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# Software Requirements Specification

for

## Scholarly Circle

Version 1.0

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# Chapter-1

## Introduction

### 1.1 Purpose of Scholarly Circle

Scholarly Circle is a social networking website for scientists and researchers to share papers, and find collaborators. The purpose of this application is to make a paper sharing platform so that researchers can upload their papers to Scholarly Circle and share them with other researchers.

### 1.2 Background and Problem Statement

#### Background

Web applications have become an essential part of our lives. We use them for everything from shopping and banking to staying connected with friends and family. As a result, there is a growing demand for web applications that are well-designed, user-friendly, and secure.

One of the most important aspects of developing a web application is understanding the needs of the users. This involves conducting user research to identify the tasks that users need to be able to accomplish and the challenges they face. Once the needs of the users are understood, the development team can design and build a web application that meets those needs.

#### Problem Statement

One of the challenges of developing web applications is that there are many different technologies that can be used. This can make it difficult to choose the right technologies for the specific needs of the application. Additionally, the web development landscape is constantly changing, so it is important to stay up-to-date on the latest trends and technologies.

Another challenge of developing web applications is that they need to be secure. Web applications are often targeted by hackers, so it is important to implement security measures to protect the data of users.

### 1.3 Motivation

There are many motivations for developing Scholarly Circle. Some of the most common motivations include:

**To make research papers more accessible and discoverable:** Research papers are often published in academic journals, which can be difficult to access for people who are not affiliated with an academic institution. A web application can make research papers more accessible to a wider audience, including students, researchers, and the general public.

**To enable new ways to interact with research papers:** A web application can enable new ways to interact with research papers, such as through search, visualization, and collaboration

tools. This can make it easier for researchers to find and use relevant information, and to share their work with others.

**To promote the dissemination of research:** A web application can help to promote the dissemination of research by making it easier for people to share and discuss research papers. This can help to raise awareness of new research findings and to accelerate the pace of scientific discovery.

## 1.4 Challenges

here are a number of challenges that can be faced when developing a research paper based web application. Some of the most common challenges include:

**Complexity:** Research papers can be complex and contain a lot of information. This can make it difficult to translate the paper into a web application that is easy to use and understand.

**Data management:** Research papers often contain a lot of data, which can be challenging to store and manage in a web application.

**Interactivity:** Research papers are typically static documents, but a web application should be interactive and allow users to explore the data and findings in a meaningful way.

**Audience:** Research papers are typically written for a specific audience, such as academics or experts in a particular field. However, a web application should be accessible to a wider audience, including people with less expertise in the subject matter.

**Security:** Research papers may contain sensitive data, so it is important to develop a secure web application that protects this data from unauthorized access.

## 1.5 Objectives

The objectives for Scholarly Circle can vary depending on the specific topic of the research paper. However, some common objectives include:

- To provide a platform for users to access and interact with the research data in a meaningful way.
- To enable users to explore and analyze the research data in new and innovative ways.
- To facilitate collaboration between researchers and other stakeholders.
- To communicate the findings of the research to a wider audience.

## Chapter-2

### Feasibility Study

A feasibility study for a research paper based web application is a document that assesses the feasibility of developing and deploying such an application. It should consider the following factors:

**Technical feasibility:** Does the necessary technology exist to develop and deploy the application?

**Economic feasibility:** Is the application affordable to develop and maintain?

**Operational feasibility:** Can the application be integrated into the existing research paper workflow?

**Schedule feasibility:** Can the application be developed and deployed within the desired timeframe?

## Chapter-3

### Design and Analysis

#### 3.1 Project architecture:

We follow an architecture to develop a software project. While developing this project we will go through Software Development Life Cycle (SDLC) which is given in figure-1. Software Development Life Cycle (SDLC) is a process used to design, develop and test high-quality software. The SDLC aims to produce high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates. SDLC consists of 7 stages. They are –

- 1) Requirement gathering
- 2) Analysis and Planning
- 3) Security and Performance Architecture
- 4) Agile Scrum Based Development
- 5) System Testing
- 6) Deployment
- 7) Support and Management



