

# Liceo de Cagayan University Online Archives Information System: A Model

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## ABSTRACT

This study is to develop an Online Archives Information System (OAIS) for locating the library collections, and the student credentials. System allows for easy uploading of images and quick search for references on the web. The water model was used in developing the system. The Unified Modeling Language (UML) was used to document the system flow, while the Hyper Text Markup Language (HTML) tag and PHP: Hypertext Preprocessor (PHP) was used to code the machine instruction. The completed system enables the users to upload easily images and allows the system administrator to monitor the resources accessed by the users. Hence, this system is recommended for utilization to enhance services through Web-based application.

**Keywords:** Archives, model, collection, hypertext markup language (HTML), graphical user interface (GUI)

## INTRODUCTION

The Internet advantage and the application of information technology have encouraged faculty members to create an online archives environment. Nowadays, most societies place importance on preserving artifacts of their culture and heritage. Without such artifacts, civilization has no memory and no mechanism to learn from its successes and failures. Culture of today produces more and more artifacts in digital form. The archives mission is to help preserve those artifacts and create an Internet library for researchers, historians, and scholars (Internet Archive).

These days, preliminary information about the archive community in general and the holdings and collections of specific archives can conveniently be researched via the Internet; quality and density of the information available online is also rising (Austrian State Archive, 2008). The museum archives collection is available to researchers at all levels through its galleries, libraries and study rooms, as well as online museum libraries and archives (British Museum, 2015).

The explosion of computer and telecommunications technology in the closing decades of the twentieth century and the expectation of researchers for immediate, efficient information retrieval have presented both a challenge and a fortuitous opportunity for archivists. Because of limited time and money, researchers want to examine original source materials in the most productive, efficient, and effective way possible before visiting an archival repository. As a result, archivists must be more innovative in publicizing their institution's collections to fulfill their traditional mission of providing access to unique resources. The Internet offers archivists a powerful tool to reach their audiences in ways never before possible. Increasingly repositories are designing projects to mount their finding aids on the World Wide Web (Altman & Nemmers, 2001).

In the global scene, people will now be able to search the 'British Newspaper Archive', which is made up of four million pages containing articles from local and regional papers going back to 1700, for details about members of their family who may have been eminent in their local communities hundreds of years ago. The launch of the archive is the first time people will be able to digitally access and search through millions of newspaper articles from the comfort of their homes. Until now, people have had to travel to the British Library newspaper depository in Colindale, North London, to access the entire collection of 200 local and regional newspapers (The Telegraph, 2015). Also, the collections held by the National Archives can be searched using its online catalogue. Entrance to

The National Archives is free. Anybody aged 14 or over can access the original documents at the Kew site, after producing two acceptable proofs of identity and being issued a free reader's ticket. The reading room has terminals from which documents can be ordered up from secure storage areas by their reference number. The reference number is composed of three sections: the department code of up to four letters, such as WO for the War Office; a series or class number, for the "subcategory" or collection that the document comes from; and an individual document number (The National Archives United Kingdom, 2015).

Moreover, the Archives Records Information Access System (ARIAS) is designed to facilitate citizen access to archival records created by all branches and levels of Pennsylvania State Government. The original paper records were microfilmed. From this microfilm, the images were digitized for presentation on the Web. The content, sequence, and image quality among the records series will vary depending on how they were originally written/typed and subsequently filmed. In some instances, certain information may be illegible. Efforts were made to optimize the records for readability and presentation purposes for the Web. Currently, about 1,500,000 records are accessible in ARIAS, and the State Archives plans to make additional records available in the near future (Pennsylvania State Archives, 2015). Furthermore, the Online Archival Search Information System (OASIS) provides centralized access to a growing number of finding aids for archival and manuscript collections at Harvard. These finding aids are detailed descriptions of collections that contain a wide variety of materials, including letters, diaries, photographs, drawings, printed material, and objects. Some contain links to digital images, text, and audio files (Harvard College Library, 2015).

Tapping the worldwide online information, Liceo de Cagayan University has designed the OASIS to upload digital files in the web server to access easily its resources.

Online archives consist of historical records that have been selected for permanent preservation. The OASIS provides centralized access for archival collections of Liceo de Cagayan University Library and Registrar's Office. The entries of OASIS are student credentials and library collections. The proposed model hopes to serve as a prototype for online archives for other departments in Liceo de Cagayan University and other universities as well.

## FRAMEWORK

The framework used in the study is the Input-Process-Output (IPO) Model. The IPO model is a diagram that identifies the inputs, outputs, and required processing tasks to transform inputs into outputs. The inputs represent the flow of data and images into the process from the outside. The processing step includes all task required to effect a transformation of the inputs. The outputs are the data and images flowing out of the transformation process.

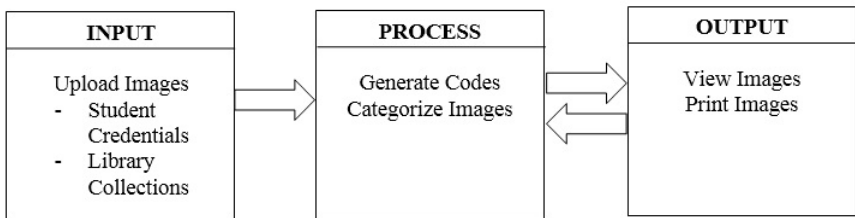


Figure 1. IPO Model.

