JU Mind Splash

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ABSTRACT

Today, technology has become a convenient means for all disciplines and in various fields, the most important of which is the digital transformation in printed materials that have become available digitally through the Internet, which facilitate the process of reading and accessing content and the speed of its spread and availability among people.

Hence, the project's idea is to build a specialized academic website in Arabic and English languages for the students and academics of the University of Jordan. The site allows users to upload their documented articles electronically to all users and make them available for reading. The site will also give users an advantage in evaluating articles according to classification from 1 to 5. In this way, the site mainly aims to accelerate the digital transformation of academic articles among students and academics at the University of Jordan and increase the spread of articles among users to stimulate reading and learning more about science.

ACKNOWLEDGMENTS

After thanking God for everything, we would like to thank our graduation supervisor (Dr. Huda Karajeh, Dr. Bassam Hammo), who allowed us to do this project (JU Mind Splash) to guide us to do a lot of research, to explain our information, and knowledge.

Also, we would like to thank our parents and friends who helped us a lot in finalizing this project within a limited period.

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LIST OF SYMBOLS AND ABBREVIATIONS

CPU	Central Processing Unit
RAM	Random Access Memory
JD	Jordanian Dinar
HR	Hours
ROI	Return on Investment
SDLC	System Development Life Cycle
NFR	Non-Functional Requirement
DFD	Data Flow Diagram
GUI	Graphical User Interfaces
JU	Jordan University

2. Chapter One: Introduction

1.1 Preamble:

Information Technology has revolutionized human life and has made lives easier by the various kinds of applications. In the light of the rapid changes in IT, there are many tools, technologies, and systems that have been produced and invented. In the modern world, time is short, so if there are many processes taking place simultaneously within a place, there is a need for integration of all the processes; the creation of a paperless environment also ensures efficient task management. Nowadays all the businesses are shifting to a computer-based system.

Hence, the project's idea is to build a specialized academic website in Arabic and English languages for the students and academics of the University of Jordan. The site allows users to upload their documented articles electronically to all users and make them available for reading. The site will also give users an advantage in evaluating articles according to classification from 1 to 5. In this way, the site mainly aims to accelerate the digital transformation of academic articles among students and academics at the University of Jordan and increase the spread of articles among users to stimulate reading and learning more about science.

1.2 Project Motivation:

Our motivation in establishing this project comes through our desire to create an academic, technological basket to support the e-learning process and digital transformation in our university, through which it is possible to reach the rules of the

smart university, which is completely dependent on the principle of digital transformation and that everything becomes electronic and behind the screens.

1.3 Problem Statement:

The problem lies in the idea of the project through the lack of a special electronic platform only in academic articles, as academic articles are considered a part of the library at the university. Still, the office is the authority in publishing and not publishing electronic articles, and it is also possible that the library will have difficulty receiving the article by hand. Then, digitally transfer it and then publish it in terms of the availability of the publisher's place, time, and presence factor. According to what has been noted, it is limited to academics only and is not available for students to upload their academic articles.

1.4 Project Aim and Objectives:

The site mainly aims to accelerate the digital transformation of academic articles among students and academics at the University of Jordan and increase the spread of articles among users to stimulate reading and learning more about science.

1.5 Project Scope:

The scope of our project is to build an online portal as a web application for sharing academic articles between students and academics inside the university of Jordan using an attractive and well design web application.

1.6 Project Software and Hardware Requirements:

- Software requirement:

Table (1): Software requirements for JU Mind Splash.

Software	Requirement
Operating system	Windows 8.1 or higher operating systems
Browser	Microsoft Edge, Firefo, Safari, and Google Chrome.
Development Tools	Notepad ++
SQL Server	Apache Server 1.7.1 or Higher included MySQL

- Hardware requirement:

Table (2): Hardware requirements for JU Mind Splash.

Hardware	Requirement
Computer	Core i5 - 1480 MHz Pentium minimum, V - 1 GHz or higher recommended
CPU	Intel Core 3 Duo E7300
Memory (RAM)	8 GB
Hard disk	500 GB

1.7 Project Limitations:

The determinants of the project we have first in terms of verification in all the information and articles that users will upload to verify them and check them before publishing. This will require an effort by the university administration or the university library concerned with this topic. Also, the availability of internet service is an essential and mandatory condition to use the site And deal with it.

1.8 Project Expected Output:

We expect from our project to achieve its aims and provide a powerful solution for online articles to accelerate the digital transformation of academic articles among students and academics at the University of Jordan and increase the spread of articles among users to stimulate reading and learning more about science.

1.9 Project Schedule:

Project management is planning, organizing, securing, and managing resources to achieve specific goals. The following table displays the project management:

Table (3): Project Schedule Management in developing JU Mind Splash.

Task	Description	Start time	End Time	Duration	Dependency
T1	Planning	02/28/21	03/03/21	4 Days	
T2	Information Gathering	03/04/21	03/10/21	5 Days	T1
T3	Analysis	03/11/21	03/23/21	9 Days	T2
T4	Design	03/24/21	04/18/21	18 Days	T3
T5	Documentation	02/28/21	05/31/21	67 Days	T1, T2, T3, T4
T6	Submission	06/01/21	06/01/21	1 Day	T5