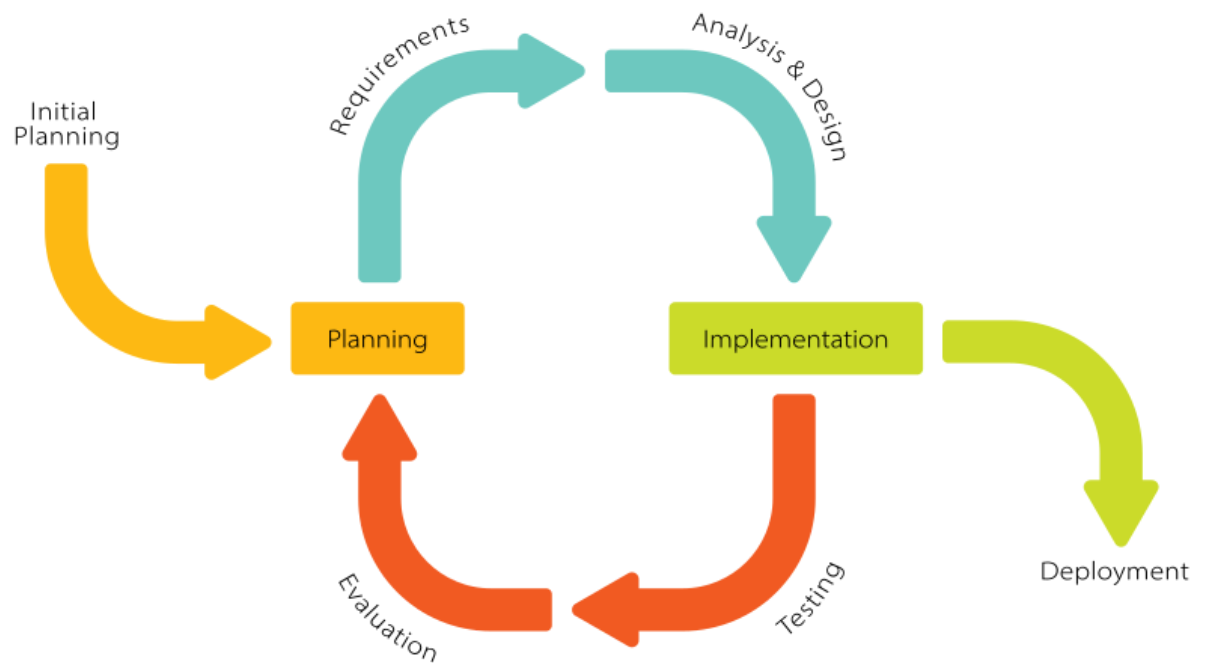
**Figure -1: Software Development Life Cycle (SDLC).**

Following are the most important and popular SDLC models followed in the industry –

- Waterfall Model
- Iterative Model
- Spiral Model
- V-Model
- Big Bang Model

Among all these models, we used the Iterative model in our software development. It is One of the simplest model. The iterative model (Figure-2) is utilized in such instances. Each iteration goes through all of the SDLC phases, and these cycles are repeated until the SDLC is completed. It was typical for the team to work on many SDLC phases concurrently. There are numerous reasons why the iterative approach was chosen for this project. Such as,

- i. This model is quite adaptable. Because new features can be introduced at any point during development.
- ii. In the Iterative model, changing the design or criteria is more economically efficient.
- iii. We construct and improve the product step by step in an iterative manner. As a result, we may detect flaws at an early stage. This prevents the flaws from flowing downhill.
- iv. Parallel development is possible.
- v. In comparison to other process models, it necessitates smaller development team.



**Figure -2: The Iterative Model of SDLC**

### 3.2 ER Diagram

The system consists of 2 entities: User and Post

**Attributes** of the entities:

**Users:** User\_id, full\_name, email, password, skills\_and\_expertise, research\_interest, department, current\_position, linkedin\_profile, location, profile\_photo.

