# CS 353
# Database Management Systems
# Project

## Project Design Report
## Scientific Papers Data Management System

**Section 3 / Group 1**
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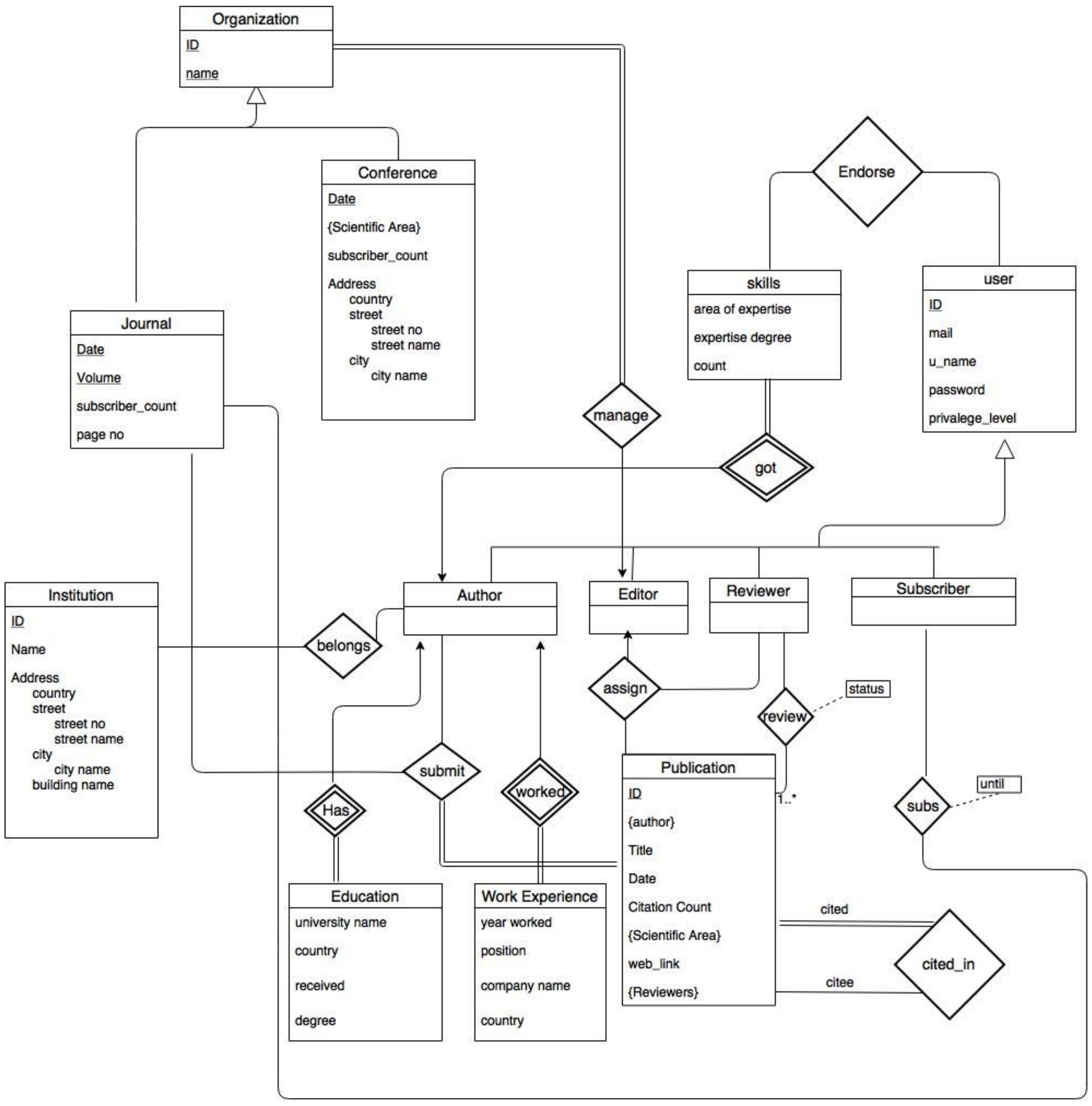
# 1. REVISED E/R MODEL

According to the feedback from our assistant, there are several changes in the E/R Model in order to make the database design better and more functional. These changes are the following:

- Institution is not a publisher anymore. We have a new relation which is called belongs between Institution and Author in order to indicate whom author work for.
- We have create a new entity called Organization.
- Conference and Journal are not weak entities. We have made is - a relationship between Journal, Conference and Organization.
- Institution is not a weak entity anymore.
- We have renamed the relation which is called e_review as manage.
- We have removed date attribute from manage relation.
- This newly named manage relation is not between Conference, Journal and Editor anymore. It is in between Organization and Editor.
- We have added total participation to Organization in manage relation.
- We removed journal_inst relation between the Journal and Institution.
- We removed hold relation between Institution and Conference.
- In cited_in relation, we have added total participation to cited.
- We have removed conference attribute from subs relation.
- We have removed journal attribute from subs relation.
- We have changed participation type as total participation to Publication in relation called submit.
- We have removed Address entity.
- Adress attribute is added to Conference entity.
- Adress attribute is added to Journal entity.
- Account entity is removed.
- Attributes of Account entity is added as new atrributes to User Entity.
- Submission_list entity is removed.
- Weak relation has which is between, Conference and Submission_list has been removed.
- {Submission} and Submission_Count() attributes of Author is removed.
- Subscribed_journal and subcribed_conference which are attributes of Subscriber has been removed.
- Publication Editor relation which is called assign has been changed as one to many.
- Relation that is called has between Journal and Submission_List is removed.
- {Proficiency} attribute from Author has been removed.
- {Degree} attribute from Author has been removed.
- A new weak entity which is called Work Experience is created.
- A new relation named worked, between Work Experience and Author has been created.
- A new weak entity which is called Education is created.
- A new relation that is called has, between Education and Author has been created.
- We have removed the connection between Publication entity and subs relation.

- A new weak entity which is called Skills has been created.
- A new relation named got, between Skills and Author entities is created.
- We have added new attribute named as until to subs relation.


Organization
ID
name
Conference
Date
{Scientific Area}
subscriber_count
Address
country
street
street no
street name
city
city name
Journal
Date
Volume
subscriber_count
page no
Endorse
skills
area of expertise
expertise degree
count
user
ID
mail
u_name
password
privalege_level
manage
got
Institution
ID
Name
Address
country
street
street no
street name
city
city name
building name
belongs
Author
Editor
Reviewer
Subscriber
assign
review
status
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Has
worked
Publication
ID
{author}
Title
Date
Citation Count
{Scientific Area}
web_link
{Reviewers}
1..*
subs
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university name
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Work Experience
year worked
position
company name
country
cited
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# 2. RELATION SCHEMAS

## 2.1. Organization

**Relational Model:**

Organization(<u>ID</u>,<u>name</u>)

**Functional Dependencies:**
None

**Candidate Keys:**
{(ID, name)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE organizations (
     ID INT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
     title VARCHAR(64) NOT NULL,
     creation_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP
         );
```

## 2.2. Conference

**Relational Model:**

Conference(<u>conference_ID</u>,<u>Name</u>,<u>Conference_Date</u>, Scientific_Area, subscriber_count, country, street_no, street_name, city_no, city_name)

**Functional Dependencies:**

conference_ID**,** Name, Conference_Date,  -> Scientific_Area, subscriber_count, country, street_no, street_name, city_name

**Candidate Keys:**
{(conference_ID, Name, Conference_Date)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE conferences(
     conferenceID INT UNSIGNED NOT NULL,
     conferenceDate DATETIME NOT NULL UNIQUE,
     subscriber_count INT DEFAULT 0,
     country VARCHAR(50) NOT NULL,
     street_no INT,
     street_name VARCHAR(50),
     city_name VARCHAR(50) NOT NULL,
     PRIMARY KEY (conferenceID, conferenceDate),
     FOREIGN KEY (conferenceID)
          REFERENCES organizations(ID)
          ON DELETE CASCADE
          );
```

## 2.3. Journal

**Relational Model:**

Journal(journal_ID, title,Journal_Date, volume, subscriber_count, page_no)