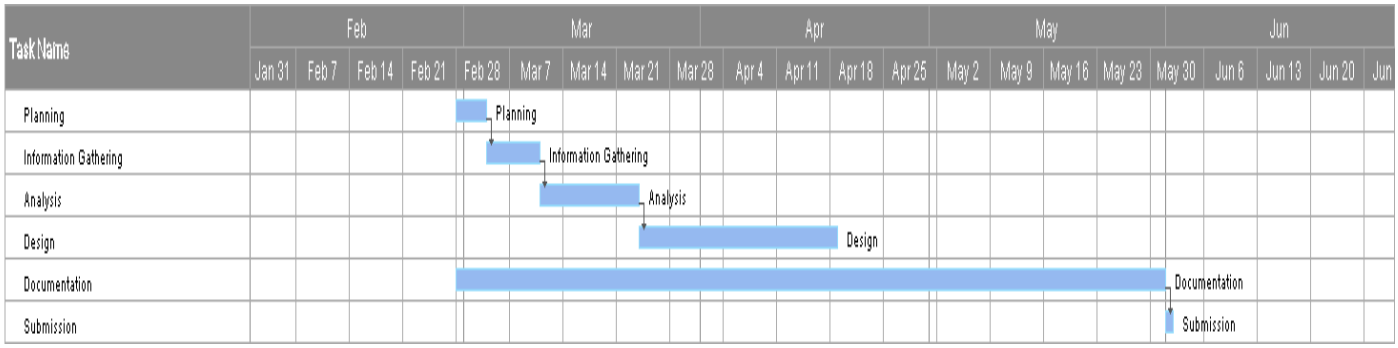

Figure (1): Gant Chart for JU Mind Splash.

1.10 Report Outline:

Chapter one shows a preamble in section 1.1; the project motivation is elaborated in Section 1.2, in additional the problem statement is stated in Section 1.3, Section 1.4, list the project aim and objectives, whereas the project scope is identified in section 1.5, Section 1.6 provide the project software and hardware requirement and Section 1.7 highlights the project limitation; furthermore, project expected output is addressed in Section 1.8, whereas the project is scheduled in Section 1.9, the report outline in finally present in Section 1.10

Chapter two show an introduction in Section 2.1; the existing system is elaborated in Section 2.2; also, the overall problems of the existing system are stated in Section 2.3, Section 2.4, overall solution approach, whereas the summary is identified in Section 2.5.

Chapter three shows an introduction in Section 3.1; requirements elicitation techniques are elaborated in Section 3.2; also, the targeted users are stated in Section 3.3, Section 3.4, Functional requirements definition and functional requirement specification are identified in Section 3.5, Section 3.6 highlights the non-functional requirements; furthermore, the summary output is addressed in Section 3.8.

Chapter four an introduction in Section 4.1, Context Diagram elaborated in Section 4.2, the Data Flow Diagram (DFD) in Section 4.3; Section 4.4 provide the Entity-Relationship Diagram; also, the UML, Sequence Diagram is stated in Section 4.5, Section 4.6 include UML Sequence Diagram, Section 4.7 provides UML Class Diagram, furthermore summary output in addressed in Section 4.8.

2. Chapter Two: Related Existing Systems

2.1 Introduction:

We will compare our project with different websites and applications with similar functionalities, if there are, or discuss the current scenario for our idea, and show how our project adds more functionalities into an already existing idea, which will improve the overall experience for the user.

2.2 Existing Systems:

Google Scholar: Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across various publishing formats and disciplines. Released in beta in November 2004, the Google Scholar index includes most peer-reviewed online academic journals and books, conference papers, theses and dissertations, preprints, abstracts, technical reports, and other scholarly literature, including court opinions and patents.

Techlearning.com: Tech & Learning’s award-winning publications, websites, e-newsletters, and virtual and in-person events provide factual and evaluative information on trends, products, and strategies to education leaders who purchase technology products in their districts and schools.

Newsela.com: Newsela's platform takes real and new content from trusted providers and turns it into learning materials that meet most State standards; the site provides an online eLearning solution supporting online articles to share and publish online.

2.3 Problem Statement:

Based on the process of research and analysis in the previous systems and from the nature of the idea they have that they agree with the idea of the project we have, but we found a lack of the evaluation process for academic articles and also the nature of the articles are available in general and for the whole world and are not particularly specialized, such as the idea of the project we have as it is at the level of the University of Jordan only.

2.4 Overall Solution Approach:

The solution lies like our project idea, which provides an effective electronic platform for disseminating electronic articles between students and academics, to be uploaded by students and academics themselves, with the opportunity for users to evaluate the article and take feedback on it.

2.5 Summary:

This chapter describes the existing systems briefly; it also describes the problem statement inside this existing process in general and the approach solution about them inside our project.

3 Chapter Three: System Requirements Engineering and Analysis

3.1 Introduction:

This chapter includes the system requirements and system analysis with a full description of the functionality of the system, including the definition and the specification for each requirement.

3.2 Feasibility Study:

- **Technical Feasibility:**

  - The system is developing as online e-services as web application online tool opening through internet browsers that supported by Web features, and this system could run in any time or any place if internet connection is available.

  - Programming Language: PHP, JavaScript, HTML, CSS, jQuery, and MySQL for database implementation.

- Hardware: Any technical device includes an internet browser, can open this application, and internet access.

- **Operational Feasibility:**
  - Websites and web applications are familiar to wide users, no need for too much training on it, it is easy to use.
  - Only the administrator of the system can access the database and modify the data inside it.

- **Economic Feasibility:**
  - **Development Cost:**
    - **Personal Cost:**

Table (4): Personal Costs.

Employee	Cost per hour	Hours	Total cost per hour
1 System Analyst	25 JOD	23 Hours	575 JOD
1 System Administrator	17 JOD	31 Hours	527 JOD
2 Programmer	16 JOD	129 Hours	2064 JOD
1 GUI designer	10 JOD	25 Hours	250 JOD
1 Database Specialist	10 JOD	15 Hours	150 JOD
Total			3566 JOD

- **New Hardware's and Software's:**

Table (5): New Hardware's and Software's.

Hardware & Software	Cost
1 Computers	710 JOD
1 DBMS Software	350 JOD
1 Development Server	640 JOD
Total	1700 JOD

- **Development Cost** = 3566 + 1700 = 5266 JOD - (For Development Year).