**Posts:** id, post\_id, title, description, category, tags, dept, date\_time, paper, citation, date\_time.

**Users:**

Primary key: User\_id (uniquely identifies each user)

**Posts:**

Primary key: id (uniquely identifies each users post)

Foreign key: post\_id (references the Users table)

Each entity has a primary key, which is used to uniquely identify each record in that entity's table. In addition, there are foreign keys, which are used to create relationships between tables. For example, the Posts table has a foreign key for post\_id, which references the Users table. This creates a relationship between the two tables, allowing information from both to be accessed and used in queries.

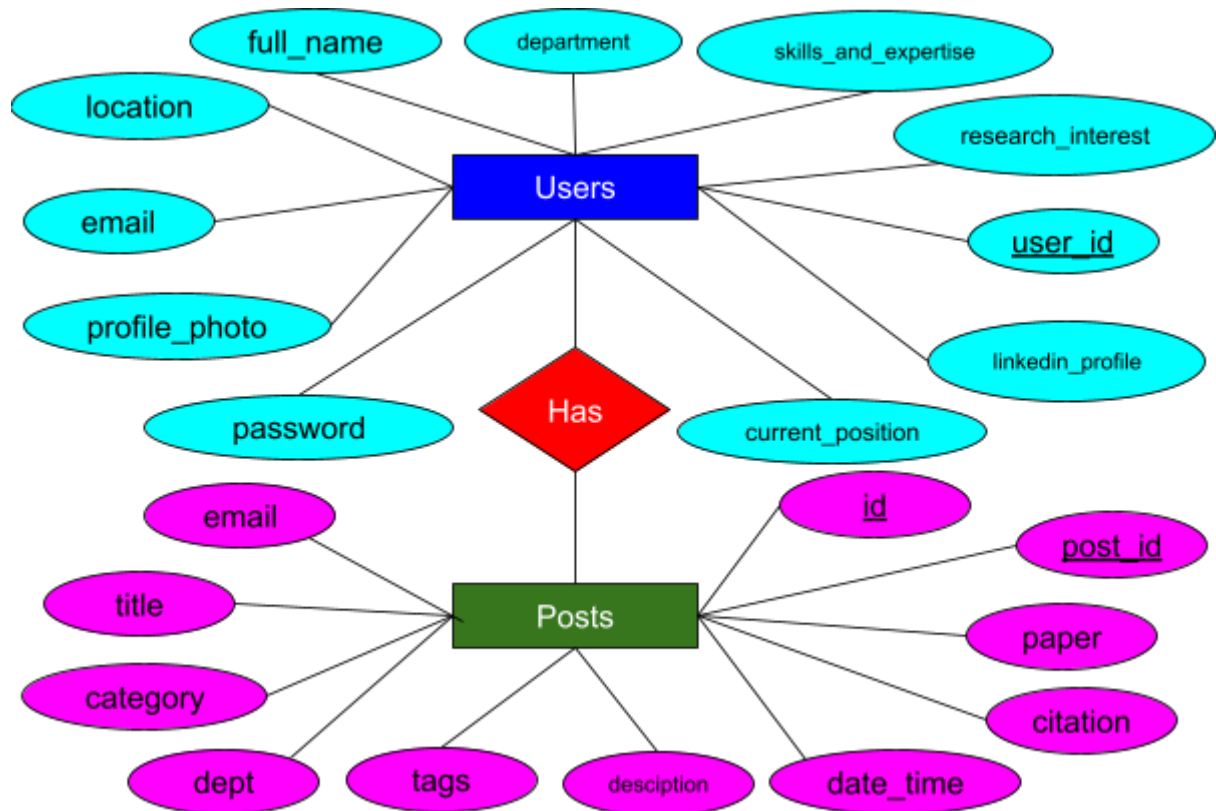


Figure: ER diagram for Scholarly Circle

### 3.3 Schema Diagram

- Primary key of entities:
  - **User:** user\_id
  - **Posts:** id
- Foreign key of entities:
  - **Posts:** post\_id