The module generates an image code and these images will be categorized as public or private for viewing purposes.

## OBJECTIVE OF THE STUDY

The study sought to develop online archive information for the users to locate information easily and speedily.

## METHODOLOGY

### Research Design

The development of the Online Archives Information System followed the following phases: (1) requirements analysis and definition, (2) system and software design, (3) implementation and unit testing, (4) integration and system testing, and (5) operation and maintenance. This approach is called the 'waterfall' model (Sommerville 1997).

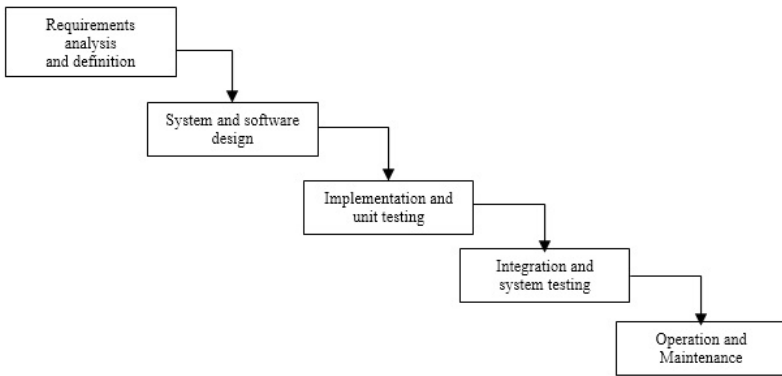


Figure 2. Waterfall Model.

Phases of the Online Archives Information System Development:

1. Requirements analysis and definition. The OAIS services, constraints, and goals were established through consultation with system users.
2. System and software design. The software architecture of the OAIS was designed and transformed into executable program.
3. Implementation and unit testing. Program development of the OAIS involved unit testing and verification.
4. Integration and system testing. The OAIS program module was integrated and tested to ensure that the software requirements were met.
5. Operation and maintenance. The OAIS courseware was installed and put into practical use. This stage also involved correcting errors that were not discovered at the earlier stages.

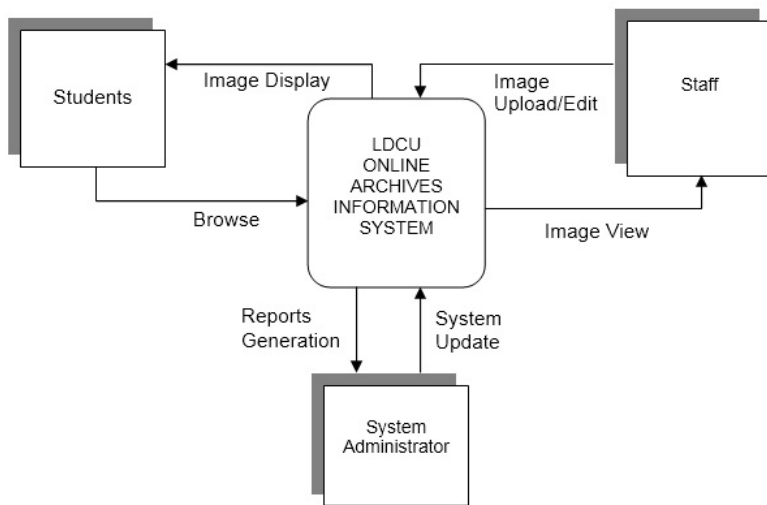


Figure 3. System Flow Diagram.

Figure 3 is a macro view of the entire system with three entities directly interacting with the system, namely students, staff, and administrator. The students must register before utilizing the system. They must completely fill out the registration form for the system to keep track of the record during system validation. After the registration, the students can access the system by typing the ID number and password.

The system administrator will register the staff for them to access the program for system validation. Given the access, the staff can upload images to the system.

### Research Instrument

The requirements of the proposed system were analyzed using the Unified Modeling Language (UML). The model of the data and data relationships were presented using the Entity Relationship Diagram (E-RD).

The system was developed in HTML format with PHP: Hypertext Preprocessor (PHP) Script for the language program. The Notepad++ was used for the editor, the My-SQL for the back-end, and the Apache for the web site. The system used the Internet Browser, and the program was linked to XAMPP Control Panel Application.

### Data Gathering Procedure

A thorough review of the library system and an interview with the staff of the Registrar's Office was conducted. Consultation with domain experts and review of related studies and literature published in the Internet were also done.

## RESULTS AND DISCUSSION

This chapter presents the system design patterned after the Unified Modeling Language. The Use Case Description Tables depict the functions of each diagram.

Use Case Diagram. It describes the system from the user's point of view. It also describes the various functionalities of the system and how the user is going to interact with those functionalities.