**Functional Dependencies:**

journal_ID,title,Journal_Date,volume -> subscriber_count, page_no

**Candidate Keys:**

{(journal_ID, title, Journal_Date, volume)}

**Normal Form:**

BCNF

**Table Definition:**
```
CREATE TABLE journals (
     ID INT UNSIGNED NOT NULL,
     volume INT,
     journalDate DATETIME NOT NULL UNIQUE,
     subscriber_count INT DEFAULT 0,
     page_no INT NOT NULL,
     PRIMARY KEY (journalID, journalDate),
     FOREIGN KEY(journalID)
          REFERENCES organizations(ID)
          ON DELETE CASCADE
           );
```

## 2.4. User

**Relational Model:**

User(ID, mail, u_name, password, privalege_level)

**Functional Dependencies:**

ID -> mail, u_name, password, privalege_level
mail -> ID, u_name, password, privalege_level
u_name -> ID, mail, password, privalege_level

**Candidate Keys:**

{(ID),(mail),(u_name)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE users (
     ID INT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
     mail VARCHAR(64) NOT NULL UNIQUE,
     username VARCHAR(20) NOT NULL UNIQUE,
     password VARCHAR(20) NOT NULL,
     privilege_level INT DEFAULT 0,
     creation_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP
         );
```

## 2.5. Institution

**Relational Model:**

Institution(<u>ID</u>, Name, country, street no, street name, city name, building name)

**Functional Dependencies:**

ID -> Name, country, street no, street name, city name, building name

**Candidate Keys:**

{(ID)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE institutions (
      ID INT UNSIGNED NOT NULL PRIMARY KEY,
      name VARCHAR(50),
      country VARCHAR(50) NOT NULL,
      street_no INT,
      street_name VARCHAR(50),
      city_name VARCHAR(50) NOT NULL
);
```

## 2.6. Publication

**Relational Model:**

Publication(<u>ID</u>,author, Title, Date, Citation Count, Scientific Area, web_link, Reviewers)

**Functional Dependencies:**

ID -> author, Title, Date, Citation Count, Scientific Area, web_link, Reviewers

**Candidate Keys:**

{(ID)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE publications (
      ID INT UNSIGNED NOT NULL AUTO_INCREMENT
            PRIMARY KEY,
      title VARCHAR(100) NOT NULL,
      publicationDate DATETIME NOT NULL,
      citationCount INT DEFAULT 0,
      weblink VARCHAR(100)
);
```

## 2.7. Subscriber

**Relational Model:**

Subscriber(subscriber_ID)

**Functional Dependencies:**

None

**Candidate Keys:**

{(subscriber_ID)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE subscribes (
      subscriberID INT UNSIGNED NOT NULL,
      publicationID INT UNSIGNED NOT NULL,
      subsUntill DATE,
      FOREIGN KEY (subscriberID)
       REFERENCES users(ID)
       ON DELETE CASCADE,
    FOREIGN KEY (publicationID)
       REFERENCES publications(ID)
       ON DELETE CASCADE,
    PRIMARY KEY (subscriberID, publicationID)
);
```

## 2.8. Reviewer

**Relational Model:**

Reviewer(reviewer_ID)

**Functional Dependencies:**

None

**Candidate Keys:**

{(reviewer_ID)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE reviews (
      reviewerID INT UNSIGNED NOT NULL,
      publicationID INT UNSIGNED NOT NULL,
      status INT NOT NULL,
      FOREIGN KEY (reviewerID)
            REFERENCES users(ID)
            ON DELETE CASCADE,
      FOREIGN KEY (publicationID)
            REFERENCES publications(ID)
            ON DELETE CASCADE,
      PRIMARY KEY (reviewerID, publicationID));
```

## 2.9. Author

**Relational Model:**
Author(author_ID)

**Functional Dependencies:**
None

**Candidate Keys:**
{(author_ID)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE authors(
      publicationID INT UNSIGNED NOT NULL,
      authorID INT UNSIGNED NOT NULL,
      FOREIGN KEY (authorID)
            REFERENCES users(ID)
            ON DELETE CASCADE,
      FOREIGN KEY (publicationID)
            REFERENCES publications(ID)
            ON DELETE CASCADE,
      PRIMARY KEY (publicationID, authorID)
);
```

## 2.10. Skills

**Relational Model:**
Skills(<u>ID</u>, area of expertise, expertise degree, count)

**Functional Dependencies:**
ID -> area of expertise, expertise degree, count

**Candidate Keys:**
{(ID)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE skills (
     experties VARCHAR(100) NOT NULL UNIQUE,
     degree VARCHAR(20),
     authorID INT UNSIGNED NOT NULL,
     endorsmentCount INT DEFAULT 0,
     FOREIGN KEY(authorID)
          REFERENCES users(ID)
          ON DELETE CASCADE,
     PRIMARY KEY (authorID, experties, degree)
);
```

## 2.11. Education

**Relational Model:**
Education(<u>ID</u>, university name, country, received, degree)

**Functional Dependencies:**
ID -> university name, country, received, degree
**Candidate Keys:**
{(ID)}

**Normal Form:**
BCNF

**Table Definition:**

```
CREATE TABLE educations (
     authorID INT UNSIGNED NOT NULL,
     universityName VARCHAR(100) NOT NULL,
     country VARCHAR(50) NOT NULL,
     year_recieved INT UNSIGNED NOT NULL,
     degree INT NOT NULL,
     FOREIGN KEY (authorID)
          REFERENCES users(ID)
          ON DELETE CASCADE,
     PRIMARY KEY (authorID, universityName, country,
          year_recieved, degree)
);
```

## 2.12. Work Experience

**Relational Model:**
Work Experience(author_ID, year worked, position, company name, country)

**Functional Dependencies:**
author_ID -> year worked, position, company name, country

**Candidate Keys:**
{(author_ID)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE workExperience (
     authorID INT UNSIGNED NOT NULL,
     yearWorked INT UNSIGNED NOT NULL,
     employerName VARCHAR(50) NOT NULL,
     country VARCHAR(50) NOT NULL,
     FOREIGN KEY (authorID)
          REFERENCES users(ID)
          ON DELETE CASCADE,
     PRIMARY KEY (authorID, yearWorked, employerName,
country)
);
```

## 2.13. Endorse

**Relational Model:**
Endorse(ID, area of expertise)

**Functional Dependencies:**
None

**Candidate Keys:**
{(ID, area of expertise)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE endorsment(
      endorserID INT UNSIGNED,
      endorseeID INT UNSIGNED,
      publicationID INT UNSIGNED,
      FOREIGN KEY(endorserID)
            REFERENCES users(ID),
      FOREIGN KEY(endorseeID)
            REFERENCES users(ID),
      FOREIGN KEY(publicationID)
            REFERENCES publications(ID)
            ON DELETE CASCADE,
      PRIMARY KEY (endorserID, endorseeID,
publicationID)
);
```

## 2.14. Submit

**Relational Model:**

Submit(publication_ID, author_ID, ID, title, journal_date, volume)

**Functional Dependencies:**

None

**Candidate Keys:**

{(publication_ID, author_ID, ID, name, date, volume)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE submitted (
     organizationID INT UNSIGNED NOT NULL,
     publicationID INT UNSIGNED NOT NULL,
     FOREIGN KEY (organizationID)
     REFERENCES organizations(ID)
          ON DELETE CASCADE,
FOREIGN KEY (publicationID)
     REFERENCES publications(ID)
     ON DELETE CASCADE,
PRIMARY KEY (organizationID, publicationID)
);
```

## 2.15. Assign

**Relational Model:**

Assign(editor_ID,reviewer_ID, publication_ID)

**Functional Dependencies:**

None

**Candidate Keys:**

{(editor_ID,reviewer_ID, publication_ID)}

**Normal Form:**

BCNF

**Table Definition:**

```
CREATE TABLE assigns(
      editorID INT UNSIGNED NOT NULL,
      reviewerID INT UNSIGNED NOT NULL,
      publicationID INT UNSIGNED NOT NULL,
      FOREIGN KEY (editorID)
           REFERENCES users(ID)
           ON DELETE CASCADE,
      FOREIGN KEY (reviewerID)
           REFERENCES     users(ID)
           ON DELETE CASCADE,
      FOREIGN KEY (publicationID)
           REFERENCES publications(ID)
           ON DELETE CASCADE,
      PRIMARY KEY (editorID, reviewerID, publicationID)
);
```