Figure: Schema diagram for Scholarly Circle

### 3.4 Data FlowDiagram

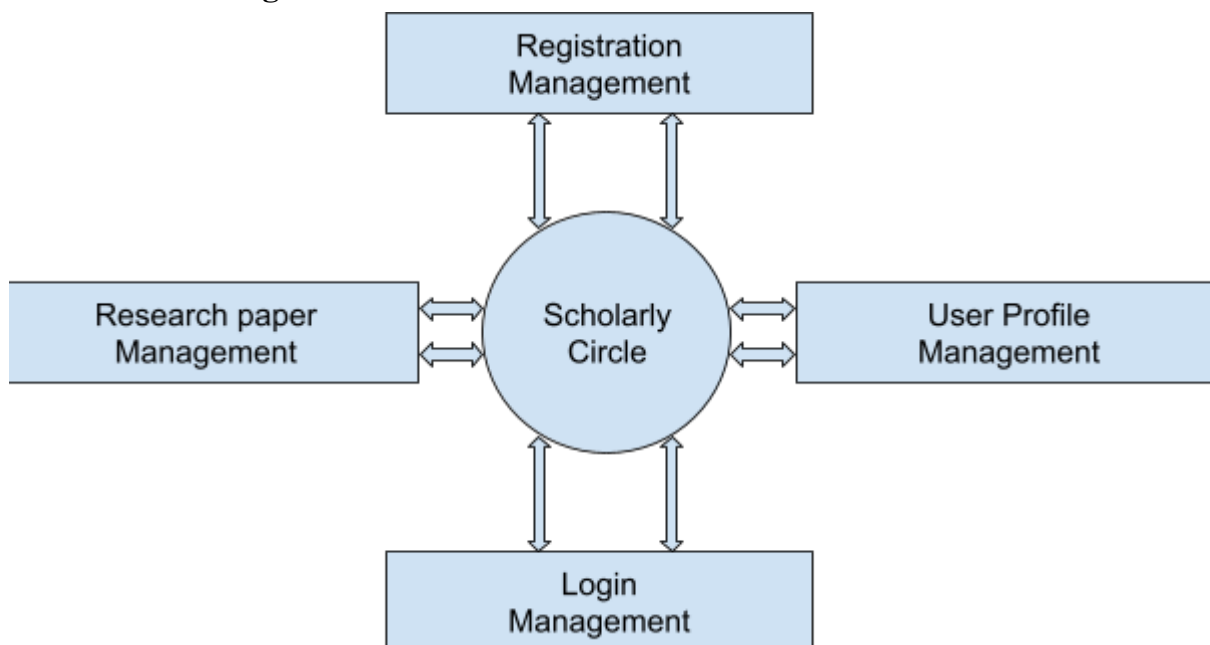


Figure: Data Flow Diagram for Scholarly Circle

### 3.5 System Implementation

**3.5.1 Software requirements:** The following Softwares will be used in this project:

<b>Operating System</b>	Linux, MacOS, Windows XP or later
<b>Browser</b>	Google Chrome, Firefox
<b>Editor</b>	Notepad++, Visual Studio Code, WebStorm or any text editor

Table-1 : Software Requirements of the System

**3.5.2 Hardware requirements:** The following hardware will be used in this project:

<b>Processor</b>	Standard Processor
<b>RAM</b>	2 GB RAM or more
<b>Hard Disk</b>	50 GB or more
<b>Monitor</b>	Standard Monitor
<b>Keyboard</b>	Standard Keyboard
<b>Mouse</b>	Standard Mouse

Table-2: Hardware Requirements of the System

### 3.6 Technologies and Tools:

#### Client-Side Scripting Technologies:

- HTML (HyperText Markup Language)
- CSS (Cascading Style Sheets)
- SASS (Syntactically Awesome Stylesheet)
- JavaScript (Programming Language)
- React.js (JavaScript Library)

#### Server-Side Scripting Technologies:

- Node.js (JavaScript Run-time Environment)
- Express.js (Node.js Framework)
- MySQL (Relational Database)

#### Version Control System:

- Git (For Version Control System)

**HTML:** HTML (Hypertext Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or

functionality/behavior (JavaScript). "Hypertext" refers to links that connect web pages to one another, either within a single website or between websites. Links are a fundamental aspect of the Web. By uploading content to the Internet and linking it to pages created by other people, you become an active participant in the World Wide Web.