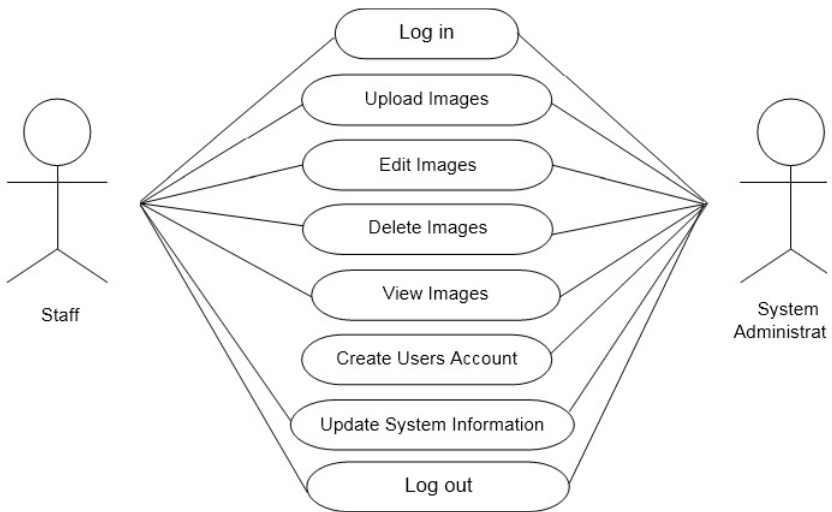


Figure 4. Use Case Diagram for Staff and System Administrator

The staff and system administrator can invoke the system by clicking the log-in button. They can enter their ID numbers and passwords, and then the system verifies and validates the log-in ID number and password. The staff assigned to the department is allowed to upload, edit, delete, and view images; uploading, editing, and deleting other departments' images are restricted by the system. The system administrator can view all department images, while the staffs are restricted from viewing private images of other departments except of their own

department's pictures due to system security. Moreover, the system administrator can upload, edit, delete, create user's account, update system information, and monitor user's transaction.

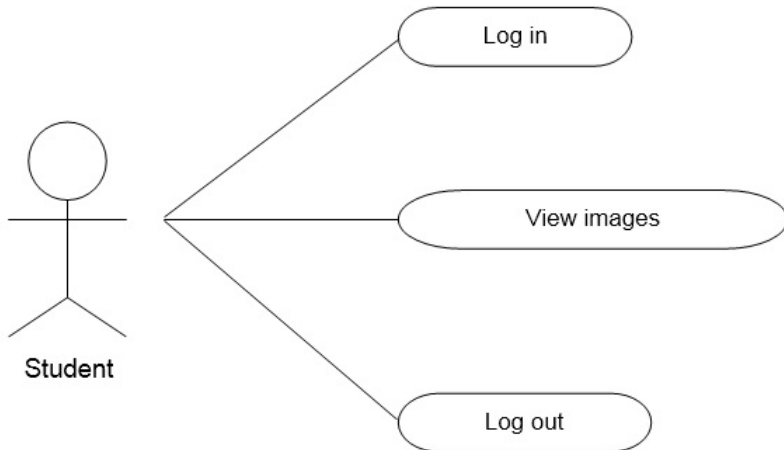


Figure 5. Use Case Diagram for Student.

Students can invoke the system by clicking the log-in button. They can enter their ID number and password, and then the system verifies and validates the log-in ID number and password. Students can view public images, but are restricted from viewing private images for security reasons.

**Use Case Description.** It is a simple synopsis or abstract of the use case diagram. It explains the goals, plot, and theme of the use case (<http://books.google.com.ph>).



Table 1. Use Case for Log-in

Use case name	Log-in
Actor	Admin/Staff/Student
Description	This use case is used by the actor to access the system.
Normal Flow	1) The user invokes the use case by clicking the “Log-in” button. 2) The user enters log-in name and password. 3) The system verifies and validates the log-in name and password. 4.) Use case instance terminates.
Alternate Flow	If log-in name or password is invalid, user has to re-enter a valid user name or password.
Precondition	User must be registered.
Post-condition	User can access the system or just exit the website.
Assumption	User is on the Web site.

Table 2. Use Case for Upload Images

Use case name	Edit Images
Actor	Admin/Staff
Description	User can edit images.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User edits the images. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be registered.
Post-condition	User finishes editing the images or just exits the website.
Assumption	User is on the Web site.

Table 3. Use Case for edit Images

Use case name	Edit Images
Actor	Admin/Staff
Description	User can edit images.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User edits the images. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be registered.
Post-condition	User finishes editing the images or just exits the website.
Assumption	User is on the Web site.

Table 4. Use Case for delete Images

Use case name	Edit Images
Actor	Admin/Staff
Description	User can edit images.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User edits the images. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be registered.
Post-condition	User finishes editing the images or just exits the website.
Assumption	User is on the Web site.

Table 5. Use Case for View Images

Use case name	View Images
Actor	Admin/Staff/Student
Description	User can view images.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User types the subject description to view the resources. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be registered.
Post-condition	User successfully views the subject resources or just exits the website.
Assumption	User is on the Web site.

Table 6. Use Case for Create User's Account

Use case name	Create User's Account
Actor	Admin
Description	Admin can register new account.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User can add new account. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be a university staff.
Post-condition	User finishes the adding of the new account or just exits the website.
Assumption	User is on the Web site.

Table 7. Use Case for Update System Information

Use case name	Update System Information
Actor	Admin
Description	User can update the system contents.
Normal Flow	1) The user invokes the use case by just entering the site. 2) User types the contents to be updated. 3) User exits the site. 4) Use case instance terminates.
Alternate Flow	The user can select other options or click the home button.
Precondition	User must be registered.
Post-condition	User finishes typing the contents to be updated or just exits the website.
Assumption	User is on the Web site.