- **Operating Cost:**
  - **Employees:**

    2 Programmers (129 Hours each 16 JOD /Hour) = 2064 JOD.

    1 System Administrator (1000 Hours each 6 JOD /Hour) = 6000 JOD.

    Total= 8064 JOD.

  - **Expenses:**

    1 Maintenance agreement for server (450 JOD).

    1 Maintenance agreement for DBMS Software (350 JOD).

    Total= 800 JOD.

- **Operating Cost** = 8064 + 800 = 8864 JOD - (For First Operating Year).

- **Benefits:**
  - **Tangible Benefits:** Benefits that measure in money and with certainty that resulted from information forms.

Table (6): Tangible Benefits.

TANGIBLE BENEFITS WORKSHEET: Year 1 – 5
1. Cost reduction or avoidance communication gap in the old process 2,850 JOD
2. Error reduction 2,300 JOD
3. Increased flexibility 2,720 JOD
4. Increased speed of activity 2,300 JOD
5. Improvement in management planning or control 1,150 JOD
Total Tangible Benefits = 11320 JOD

  - **Intangible Benefits:** Benefits that cannot easily measure in money and with certainty that resulted from information forms.

- Payback Analysis:

Table (7): Payback Analysis.

Cash flow	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Cost	(5266)	0	0	0	0	0
Operating Cost	0	(8864)	(9864)	(10864)	(11864)	(12864)
Benefits	0	11320	12320	13320	14320	15320
Discount Rate (10%)	1	0.9091	0.8264	0.7513	0.6830	0.6209
Time Adjusted Cost	(5266)	(8058)	(8152)	(8162)	(8103)	(7987)
Time Adjusted Benefits	0	10291	10181	10007	9781	9515
Cumulative Time Adjusted Cost	(5266)	(13324)	(21476)	(29638)	(37741)	(45728)
Cumulative Time Adjusted Benefits	0	10291	20472	30479	40260	48247
Cumulative Time Adjusted (Cost& Benefits)	(5266)	(3033)	(1004)	841	2519	2519

  - Payback Year = The Third Year (Year 3).
  - Lifetime ROI (Return on Investment) = (48247 – 45728) / 45728 = 5%,

    (Estimated Lifetime Benefits - Estimated Lifetime Cost) / Estimated Lifetime Cost = 5%.
  - Annual ROI = Lifetime ROI / Lifetime of The System = 0.08 = 8%

- Net Present Value = Cumulative Benefits - Cumulative Cost = 48247 – 45728 = 2519

3.3 Requirements Elicitation Techniques:

Good requirements start with good sources. Finding those quality sources is an important task. After you have identified these sources and techniques that could use to gather requirements.

We used the following techniques:

- **Interview Users:**

  The goal of interviewing users is to learn about everything that might influence how the users might use what you are creating. Good interviewing is a skill we develop with practice. The great myth is that we need to be good talkers. Conducting a good interview is about shutting up. And this could be hard, especially when we are enthusiastic about the topic.

  Face-to-face contact with users through individual interviewing is the primary source of requirements and an important way we gather and validate their requirements. Remember that it is not the only possible technique and that we can conduct interviews in many ways.

- **Send Questionnaires:**

This technique has the advantage of providing a lot of information for statistical analysis. However, the questions must be well designed to be clear and avoid so-called "leading questions," which bias the responses. If face-to-face meetings are possible, they are always preferable because they provide a better means of uncovering the problem behind the problem. Sometimes, though, face-to-face meetings with stakeholders are not feasible. In those situations, consider using questionnaires. Send a set of questions, possibly with multiple-choice responses, the relevant stakeholders, and ask them to complete it and return it to us. Success tips: Keep it short and give them a deadline.

- **Study existing systems:**

The starting point for many projects is often a similar or an existing system. Sometimes, comparable products and systems contain working versions of good ideas for solving user problems. We can save the time lost in reinventing the wheel by looking at systems already on the market, whether they are systems installed at the user's site or products made by rival organizations.

- **Software Development Life Cycle:**

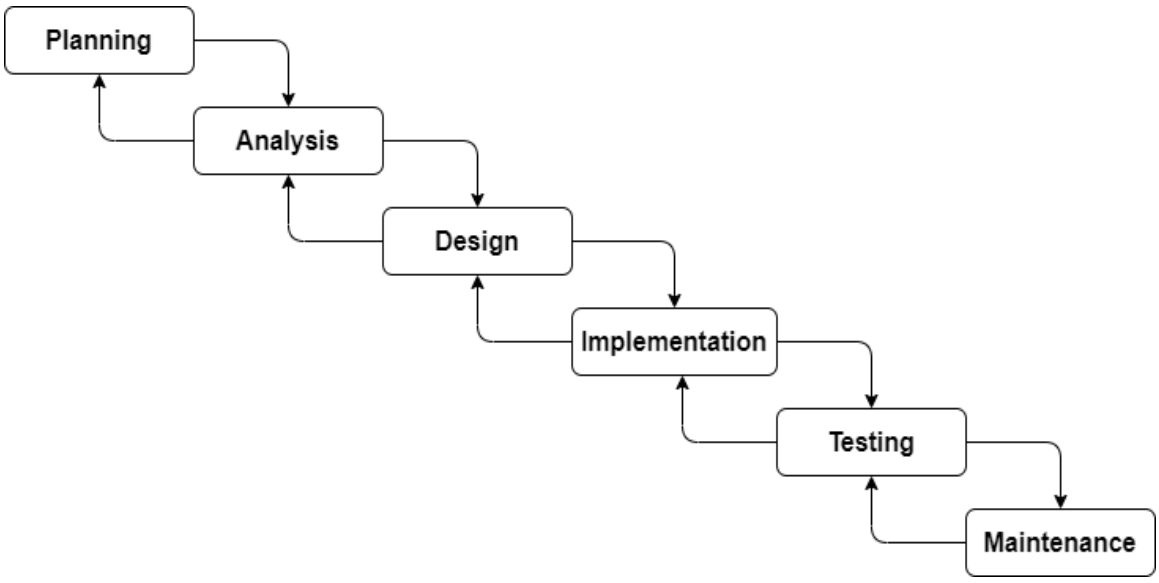

Figure (2): Agile SDLC.

