an academic institution, as stated by Itiola et al. (2021). As a result, it is anticipated that higher education institutions will place a high value on identifying, safeguarding, and advancing the intellectual property of their faculty, staff, and students. production; It will play a vital role in conserving and spreading the institution's research effort as well as in the dissemination of academic resources. As a result, an institutional repository for scholarly research was created for the Federal University of Technology Akure's (FUTA) Department of Computer Science.

The Research Information System is the most crucial system for higher education institutions, as stated by Jeyapragash et al. (2019). It helps obtain faculty profiles, including affiliations, publications, research projects, awards and honors, education details, and more. This helps the department and institution become more visible in order to obtain funding and fellowship opportunities. This essay talks about Bharathidasan University's implementation of a research information system.

As stated by Caseres et al. (2020), having access to numerous article directories and institutional repositories can frequently be the nightmare of academics and students. Lack of an online tool to find and access digitally saved,high quality The prevalent problem that could result in an inadvertent repetition of previous research findings on campus. Thus, a compilation of citations and academic works by researchers in Bukidnon State University is required. The objective of this study was to create an online application named Research portal that provides current information on the topic and research articles for quick references scholar at the university.

Over time, this program has developed into a complete record management system to monitor state of the active research projects.

A study by Rosales et al. (2023), two well-known problems with institutional research are replication and a lack of departmental cooperation. Without access to consolidated research data, organizations are establishing innovation silos across offices and departments. It avoids the institution's research objective and stymies innovation. The goal of the project is to create a digital repository for Adamson University's scholarly publications in order to make it easier for the institution to store and share research material. The five primary scopes of the research are User Management, Research Repository, Data

Visualization, User Interface Development, and System Testing. The researchers divided the respondents into three categories: research staff, academic staff, and students.

As stated by Irhansyah et al. (2023), information technology can be used in the field of education to support other scholars, facilitate government operations, and provide information about an institution's profile. Information technology that can preserve student thesis data and be utilized as a search engine for theses published inside the Faculty of Science and Technology is currently lacking at UIN North Sumatra, particularly in the Faculty of Science and Technology. Electronically archiving thesis manuscripts will also facilitate the tracking of each student's and lecturer's progress in thesis preparation.

Based on Li and Mostafa (2023), the Research Management Centre (RMC) of UTHM oversees and improves all of the university's research cultures and initiatives. The Scientific Data Repository (SDR), a web-based scientific data repository, was created with the intention of offering a platform for managing and archiving research data. The technology enables researchers to request or donate research data, and it also enables RMC to manage the data. The C# programming language and the prototyping approach were used in the development of this system.

As per Okon et al. (2023), this paper presents a case study of the Journal of Research and Innovations in Engineering (JORIE) and discusses the construction of a web application for journal management. The iterative-incremental model was used to construct the program. Additionally, the backend was created using the model-view-controller (MVC) design, which divides the system into three primary logical components: view, controller, and model. The web application was built on the three tier architecture. The

journal management dashboard (administration backend) and the journal website are the two sub-systems that make up the system's functional decomposition.

As stated by (Cofino et al., 2022), the study's goal was to establish a research repository system that would serve as a databank for the thesis materials of the graduate and undergraduate students who offer a dependable, effective, and safe repository; create a user pleasant design, and demonstrate that the created design conforms with the system specifications and requirements. To ensure the development was successful, the researchers employed a model that would respect the project. It adhered to the Software Development Life Cycle's Agile model process. (SDLC) in order to validate and confirm the application

(Muslim, 2023) states that higher education is an organization with multiple departments and work units that collaborate to implement the Tri Dharma principles—research, learning, and service—and that can handle massive volumes of data in both traditional and digital formats. Since College X in Pagar Alam, South Sumatra does not yet have a repository—as it is known digitally—a feasibility study that may eventually serve as a forum for recommendations must be conducted. A feasibility study must be conducted prior to the repository's creation in order to ensure proper development. This feasibility study, which incorporates survey technique research, is initially conducted through the management life cycle.

The goal of this study is to create a web-based repository system for the graduating projects of Jamhuriya University of Science & Technology in Somalia, as stated by SHURIE (2021). The created project might make it easier for the parties concerned to organize their activities with the least amount of work and manage their graduation projects

through a well-designed website. Through a mailing system (which is integrated into our website to guarantee that everyone can get in touch with one another), the website may make it easier for student supervisors to monitor their students' progress and provide them with comments.