Table 8. Use Case for Log-out

Use case name	Log-out
Actor	Admin/Staff/Student
Description	This use case is for the registered user to log out.
Normal Flow	1) The customer invokes the use case by clicking the “log-out” button. 2) Use case terminates.
Alternate Flow	None
Precondition	User is logged in.
Post-condition	User is logged out.
Assumption	User is on the Web site.

Sequence Diagram. It shows the sequence of method and interactions between classes. It also shows the interaction of objects through message passing that reflects the sequence of events. Every use case has one sequence diagram (<http://www.fresherswisdom.wisdomplug.com/interview-questions/6-uml/6-interview-questions-on-uml-use-case-diagrams-class-diagram-and-sequence-diagram.html>).

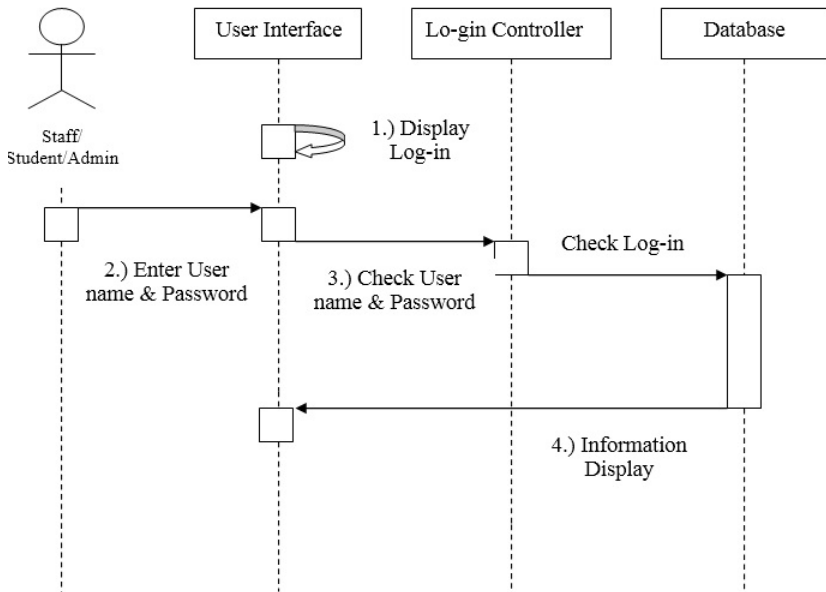


Figure 6. Sequence Diagram for Log-in.

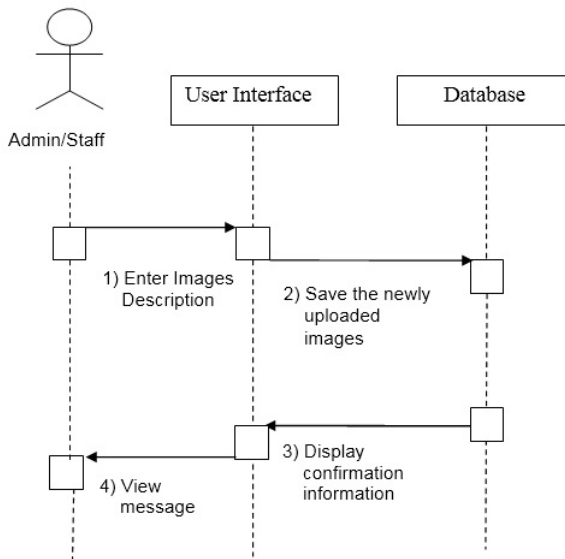


Figure 7. Sequence Diagram for Upload Images.

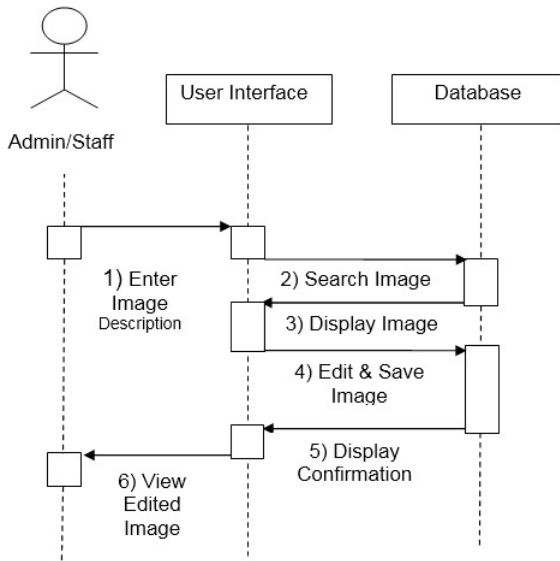


Figure 8. Sequence Diagram for Edit Images.

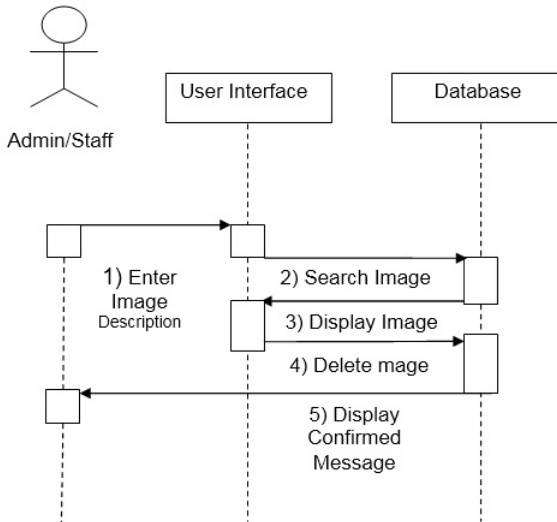


Figure 9. Sequence Diagram for Delete Images.