- Project Initiation and Planning: In this section, we define project feasibility, identify the project, and identify its scope, and we discuss it with our supervisors to make sure that we choose a good idea to work on it.

- Project Analysis: In this phase, we will understand system needs and requirements, then we structure these requirements; we mean providing a description for system activities and processes, also we make a full feasibility study about the whole project, then define the functionality of the system.

- Project Design: The main phase activities are to identify Database relations, transfer these relations to ER-Diagram that show all overall

system relations, then transform ER-Diagram to physical Tables; after that, we will design system Forms and Reports.

- Implementation: This phase includes Coding, installations, and documentation completion of the system. Then we start to implement the design of the system and connect it with the functionality code.
- Testing: This system will be tested with real data to check about every function and how it works as a live online test during this phase.
- Maintenance: This is the final phase of the SDLC to check the Information System if it is systematically repaired and improved.

3.4 Targeted Users:

All students and instructors in Jordan University.

3.5 Functional Requirements Definition:

- **Administrator Section:**

3.5.1 **Login:** The administrator can access the system by special username and password.

3.5.2 **Logout:** The administrator can log out from the system by sending a request to end the current session.

3.5.3 **Categories Management:** The administrator will manage the categories table, including the following functions (Add, Edit, Delete and Display).

3.5.4 **News & Events Management:** The administrator will manage news & events table including the following functions (Add, Edit, Delete and Display).

3.5.5 **Users Management:** The administrator will manage users table including the following functions (Edit, Delete and Display).

3.5.6 **Articles Management:** The administrator will manage articles table including the following functions (Edit, Delete and Display).

- **Users Section:**

3.5.7 **Register:** Users will register inside the website based on user type, students, or instructors.

3.5.8 **Login:** User can access the system by special username and password.

3.5.9 **Logout:** User can log out from the system by sending a request to end the current session.

3.5.10 **Articles Management:** User will manage articles table including the following functions (Add, Edit, Delete and Display).

3.6 Functional Requirements Specification:

- **Administrator Section:**

3.6.1 Login: The administrator will access the administration section through the admin login area after entering the username and the password for that admin. This shall be the basis for determining the class privilege corresponding with the assigned admin username and password. The login should be validated before access to the system is approved.

3.6.2 Logout: The administrator can log out from the system by a press on log out button to destroy the current session.

3.6.3 Categories Management: The administrator can manage the categories table after success login to the administration area by active all management functions (Add, Edit, Delete and Display the table list).

3.6.4 Events & News Management: The administrator can manage events & news tables after success login to the administration area by active all management functions (Add, Edit, Delete and Display the table list).

3.6.5 Users Management: The administrator can manage the users table after success login to the administration area by active all management functions (Edit, Delete, and Display the table list).

3.6.6 Articles Management: The administrator can manage the articles table after success login to the administration area by activating all management functions (Edit, Delete and Display the table list).

- **Staff Section:**

3.6.7 Register: The user will make registration process after entering all the needed information and identify user type; if he/she students or instructors.

3.6.8 Login: The user will access the staff user section through the user login area after entering the username and password. This shall be the basis for determining the class privilege corresponding with the assigned user username and password. The login should be validating before access to the system is approved.

3.6.9 Logout: The user can log out from the system by a press on log out button to destroy the current session.

3.6.10 Articles Management: The user can manage the articles table after success login to the user area by active all management functions (Add, Edit, Delete and Display the table list).

3.7 Non-Functional Requirements:

Table (8): Non-Functional Requirements.

Requirement #	Title	Description
NFR1	Security	Our web application is fully secure by a username and password for the administrator to ensure all the control features only with the admin. Also, each user inside the system has an encryption password using the MD5 algorithm.
NFR2	Performance	The web application should run fast with no propagation to provide the best service for users.
NFR3	Reliability	The web application should be as reliable as possible since we have critical information about users and articles.
NFR4	Ease of Use	The web application has a friendly interface that the different users can use.
NFR5	Availability	The web application will be available for all users through a web application and using web browsers, and this web application will be available for users anywhere and anytime through internet service once they need it**.**
NFR6	Flexibility	If web application management intends to increase or extend the web application's functionality after it is developed, that should be planned from the beginning; it influences choices made during the design, development, testing, and deployment of the web application.

		So far, our web application is an open-source system that web application management can customize the functionality of the web application as they need.

3.8 Summary:

Finally, based on the previous titles, this chapter defines the SDLC module that we worked on it and included our system requirements and its analysis with a full description of the functionality of the project, including the definition and the specification for each requirement; also, this chapter includes the non-functional requirements that support our project.

4. Chapter Four: System Design

4.1 Introduction:

This chapter includes manly important figures that describe our system process; it will include context diagram, data flow diagram (DFD), entity relation diagram (ERD), use cases diagrams, sequences diagrams, class diagrams.