Research Data Repositories are the repository for research data, according to Ansari et al. (2024). It is a way to preserve research data, which is essentially the result of information gathered by earlier researchers and scientific research. It can be gathered both online and offline, and research data is gathered using a variety of instruments and techniques. A research data repository is a system used for the long-term storage and retrieval of research data. There are a number of technologies available for designing and creating a research data repository that will help with data discovery, preservation, access, and curation

UPN "Veteran" Jawa Timur has been granted a predicate of "Klaster Mandiri" (Self-Governing Cluster) in terms of research since 2019 according to Afandi et al. (2022), which is based on an evaluation of the university's research performance from 2016 to 2018. As the number of research funds that LPPM may manage internally increases, the status directly affects that number. LPPM, however, has difficulties in overseeing its operations concerning the execution of independent grants. Any organization, including LPPM, has been obliged to create a substitute for the limited face-to-face interaction due to the COVID-19 pandemic, particularly in the previous two years. Therefore, a lot of tasks that were previously completed offline, including submitting research proposals or progress reports,had to be completed online.

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TECHNOLOGY RELATED TO THE PROJECT

APPDYNAMICS

App dynamics monitoring tool is effective for businesses with numerous applications that rely solely on cloud-based technology. The tool monitors applications in real time and keeps a record of performance information for future reference. It includes a tool for diagnostics that monitors the application's performance and displays user experience data. AppDynamics' services may help businesses make data-driven business decisions.

PINGDOM

Pingdom is a server, application, and website performance and availability monitoring solution available globally. This application assists the user in giving customers the greatest online experience possible with all-inclusive monitoring platform. The majority of the organization uses Pingdom since it periodically pings websites to see if they are reachable from the Internet. Pingdom's core functions include: uptime monitoring: checking the global availability of the website. Notifying: notifying when the service under observation is unavailable.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

This chapter covers the research methods that should be used to collect, analyze, and interpret data. Along with this chapter is the descriptions of the respondents and the equipment used to gather the data.

RESEARCH DESIGN

It was a quantitative approach that assessed the efficiency and reliability of the Development of a Web-Based School Platform with an Integrated Online Research Repository for Senior High School at Becuran National High School through surveys and system performance metrics. Additionally, the researchers conducted an evaluation of the existing information dissemination and research management processes used by the school to determine their technological viability and relevance in the development of the Web-based platform

RESEARCH PARTICIPANTS

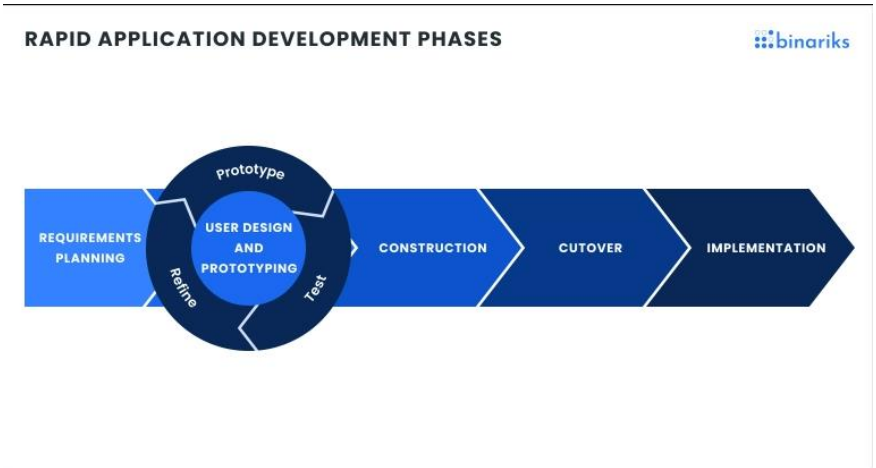
The participants of this study will include Senior High School Students, Research Teacher, and School Administrators at Becuran National High School who are directly involved in research and information dissemination.

RESEARCH LOCALE

This study will be conducted at Becuran National High School, where the Development of a Web-Based School Platform with an Integrated Online Research Repository will be developed and implemented. The school will be the primary place of

study as it has senior high school students and faculty members who engage in academic research. This document will focus on the practices of research management and dissemination currently in place at the institution to identify areas the proposed system will address. The digital infrastructure of the school would also be taken into consideration; that is, internet accessibility at the institution should be in place so the proposed web-based platform would be ensured of feasibility.