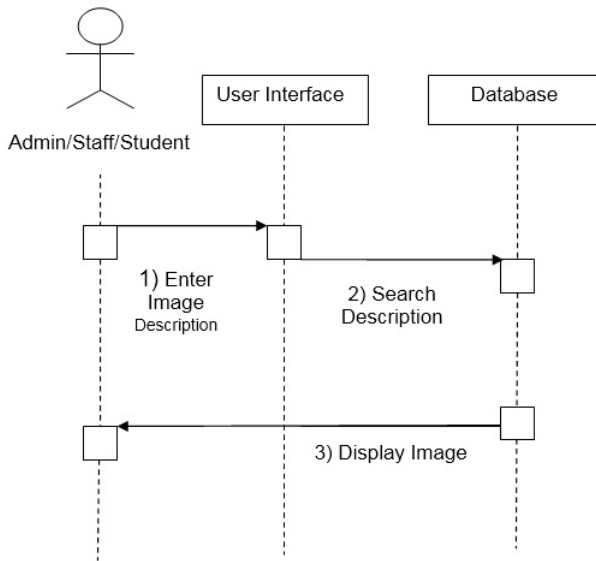


Figure 10. Sequence Diagram for View Images.

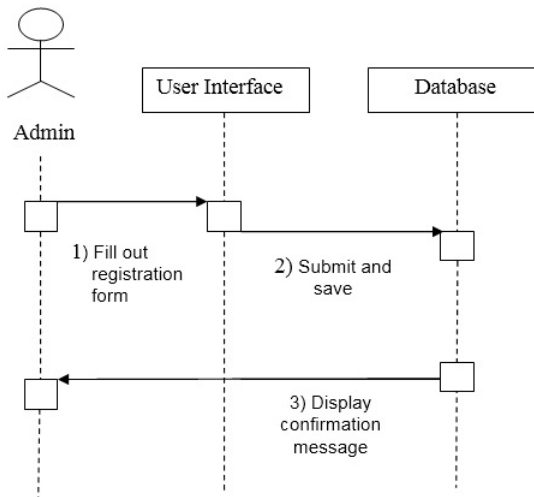


Figure 11. Sequence Diagram for Create User's Account.

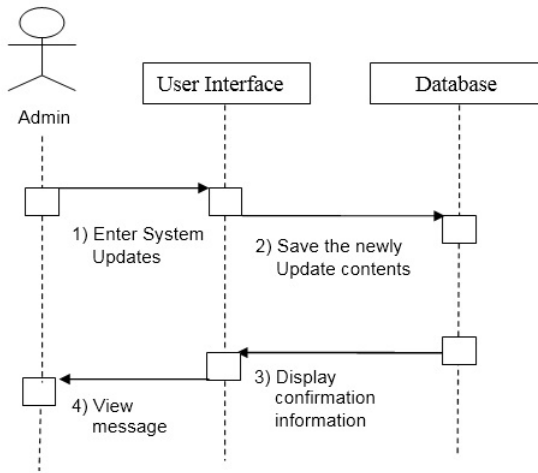


Figure 12. Sequence Diagram for Update System Information.

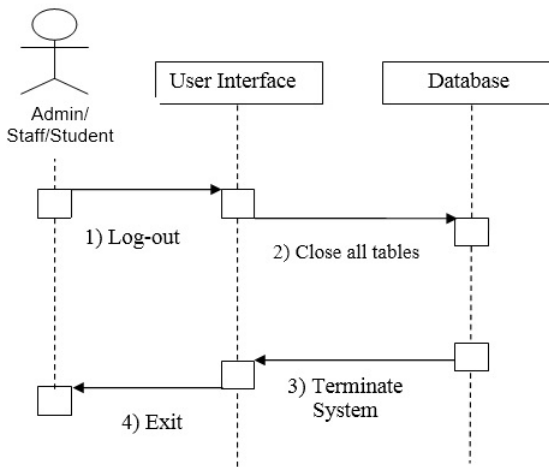


Figure 13. Sequence Diagram for Log-out.

Activity Diagram. It describes the sequence of activities in a system ([http://docs.kde.org/development/en\\_GB/kdesdk/umbrello/uml-elements.html](http://docs.kde.org/development/en_GB/kdesdk/umbrello/uml-elements.html)).

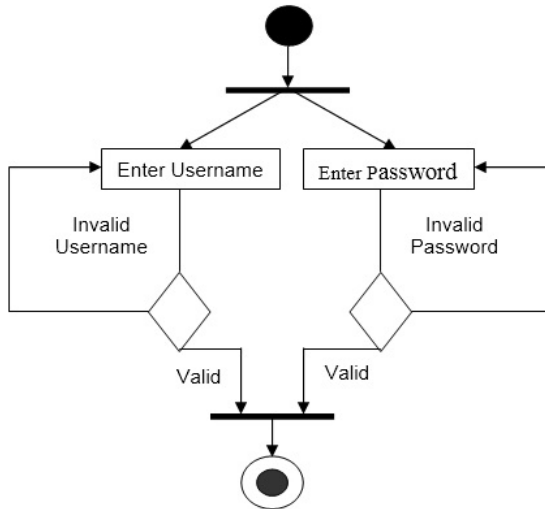


Figure 14. Activity Diagram for Log-in.