4.2 Context Level:

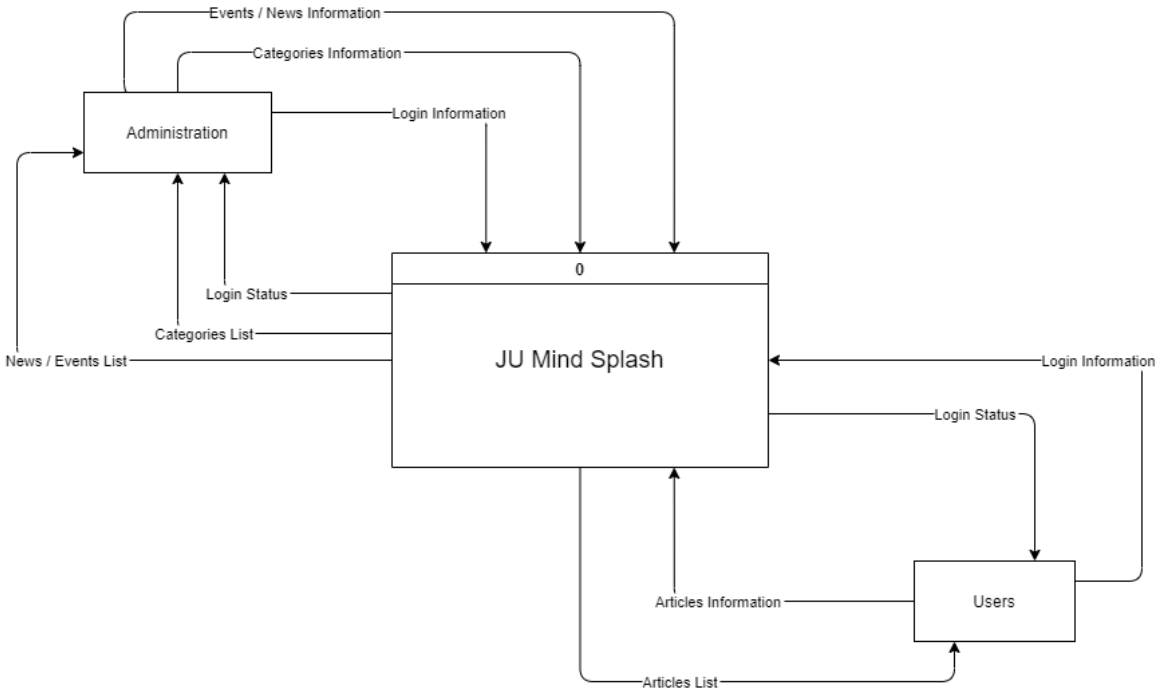

Figure (3): Context Level.

4.3 Data Flow Diagram (DFD)

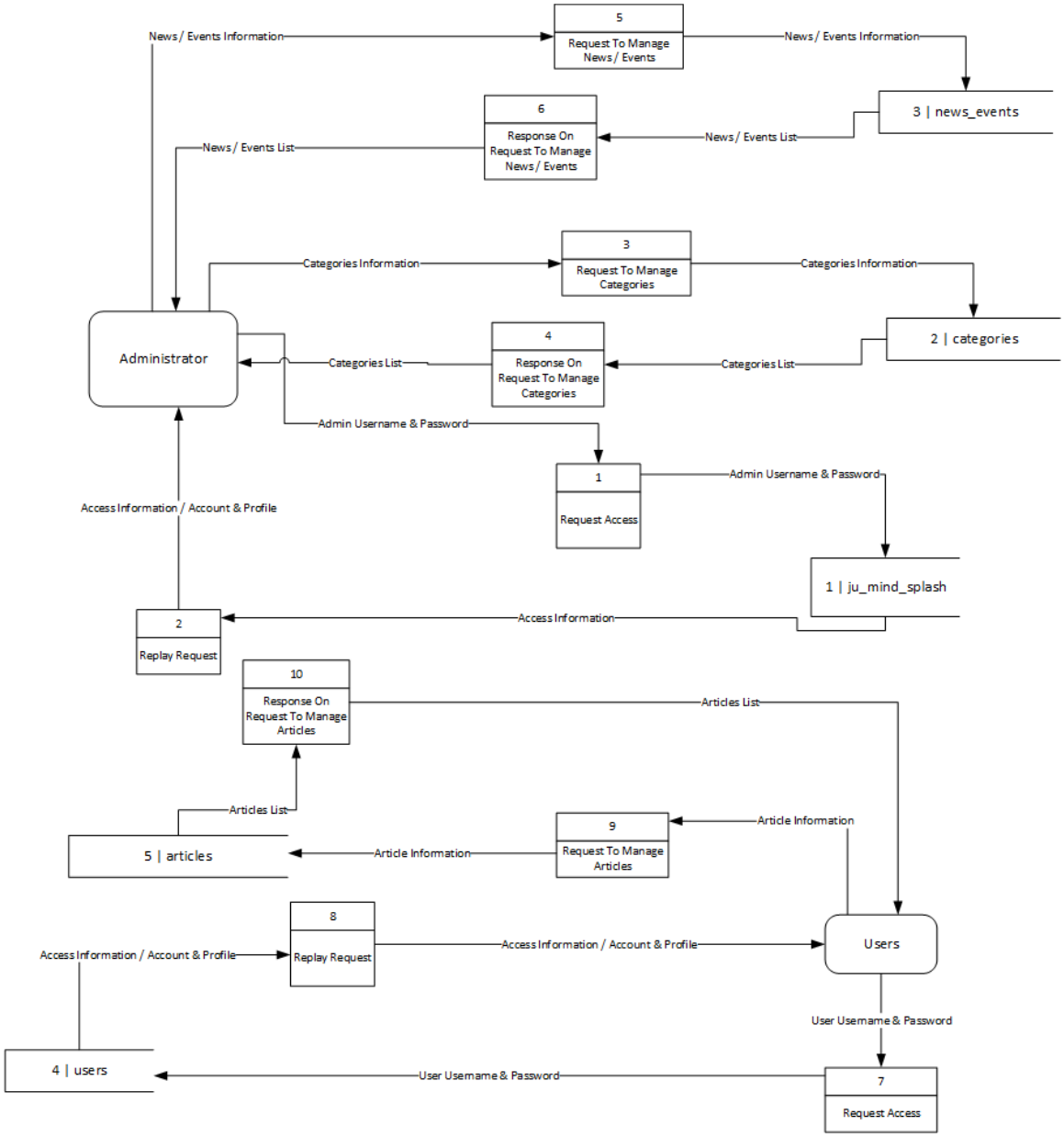

Figure (4): Data Flow Diagram (DFD).