## 2.16. Review

**Relational Model:**
Review(reviewer_ID, publication_ID, status)

**Functional Dependencies:**
None

**Candidate Keys:**
{(reviewer_ID, publication_ID, status)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE reviews (
    reviewerID INT UNSIGNED NOT NULL,
    publicationID INT UNSIGNED NOT NULL,
    status INT NOT NULL,
    FOREIGN KEY (reviewerID)
      REFERENCES users(ID)
      ON DELETE CASCADE,
    FOREIGN KEY (publicationID)
      REFERENCES publications(ID)
      ON DELETE CASCADE,
    PRIMARY KEY (reviewerID, publicationID)
);
```

## 2.17. Subs

**Relational Model:**
Subs(journal_ID, title, Journal_Date, volume, subscriber_ID, until)

**Functional Dependencies:**
None

**Candidate Keys:**
{(journal_ID, title, Journal_Date,volume,subscriber_ID,unti)}

**Normal Form:**
BCNF

**Table Definition:**
```
CREATE TABLE subscribes (
     subscriberID INT UNSIGNED NOT NULL,
     publicationID INT UNSIGNED NOT NULL,
     subsUntill DATE,
     FOREIGN KEY (subscriberID)
          REFERENCES users(ID)
          ON DELETE CASCADE,
     FOREIGN KEY (publicationID)
          REFERENCES publications(ID)
          ON DELETE CASCADE,
     PRIMARY KEY (subscriberID, publicationID)
);
```

# 3. FUNCTIONAL DEPENDENCIES AND NORMALIZATION OF TABLES

The Relational Schemas of E/R Model provides normal forms and functional dependencies. There is no normalization or decomposition because all of the relations are in Boyce-Codd Normal Form.

# 4. FUNCTIONAL COMPONENTS

## 4.1. Use Cases / Scenarios

Scientific Papers Data Management is responsible for storing, manipulating, and retrieving the information of people who serve as authors in academic environments, and the data of academic papers with certain attributes. Scientific Papers Data Management System has 5 different users. These users are User, Author, Editor, Reviewer and Subscriber. Each user has not only some common services but also user specified ones.

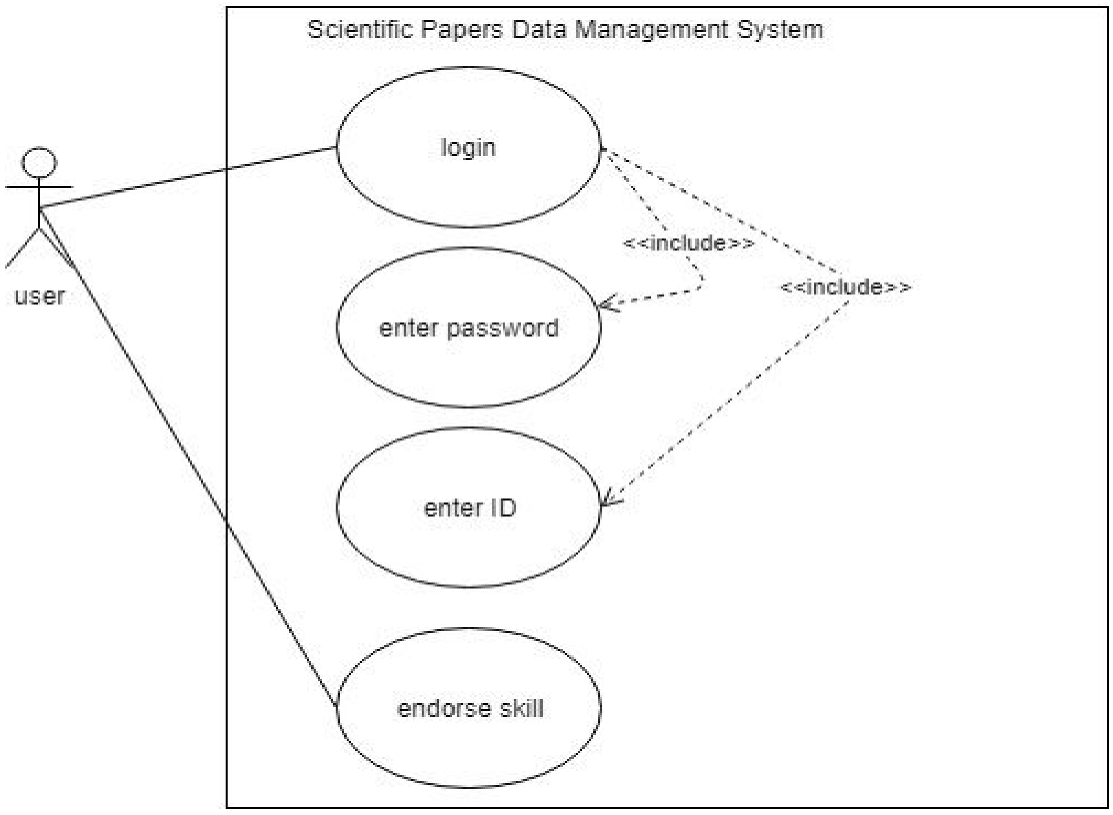
### 4.1.1. User

**Login:** Users are able to login to system in order to subscribe an author, submit a publication, review a publication and so forth. To successfully login to the system, users have to enter the correct password and id.

**Enter password:** Users have to enter their password in order to login to the system successfully.

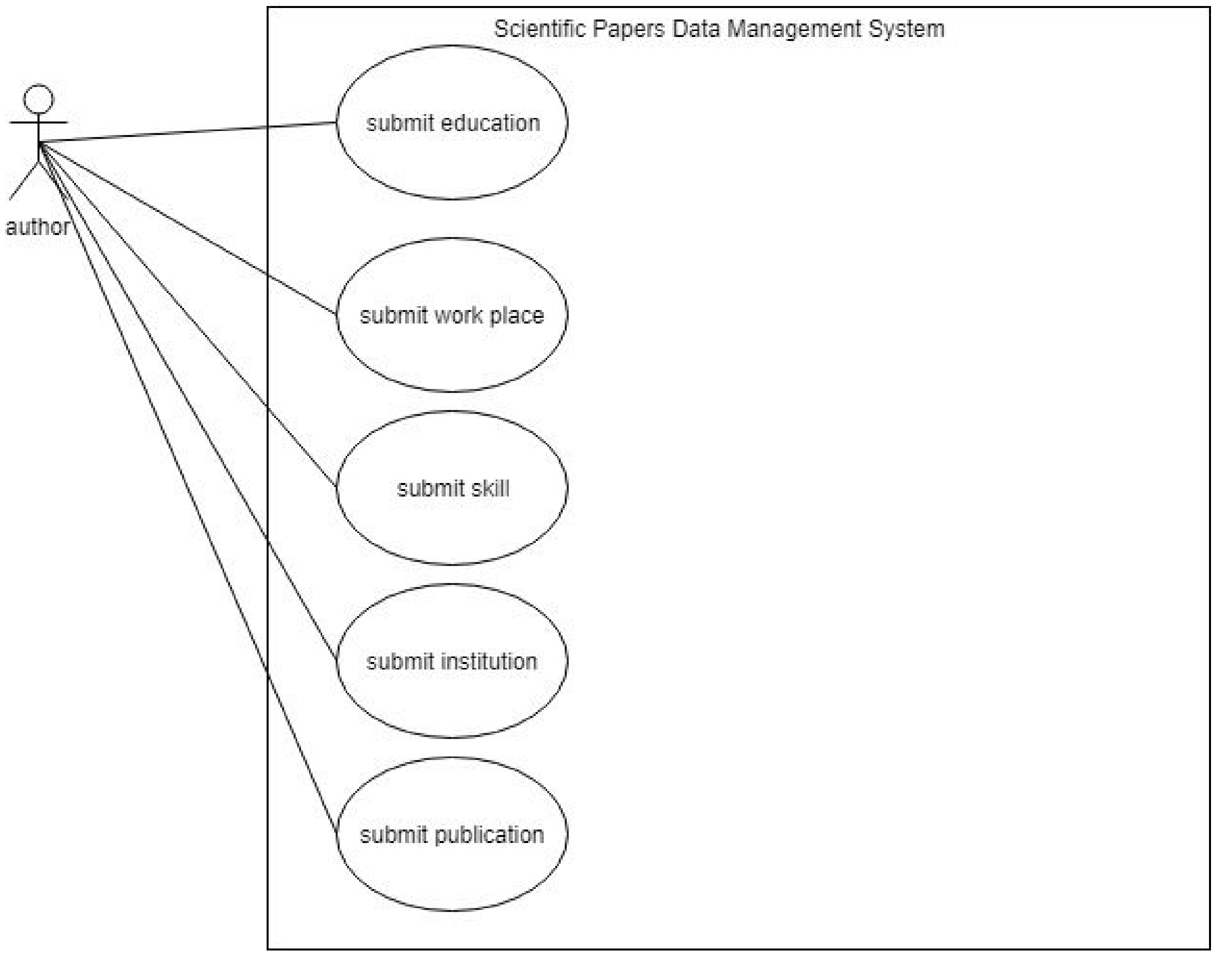
**Enter ID:** Users have to enter their ID in order to login to the system successfully.

**Approve Skill:** Users can see the skills of other users. There is a feature which provides opportunity to all users to endorse skills of other users.



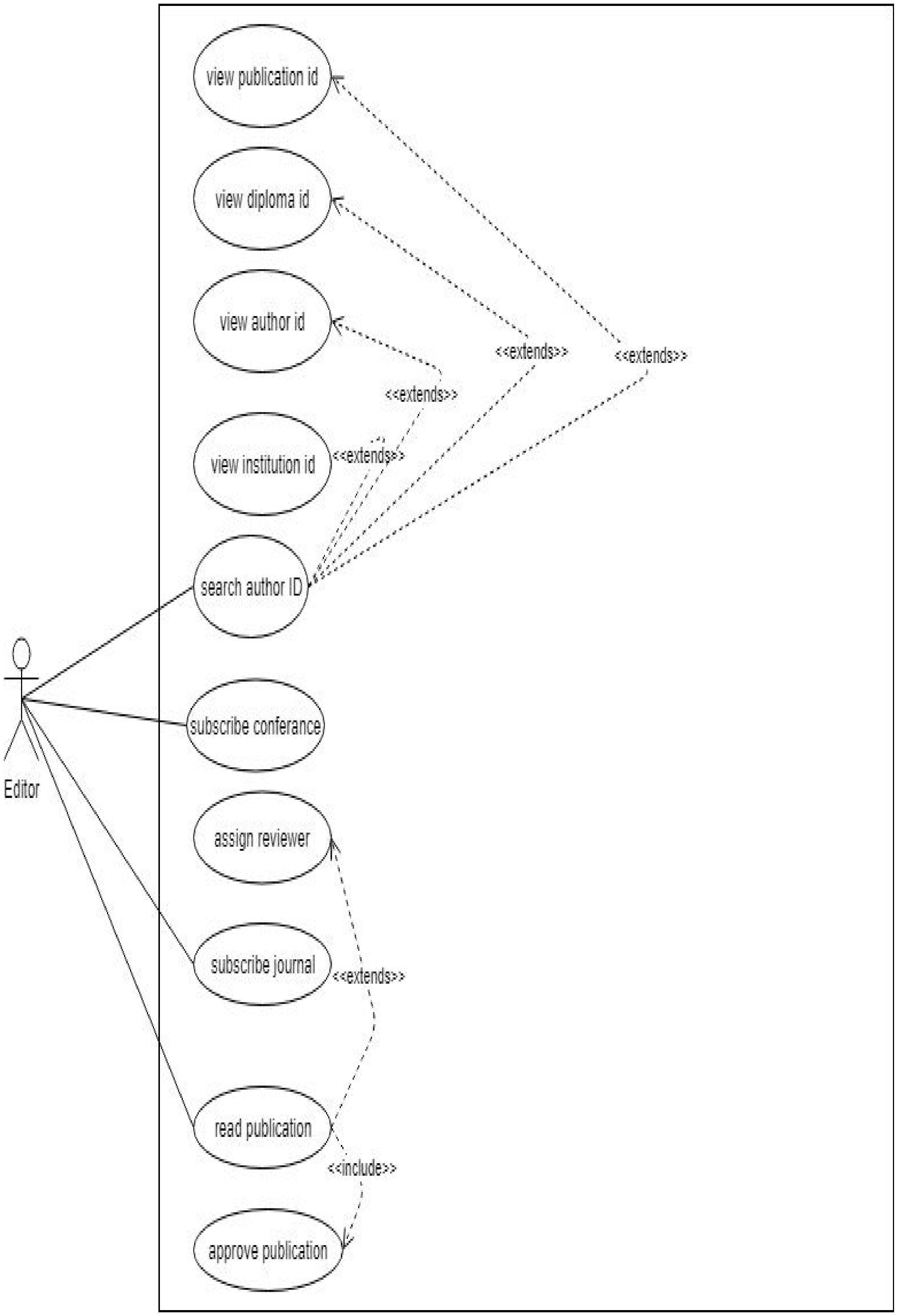
### 4.1.2 Author

**Submit Education:** Authors are able to submit their education information.
**Submit Work Place:** Authors are able to submit their work place.
**Submit Skill:** Authors can submit their skills.
**Submit Institution:** Authors can submit their institution.
**Submit Publication:** Authors can submit any publication of themselves.



### 4.1.3 Editor

**Search Author ID:** Editors can search any author id.
**View Publication ID:** Editors can view any publication of the specified author after searching for the author’s id.
**View Diploma ID:** Editors can view any diploma of the specified author after searching for the author’s id.
**View Author ID:** Editors can view any author id of the specified author after searching for it.
**View Institution ID:** Editors can view any institution of the specified author after searching for the author’s id.
**Subscribe Conference:** Editors are able to subscribe any conference with respect to their desires.
**Assign Reviewer:** Editors should assign reviewers to the publications in order to make them ready for publication process after reading the publication.
**Subscribe Journal:** Editors can subscribe any journal with respect to their pleasure.
**Read Publication:** Editors are able to read different publications of different authors. With the help of reading publications, the editor decides whether to publish it or not.
**Approve Publication:** Editors are able to make decisions about approving a publication or vice versa after they are done with reading the publication.


view publication id
view diploma id
view author id
view institution id
search author ID
subscribe conferance