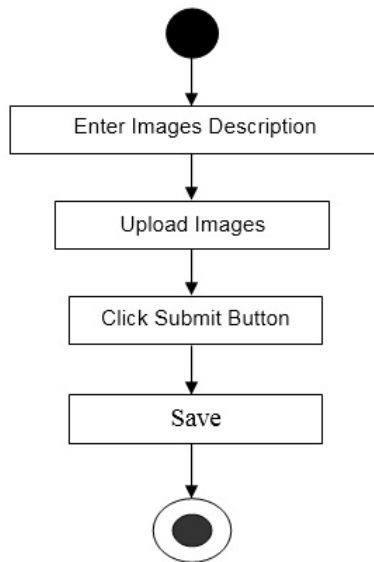


Figure 15. Activity Diagram for Upload Images.



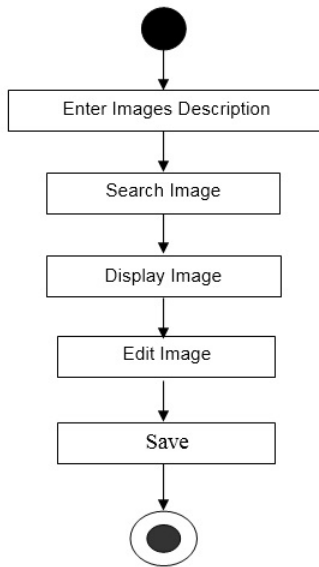


Figure 16. Activity Diagram for Edit Images.

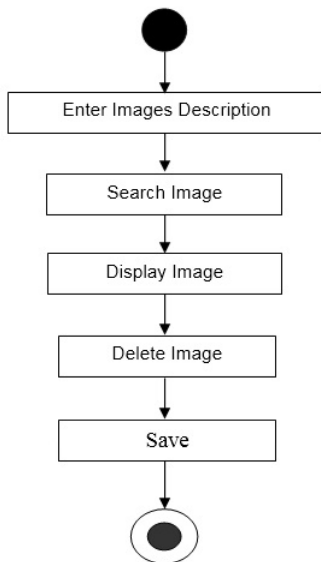


Figure 17. Activity Diagram for Delete Images.

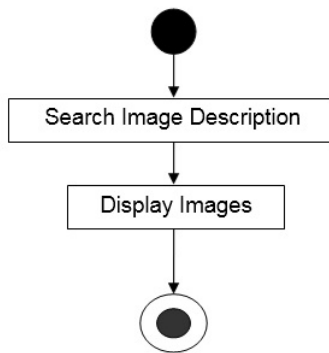


Figure 18. Activity Diagram for View Images.

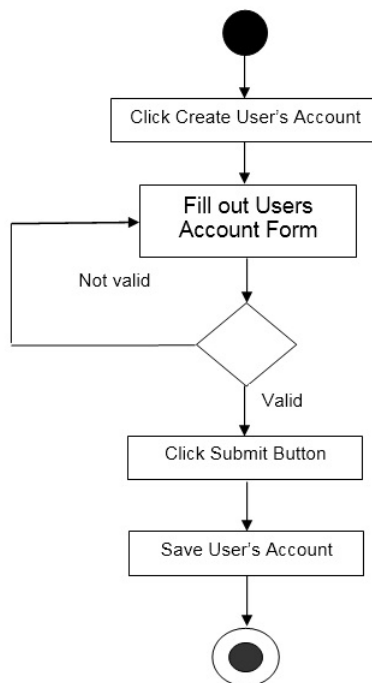


Figure 19. Activity Diagram for Create User's Account.

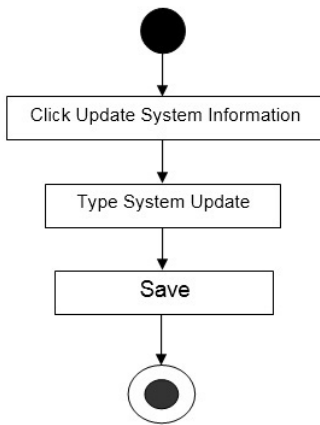


Figure 20. Activity Diagram for Update System Information.

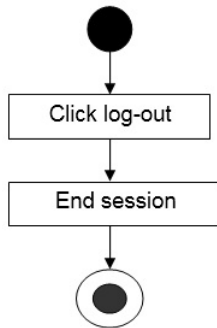


Figure 21. Activity Diagram for Log-out.





Figure 23. Main Page.

The Main Page is designed to accommodate users. Users must open first a browser and type the URL address.

The figure above serves as the point of entry into the system. The main page consists of the following inputs:

ID No. This textbox requires users to enter their ID No. that will be matched with the registration table for confirmation.

Password. This textbox requires the users to enter their password that will be matched with the registration table for confirmation.

Department and Category. Users can immediately search by clicking the department name and the category drop-down list.