4.4 Entity Relationship Diagram (ERD)

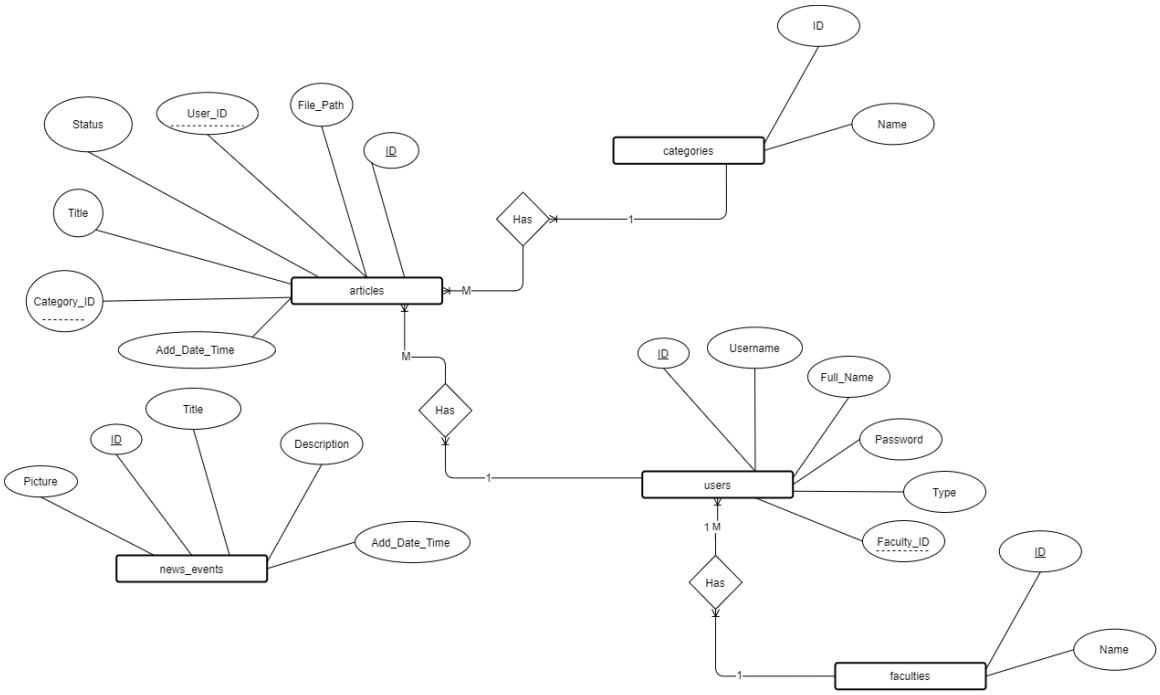

Figure (5): Entity Relationship Diagram (ERD).

4.5 UML Use Case Diagram

- **Administrator Section:**

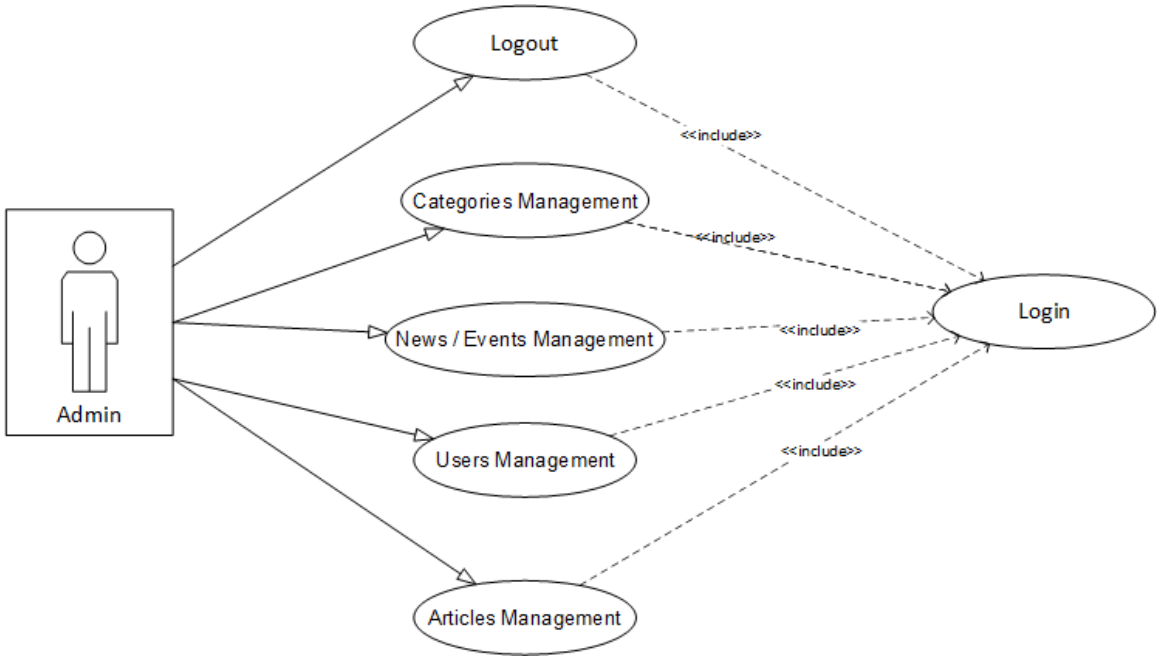

Figure (6): Admin Use Case Diagram.