assign reviewer
subscribe journal
read publication
approve publication
Editor
<<extends>>
<<extends>>
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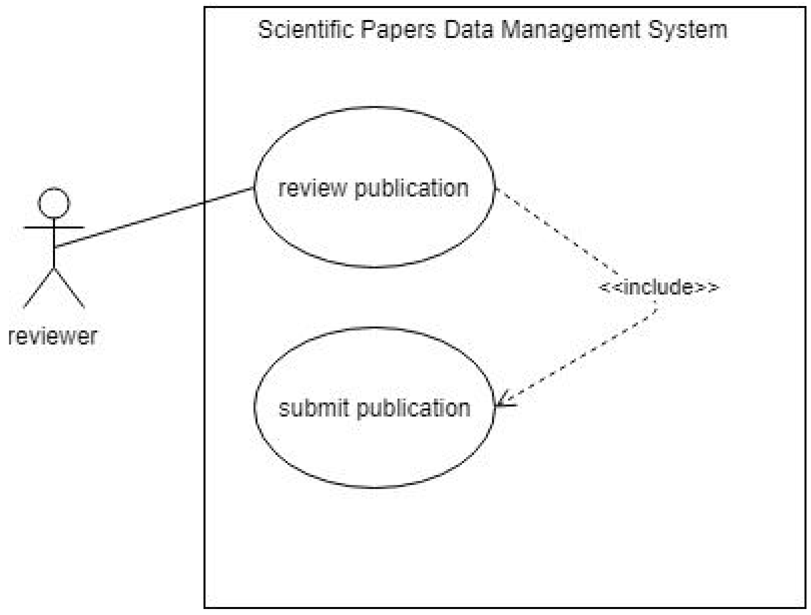
<<extends>>
<<extends>>
<<include>>

### 4.1.4 Reviewer

**review publication:** Reviewers are responsible for reviewing the publications and give feedbacks according to this process.

**submit publication:** Reviewers should submit the publications after they are done with reviewing them.

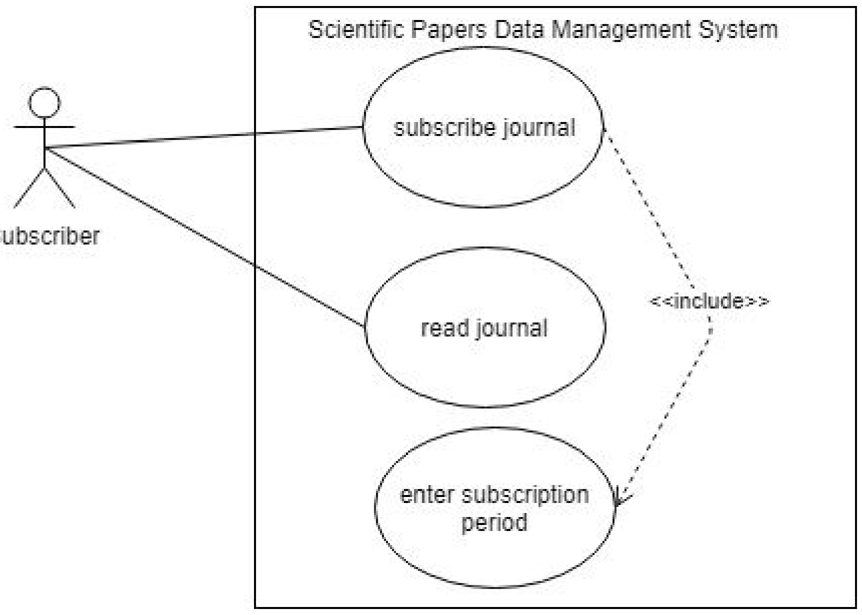


### 4.1.5. Subcriber

**subscribe journal:** Subscribers can subscribe any journal with respect to their enjoyment.

**read journal:** Subscribers are able to read journals.

**enter subscription period:** Subscribers should enter the subscription period in order to indicate the time duration after subscribing the journal.


Scientific Papers Data Management System
Subscriber
subscribe journal
read journal
enter subscription period
<<include>>

## 4.2. Algorithms

### 4.2.1. Subscription Algorithm

In our system, subscribers are able to subscribe journals. When a subscriber decides to subscribe a spesific journal. he or she should determine a time period in order to indicate the duration of subscription. That value is stored in an attribute named as *until*. If all of the until, subscriber_ID, journal_ID, title, journal_date and volume are compatible with each other, the subscription process is successfully done. Otherwise, process can not be done properly.

### 4.2.2. Endorsement On Skills Algorithm

In our system, only the authors are able to have skills. This is the reason why only the authors table have skills column. So that In order to have skills, an author must publish a publication. Anyone from the author table who have published before, may have zero or more skills. The skills of the authors must be endorsed by only the users. If a user decides to endorse, both skills table and author table should be updated. Firstly, the user decide which area of expertise of the author to endorse. Then the count of that specific skill that has the same area of expertise, must be incremented by one. Author whose ID is compatible with that updated skills entity, is also affected by this process.

### 4.2.3. Logical Requirements

Our Scientific Papers Data Management System must not be error prone. There should be information check in order to have valid system, avoid logical errors and so forth. It is needed to check dates, IDs, titles or names whether they are irrelevant or not. Since most of the logical errors are created by them. For example, if an editor assigns a specific publication to a specific reviewer, the reviewer's ID should be equal to the reviewer attribute of Publication after completing the assign process. Also in review process, the ID of the reviewer must be compatible with the ID of the publication in order to have valid data flow.

## 4.3. Data Structures

Date and Time Type, String Type and Numeric Type are used in the relational schemas which are derived from the E/R Model.

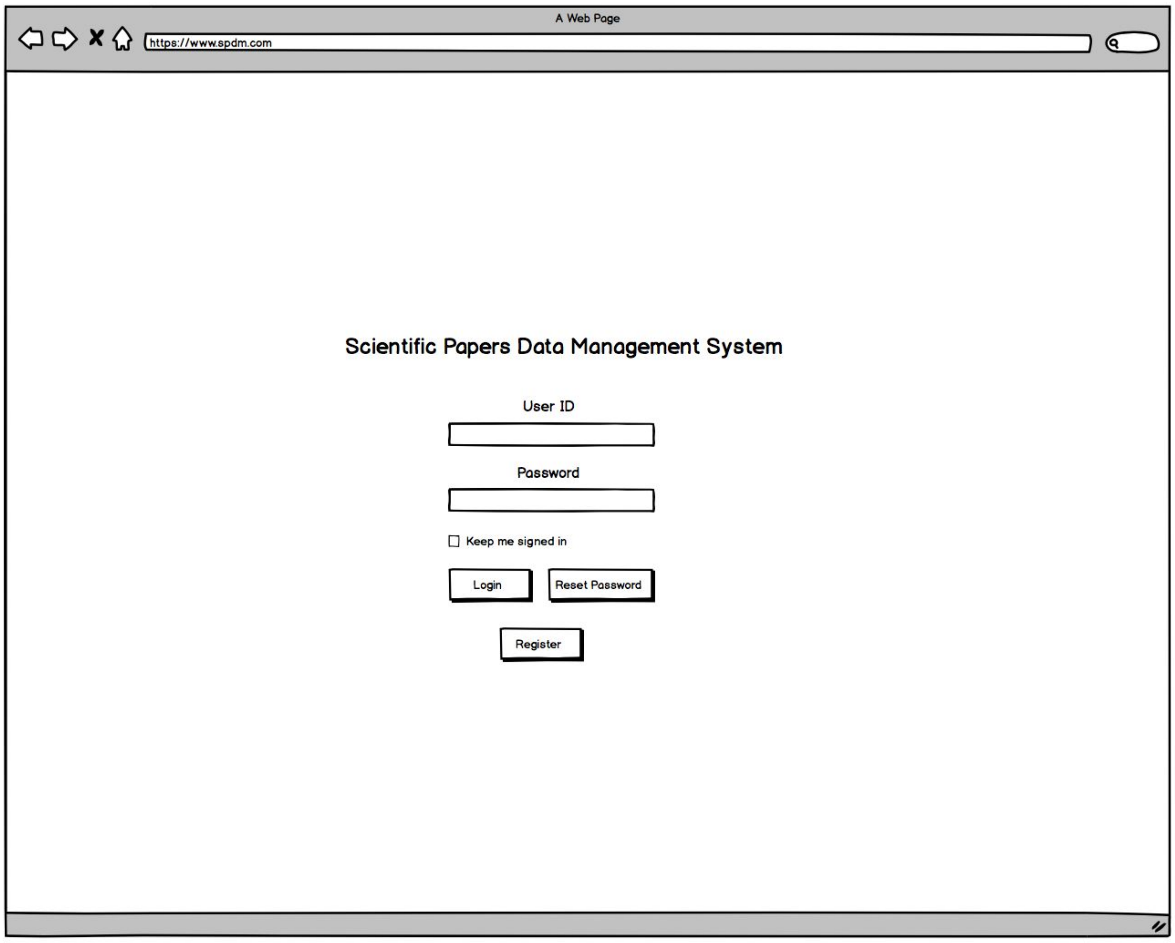
String Types are used to store values which are character compositions. We have used **char** and **varchar**. As an example, varchar is used to represent mail address of the user.

Date and Time Types are used to store time values. We have used **datetime**. As an example, datetime is used to indicate the date of Conference or Journal.

Numeric Types are used to store numeric data. We have used **int**, **tinyint** and **middleint**. As an example, int is used to indicate volume from Journal.

# 5. USER INTERFACE DESIGN AND CORRESPONDING SQL STATEMENTS

## 5.1. Login



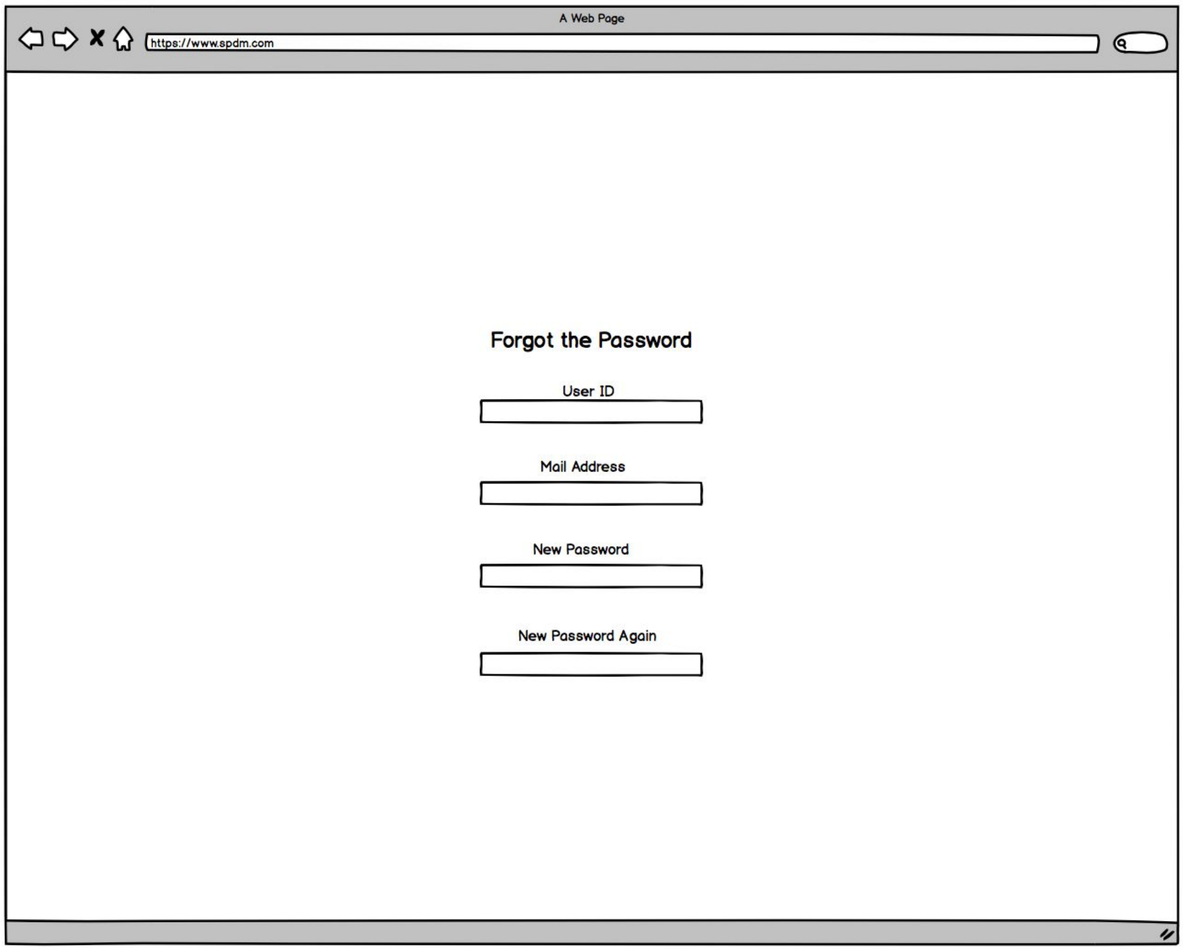
**Input:** @username_or_mail_or_ID, @password

**Process:** Login page is the first one that application visitor encounters with. In order to use the application, user must login to the system by entering the user ID and password and clicking the login button. Once the boxes are filled, user may choose the “keep me signed in” check box so that credentials are saved by system. Reset password button allows user to assign a new password value if the password is forgotten. From the same page, the visitor may create a new account with the register option provided.

**SQL Statements:**
Loggin In
SELECT *