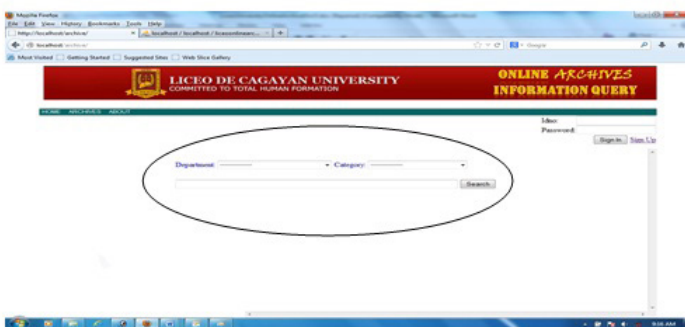


Figure 24. Public View Image Form.

The Public View Image Form Allows the Public to View Images Described by the Department as Public Type Images.

The screenshot shows a web browser window displaying the 'SIGN-UP' form. At the top, there is a red banner with the university's name and logo. Below the banner, there are navigation links: HOME, ARCHIVES, ABOUT. The main content area contains a form with a 'Department' dropdown menu, a 'Category' dropdown menu, and a search input field with a 'Search' button. To the right of the search field, there are two buttons: 'Sign In' and 'Sign Up', with the 'Sign Up' button circled in red. The browser's address bar shows 'http://localhost/archives/'.

Figure 25. Sign-Up Form.

The Sign-up Form allows students to register in the web.

The screenshot shows the 'Administrator Account Form' titled 'User's Registration'. The form is displayed in a window with a title bar. On the left side of the window, there is a sidebar menu with the following items: 'Users' (Add User, Add Student, Registration Approval), 'Transactions' (Upload Files, Library, PG, Register), 'View Files' (Library, PG, Register), and 'Maintenance' (Add Course, Add Department). The main form area contains the following fields: 'Idno' (1111), 'Last name' (a), 'First name' (a), 'MI' (a), 'Department' (College of IT), 'User Type' (1), 'Contact No' (a), 'Address' (a), and 'Email' (aposte@yahoo.com). There are 'Submit' and 'Reset' buttons at the bottom of the form. The browser's address bar shows 'http://localhost/archives/'.

Figure 26. Administrator Account Form.

This window allows the system administrator to choose what processes to perform. The window has the following contents:

Add User. Clicking this link will open the add user form.

Add Student. Clicking this link will open the add student form.

Registration Approval. Clicking this link will open the registration approval form.

Transactions Upload Files. Clicking the department links will open the upload files form.

Transactions View Files. Clicking the department links will open the view files form.

Maintenance Add Course. Clicking this link will open the maintenance add course form.

Maintenance Add Department. Clicking this link will open the maintenance add department form.

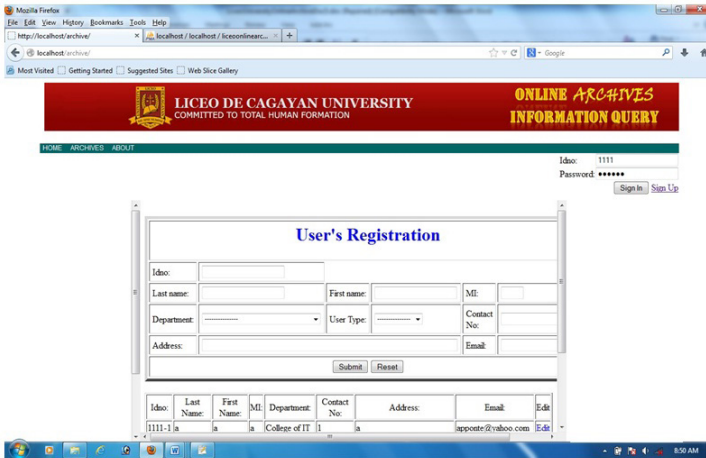


Figure 27. User's Registration.

The User's Registration Form allows the system administrator to register the user in order to access the system.

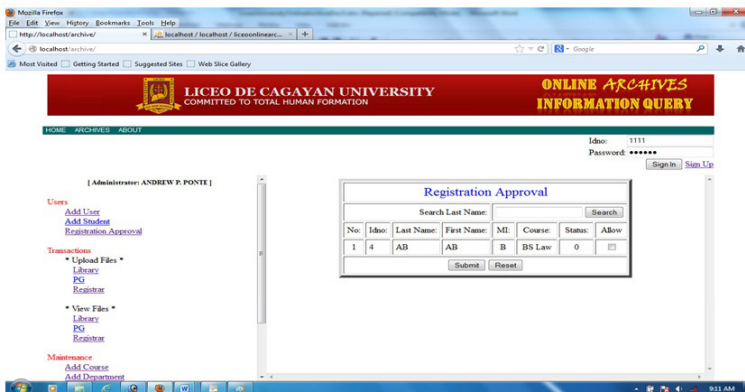


Figure 28. Registration Approval.

The Registration Approval Form allows the system administrator to give students access to the system.

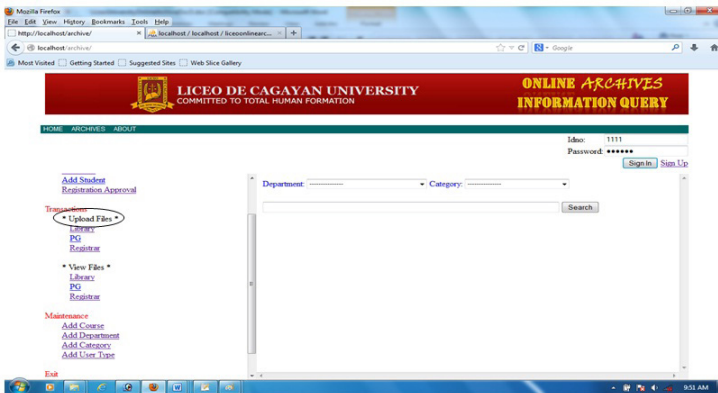


Figure 29. Admin Upload Image.