- **Users Section:**

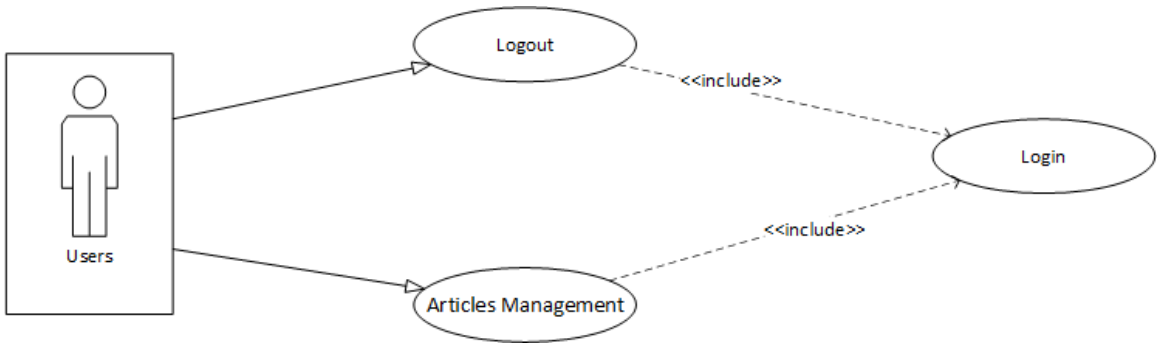

Figure (7): Users Use Case Diagram.

4.6 UML Sequence Diagram

- **Administrator Section:**
  - **Login:**

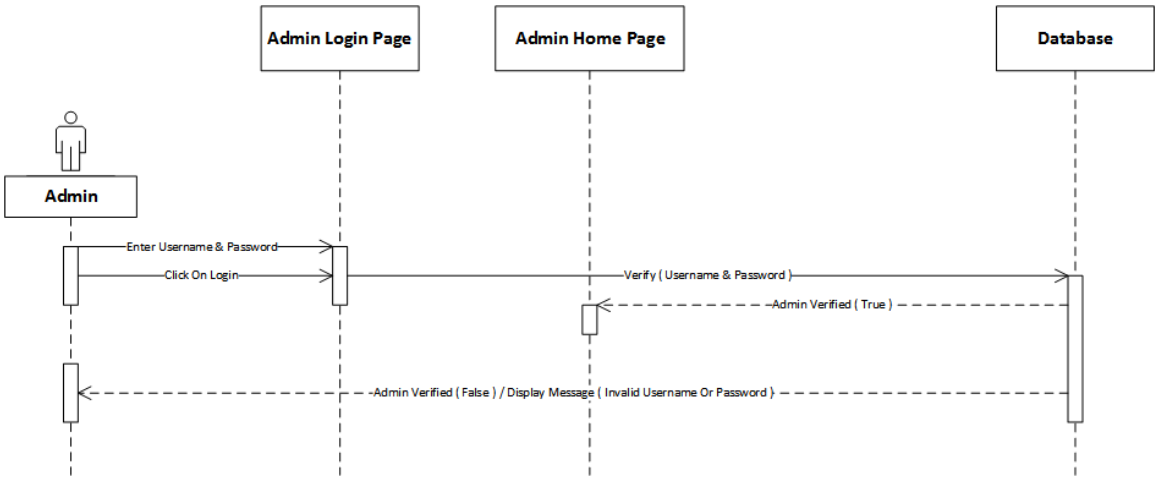

Figure (8): Administrator Login Sequence Diagram.

  - **Logout:**

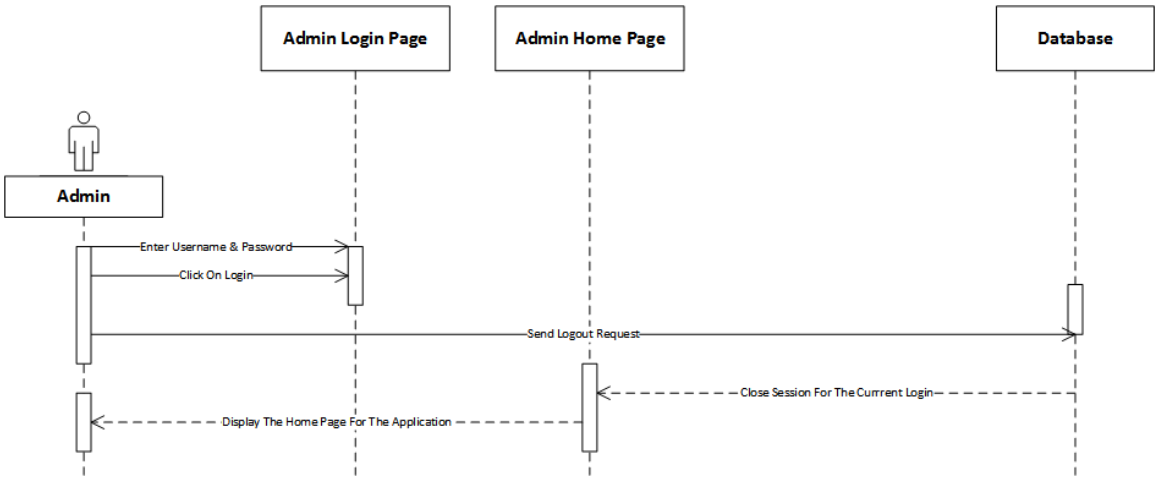

Figure (9): Administrator Logout Sequence Diagram.