```
FROM users
WHERE (username = @username OR mail = @mail OR ID = @ID)
        AND  password = @password;
```

## 5.2. Forgot The Password



**Input:** @searchquery, @mail, @ID, @newpassword, @newpasswordagain

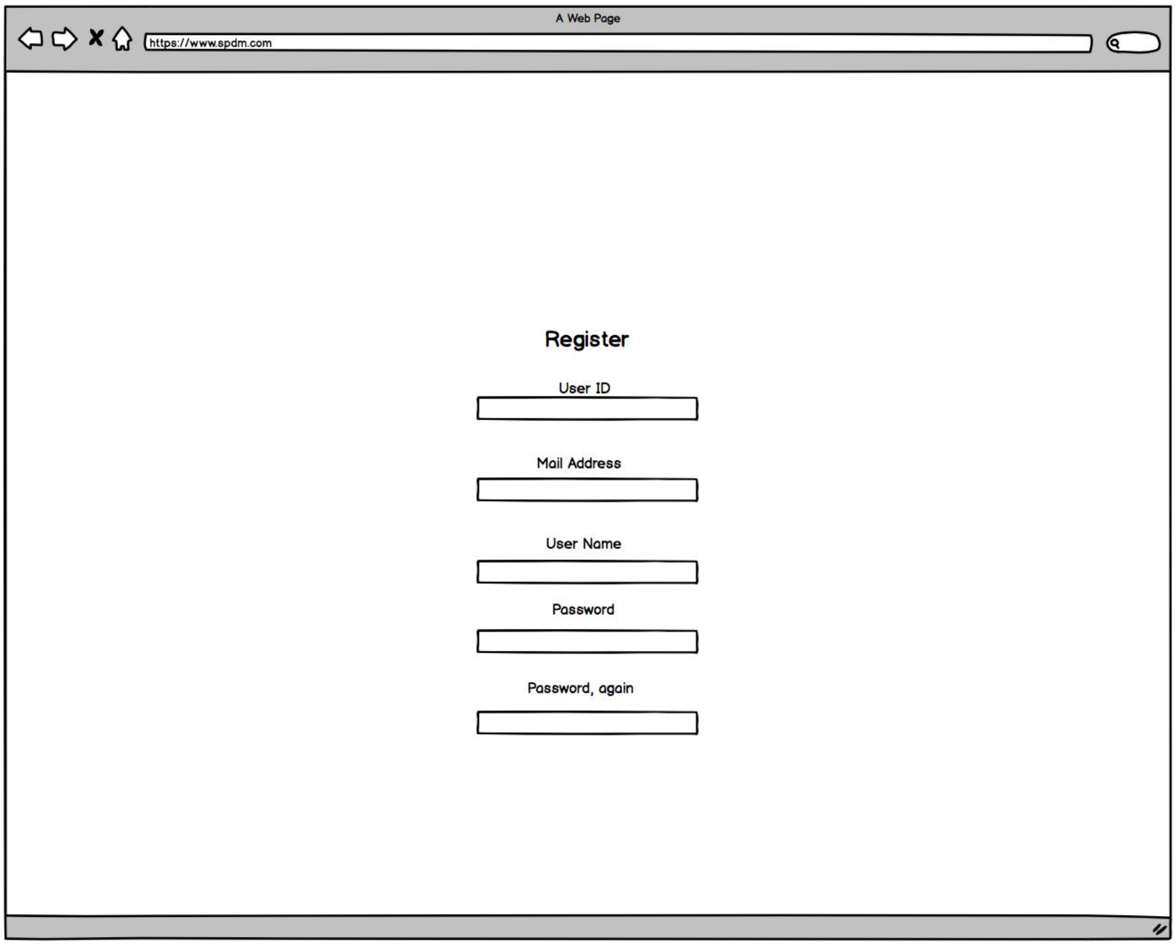
**Process:** User can change the original password from two different pages which navigate user to the forgot the password page. Once the ID, mail address, and new password are entered, forgot the password option is done.

**SQL Statements:**

Password Retrieval