SOFTWARE DEVELOPMENT METHODOLOGY



The researchers developed and created the proposed system using a variety of development tools, including PHP, JavaScript, HTML, CSS, and MySQL, along with other related technologies. The study employs the Rapid Application Development (RAD) methodology, which emphasizes iterative prototyping, user feedback, and rapid development cycles. This approach allows for continuous refinement and enhancement of the system based on stakeholder input, ensuring a more flexible and efficient development process. By following this model, the researchers aim to design a stable, robust, and user-friendly web-based system for Becuran National High School.

Requirements Planning - In this phase, developers, stakeholders, and end-users collaborate to define the system's objectives, scope, and requirements. Unlike the Waterfall model, RAD focuses on gathering broad system requirements quickly and refining them throughout the development process.

User Design and Prototyping - In this iterative phase, prototypes are built, tested, and refined based on user feedback. This ensures that the system aligns with user expectations before full-scale development begins.

Construction Phase– nce the design is finalized, developers rapidly build the functional system based on the refined prototypes. Since most issues were addressed earlier, development is faster and more efficient**.**

Cutover & Implementation Phase– The final phase involves system deployment, user training, and final testing before full-scale implementation.

.**Respondents of the Study**

The respondent of this study Senior High School Students, Research Teacher, and School Administrators.

THE RESEARCH INSTRUMENT

The use of survey questionnaires and system evaluation checklists were research instruments in the study to gather relevant data concerning the Web-Based School Website with an Online Research Repository for Senior High School at Becuran National High School. These instruments intended to assess the usability, functionality, and overall effectiveness of the developed system.

Online Research - These are mostly publications in some of the academic online repositories, digital learning platforms, and web-based school management systems. These papers are brought together to guide the design of a system to increase research accessibility, collections management, and ease of use for students, teachers, and administrators. Further, best practices from previous studies are incorporated into the system to allow an efficient and user-friendly platform for research submission, storage, and retrieval.

Interview - The researchers visited Becuran National High School and engaged in discussions with faculty and staff to gain a thorough understanding of the current research management process. The interaction provided a chance for assessing now prevailing challenges in research storage and accessibility while revealing the intended School Website with Online Research Repository for Senior High School so that insights and feedback could inform its development.

Library Method – The researchers referred to a previous Santa Rita College of Pampanga capstone project as a source in documenting how the Web-Based School Website with an Online Research Repository for Senior High School at Becuran National High School evolved. This source gave good background information on documentation of systems, management of a research repository, and development of a web-based platform. Upon analyzing its architecture and methods, the researchers had it so the proposed system practices best in its design, performance, and execution.

DATA GATHERING PROCEDURES

The data for this study was obtained through online research and interviews. The researchers explored the internet for published papers and publications that could serve as a reference during the system's development. Additionally, the researchers obtained permission from the School administrator to conduct the study by interviewing the selected locals and submitting a formal letter from the Dean of CCS.

SYSTEM DEVELOPMENT TOOLS

The system development tools are the various tools and approaches that the researchers used to develop the proposed system to further evaluate and analyze the needs of the system.

Visual Studio Code - is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to fuller featured IDEs, such as Visual Studio IDE.

H**TML -** (Hypertext Markup Language) code that structures the content of a web page. It allows for the creation and arrangement of sections, paragraphs, and links of the system by using HTML elements such as tags and attributes, which are the core components of a website.

CSS - is a language for formatting webpages. CSS allows to change the appearance and layout of a webpage. can also specify how a website's view changes across multiple screens, such as computers, tablets, and mobile devices.

JAVASCRIPT - a scripting language that enables you to create dynamically updating content, control multimedia, animate images, and pretty much everything else.

PHP - is a free and open-source server-side programming language that may be used to create applications, websites, CRMs, and other things. It is a popular general-purpose programming language that can be embedded into HTML.

MYSQL) - is an open-source relational database management system (RDBMS) that allows users to store, manage, and retrieve structured data efficiently

XAMPP– is an acronym that stands for Cross-Platform, Apache, MySQL, PHP, and Perl. It's a free, open-source platform that lets developers test their code locally on their computers.

Data Flow Diagram (DFD) - is a type of diagram chart that depicts how data flows from Var locations to a specific processor in general. In other cases, DFD can show how different organizational departments collaborate; it adds clarity and coherence.

User Flow Diagram – Methodology is used to define or analyze new processes, standardize or redesign current processes, and identify ways to enhance processes through the elimination of unnecessary steps, bottlenecks, and other problems.