- **Users Section:**
  - **Login:**

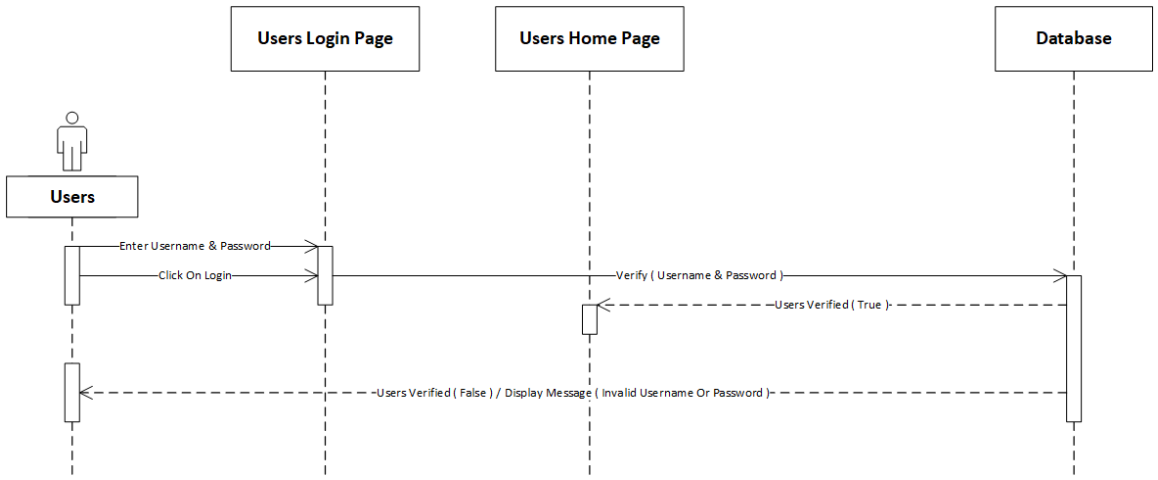

Figure (10): Users Login Sequence Diagram.

  - **Logout:**

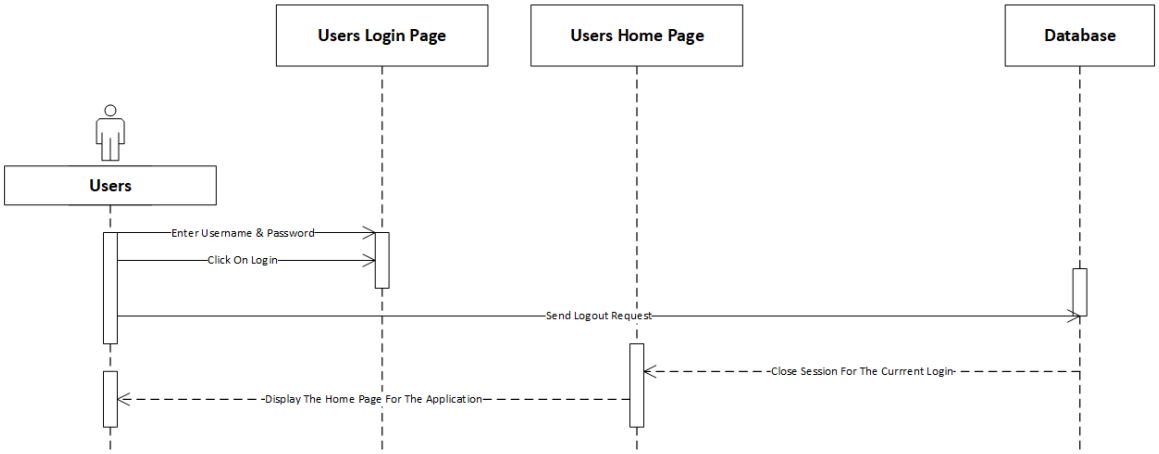

Figure (11): Users Logout Sequence Diagram.

4.7 UML Class Diagram

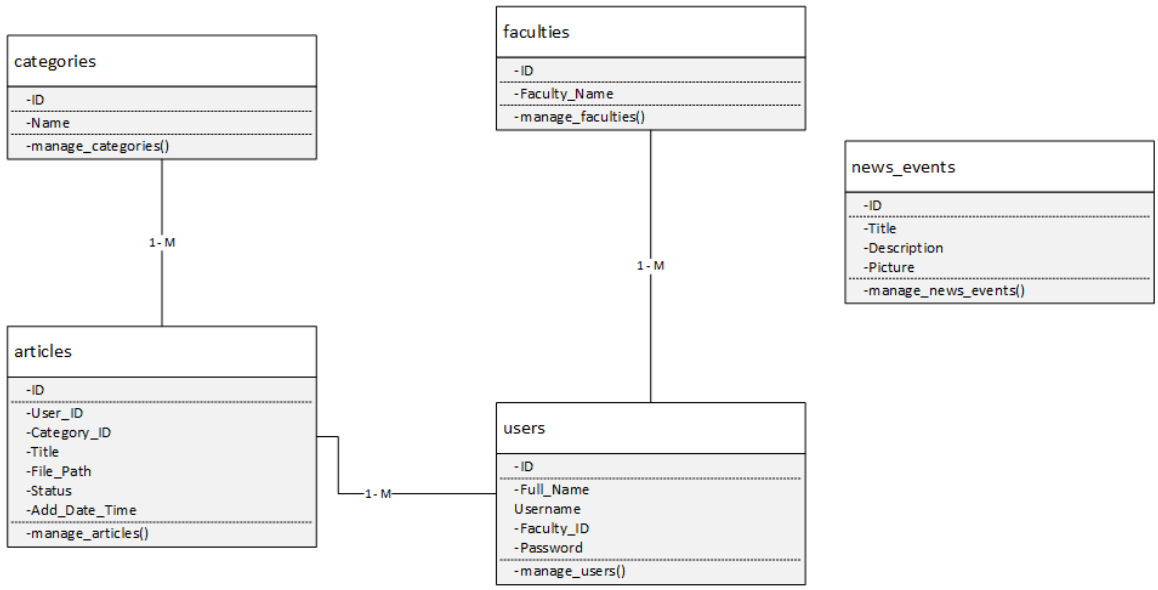

Figure (12): Class Diagram.

4.8 Summary

A final, this chapter defines our system functionality, and how the data transfer inside it the methodology of the system, that we build the context level and 0 levels for the system functions, then design the entity-relationship diagram for the database, after that, we identified use cases diagrams, sequence diagrams, and class diagram.