```
UPDATE user
SET password = @newpassword
WHERE (mail = @mail OR ID = @ID) AND
        @newpassword = @newpassword;
```

## 5.3. Register



**Input:** @username, @mail, @ID, @password, @passwordagain

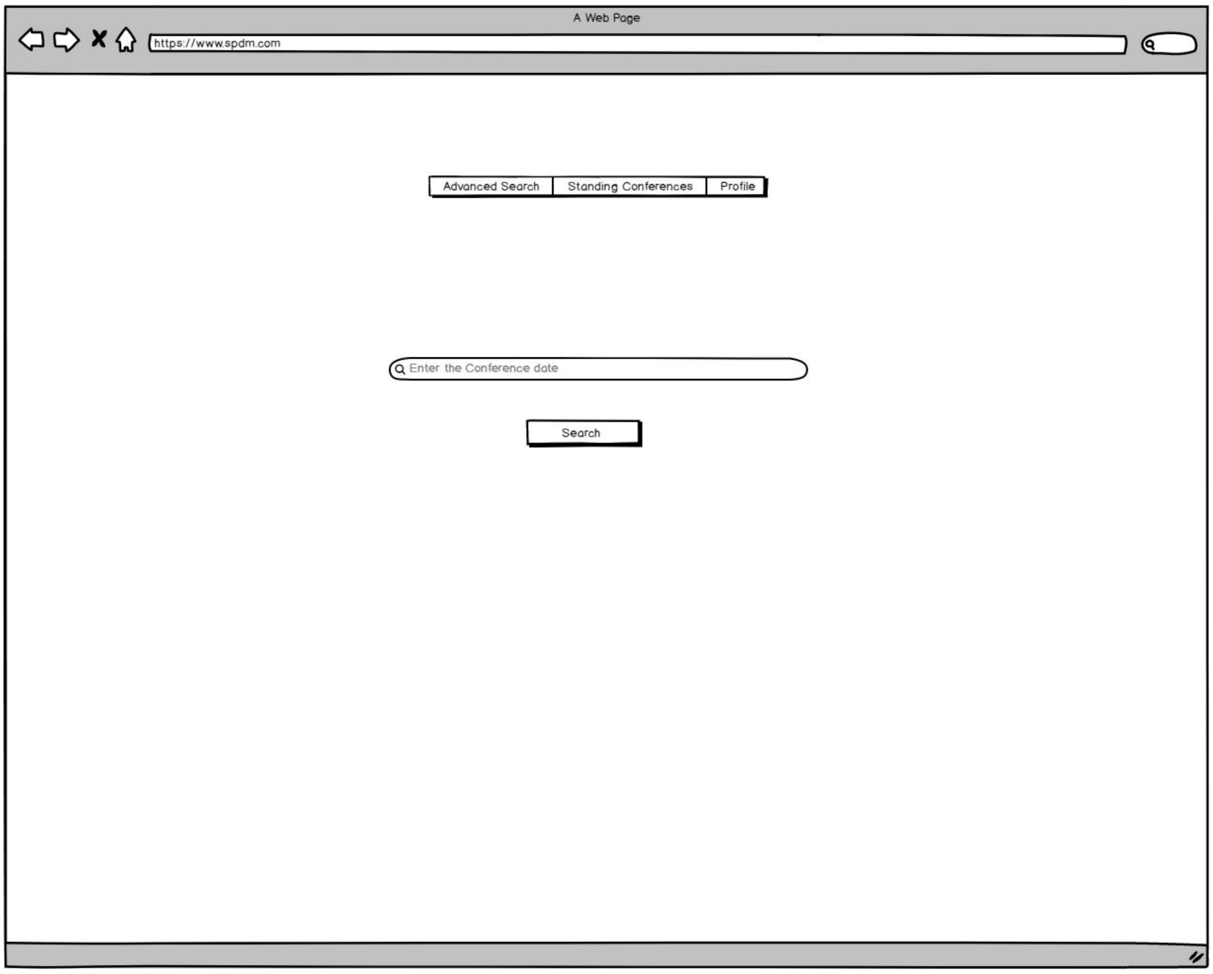
**Process:** Application is only open for the registered users, so everyone who is willing to use the application must first register by providing user ID, mail address, user name and password.

**SQL Statements:**

Registration