**CSS:** Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., fonts, colors, spacing) to Web documents. It is a stylesheet language used to describe the presentation of a document written in HTML or XML. CSS describes how elements should be rendered on screen, on paper, in speech, or on other media.

**SASS:** Sass is an extension to CSS. It is a CSS pre-processor. It is completely compatible with all versions of CSS. It reduces repetition of CSS and therefore saves time. It was designed by Hampton Catlin and developed by Natalie Weizenbaum in 2006

**JavaScript:** JavaScript is a scripting or programming language that allows you to implement complex features on web pages — every time a web page does more than just sit there and display static information for you to look at — displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc. — you can bet that JavaScript is probably involved. It is the third layer of the layer cake of standard web technologies, two of which (HTML and CSS) we have covered in much more detail in other parts of the Learning Area.

**React.js:** React is a JavaScript library used for building user interfaces for web applications. It was developed by Facebook and released as an open-source project in 2013. React allows developers to build complex UI components using a declarative syntax and a "component-based" approach, where UI elements are treated as independent and reusable building blocks.

**Node.js:** Node.js is an open-source, cross-platform, server-side runtime environment for executing JavaScript code outside of a web browser. It was developed by Ryan Dahl in 2009 and is built on the V8 JavaScript engine used in Google Chrome

**Express.js:** Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications. Express JS is a Node.js framework designed to build API's web applications cross-platform mobile apps quickly and make node js easy.

**MySQL:** MySQL is the world's most popular open source database. According to DB-Engines, MySQL ranks as the second-most-popular database, behind Oracle Database. MySQL powers many of the most accessed applications, including Facebook, Twitter, Netflix, Uber, Airbnb, Shopify, and Booking.com. Since MySQL is open source, it includes numerous features developed in close cooperation with users over more than 25 years. So it's very likely that your favorite application or programming language is supported by MySQL Database.

## Chapter-4

### Expected Outcome of the project

Scholarly Circle offers a variety of features for researchers, including:

**A paper-sharing platform:** Researchers can upload their papers to Scholarly Circle and share them with other researchers.

**A collaborator search tool:** Researchers can search for other researchers who are working in their field. All users can filter all kinds of research papers department-wise and category-wise and can search research papers by their tags and categories added by authors.

**A news feed:** Researchers can stay up-to-date on the latest research-related posts.

**A profile page:** Researchers can create a profile page to showcase their research and experience.

**Citation:** A “citation” is the way you tell your readers that certain material in your work came from another source. It also gives your readers the information necessary to find the location details of that source on the reference or Works Cited page. All users can give citations in any posts that are helpful for them.

## Chapter-5

### Conclusion

The conclusion of Scholarly Circle should summarize the main findings of the paper and discuss their implications. It should also highlight the limitations of the study and suggest directions for future research.

Scholarly Circle is a valuable resource for scientists and researchers. It provides a platform for sharing research and finding collaborators. However, it is important to be aware of the potential for academic misconduct on the website.

It is specially made for **Noakhali Science and Technology University**.

Overall, our results suggest that Scholarly Circle is a promising tool for task. Further research is needed to evaluate the application's effectiveness in real-world settings and to identify ways to improve it.

Here are some additional things to consider when writing the conclusion of your research paper:

- Restate the main research question or hypothesis of your study.
- Summarize the key findings of your study and discuss their implications.

- Acknowledge the limitations of your study and suggest directions for future research.
- End on a positive note, highlighting the significance of your findings and their potential impact.

## **References**

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