In this window, the administrator can upload department's images.

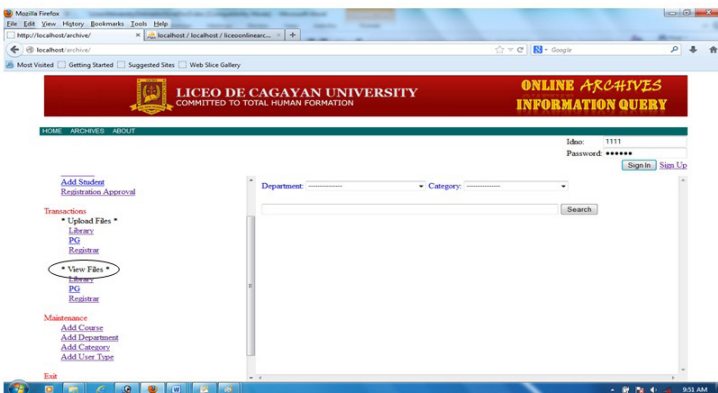


Figure 30. Admin View Image.

In this window, the administrator can view department's images.



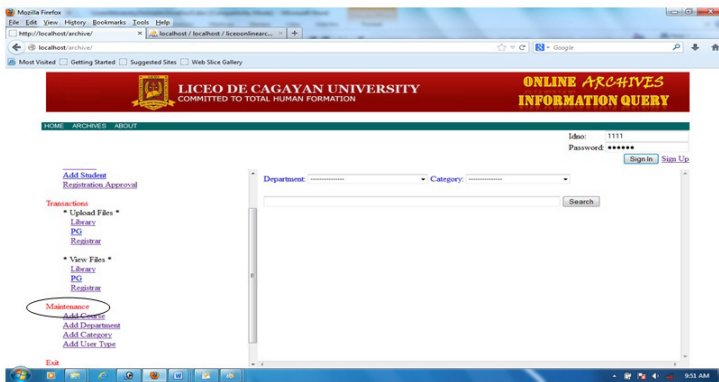


Figure 31. Admin Maintenance.

In this window, the administrator can add course, department, category, and user types.

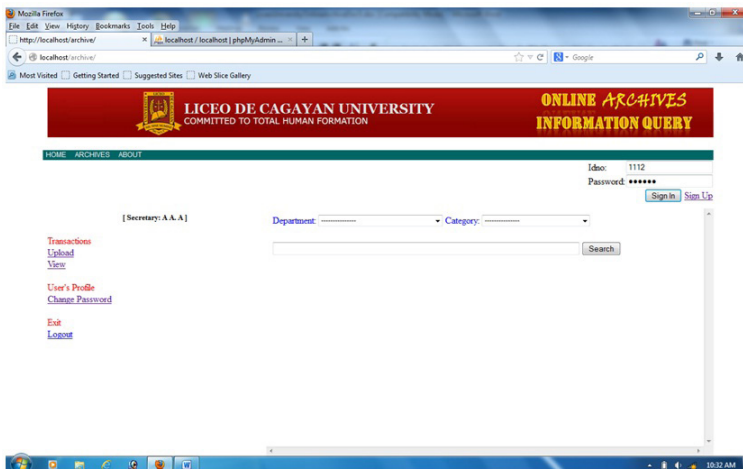


Figure 32. User Account Form.

This window allows users to choose what processes to perform. The window has the following contents:

Upload Image. Clicking this link will open the upload image form.

View Image. Clicking this link will open the view image form.

Change Password. Clicking this link will open the change password form.



Figure 33. User Upload Image Form.

In this window, users can search images for uploading.



Figure 34. User View Image Form.

In this window, users can search images for viewing.

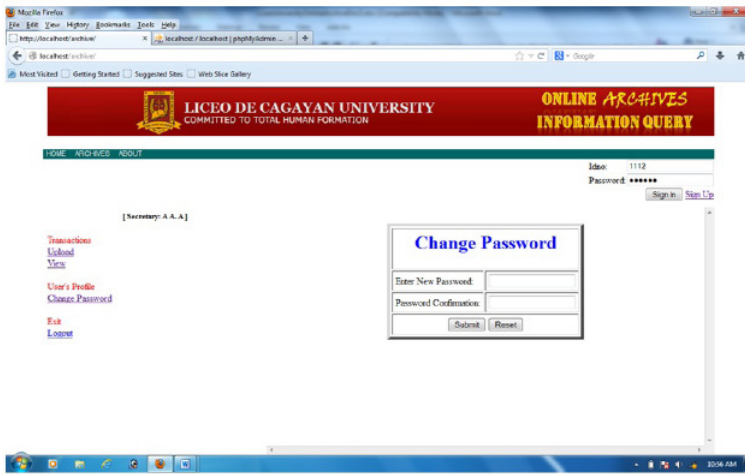


Figure 35. User Change Password Form.

In this window, users can change their password.

## CONCLUSION

The completed online archives information system enables users to upload images easily and to search quickly student credentials. Hence, the system is recommended for utilization to enhance university services through Web-based applications.

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