```
INSERT INTO users(ID, mail, username, password, passwordagain)
VALUES (@ID, @mail, @username, @password, @passwordagain)
WHERE @password = @passwordagain;
```

## 5.4. Search For Standing Conferences



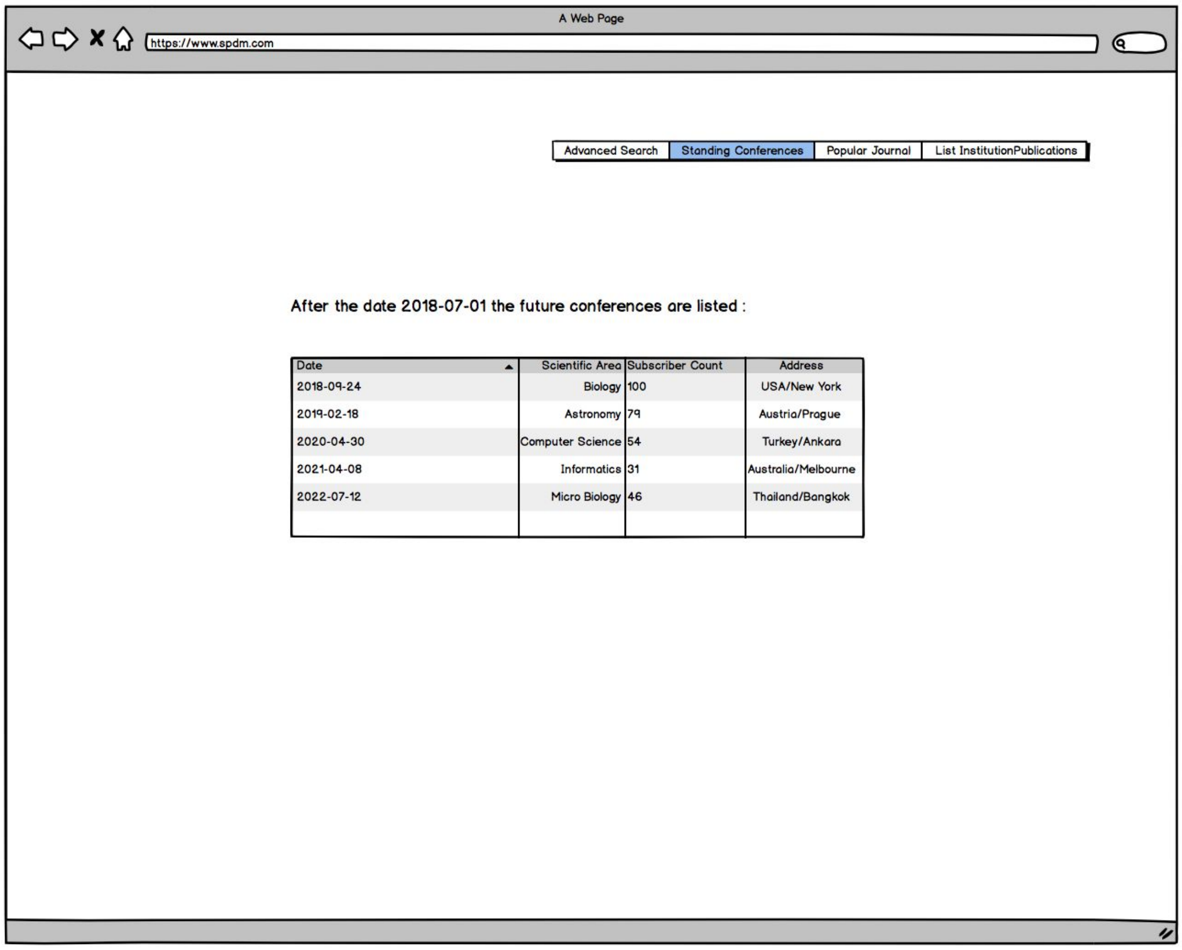
**Input:** @conferenceDate

**Process:** In this page, user can search for the future conferences with a search bar. The results are listed as a bar chart according to the given input.

**SQL Statements:**
Searching for conferences after a specific date

```
SELECT *
FROM conferences
WHERE conferenceDate >= @conferenceDate
```

## 5.5. Screen Of Search Result



After the date 2018-07-01 the future conferences are listed :

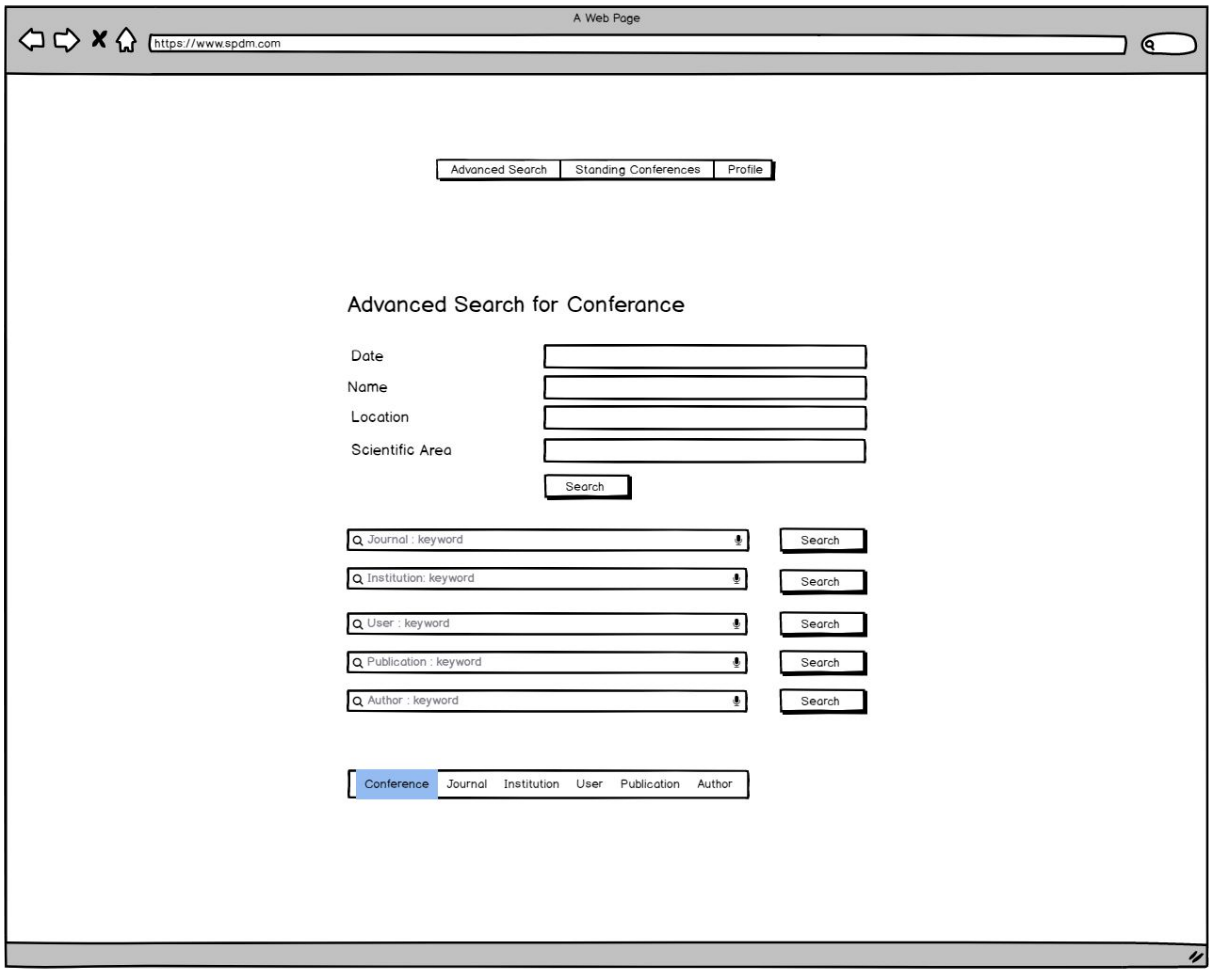
| Date | Scientific Area | Subscriber Count | Address |
|---|---|---|---|
| 2018-09-24 | Biology | 100 | USA/New York |
| 2019-02-18 | Astronomy | 79 | Austria/Prague |
| 2020-04-30 | Computer Science | 54 | Turkey/Ankara |
| 2021-04-08 | Informatics | 31 | Australia/Melbourne |
| 2022-07-12 | Micro Biology | 46 | Thailand/Bangkok |

**Input:** @searchquery

**Process:** The search results for standing conferences are listed as noticeable.

**SQL Statements:** In the screen of the search result, there is no need for SQL statements to be executed.

## 5.6. Advanced Search For Conference



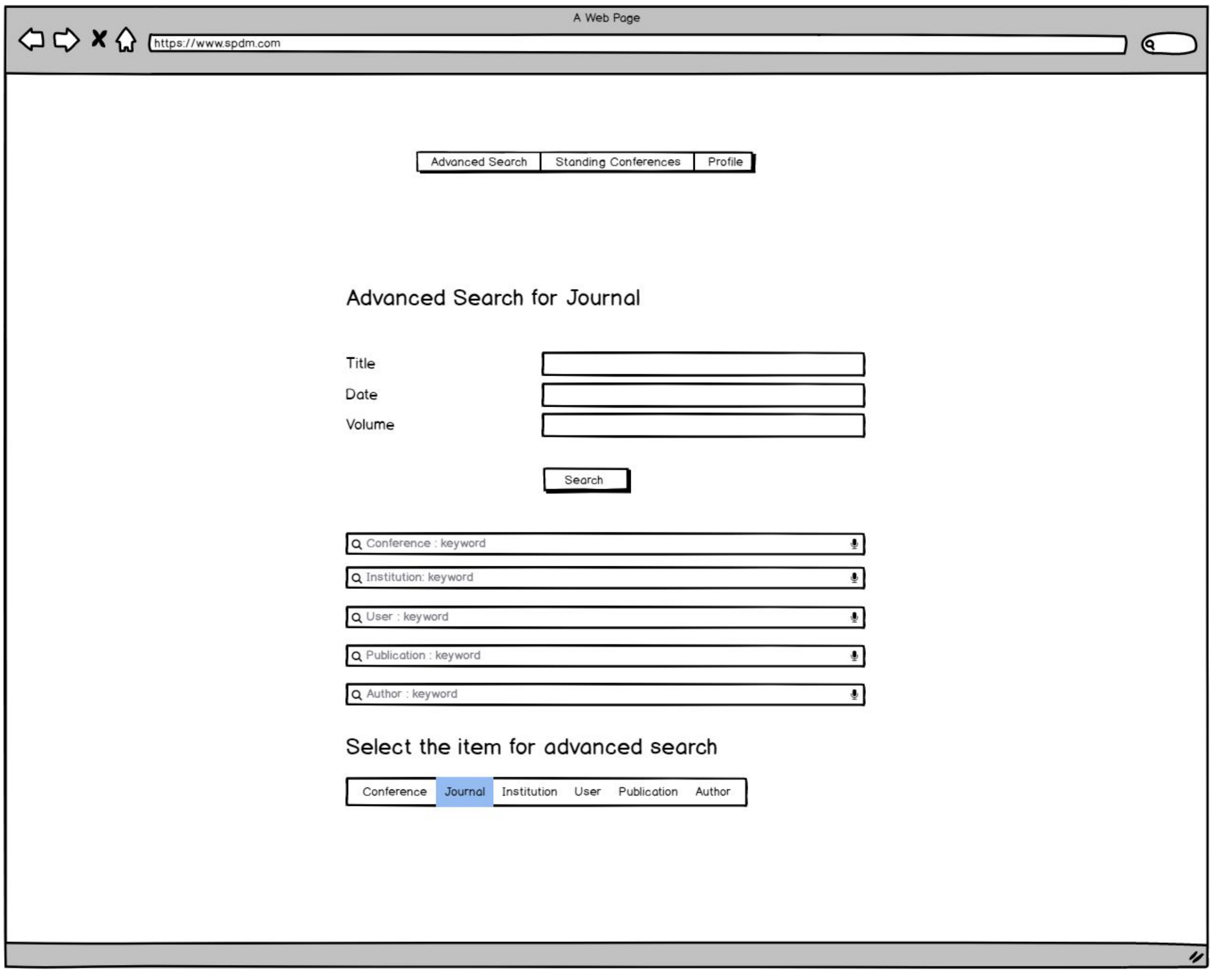
**Input:** @conferenceID, @name, @country, @scientific_area

**Process:** In the advanced search page, there are several tabs listed as conference, journal, institution, user, publication, author. Alongside the advanced search option, user may search for other type of elements in system with a keyword to be provided and by clicking the corresponding search button. In this specific case conference is chosen for the advanced search. To search conference, date, name, location, and scientific area must be specified.

**SQL Statements:**
Searching for conferences

```
SELECT *
FROM conferences
WHERE conferenceID = @conferenceID AND name = @name AND
        country = @country AND scientific_area = @scientific_area;
```

## 5.7. Advanced Search For Journal



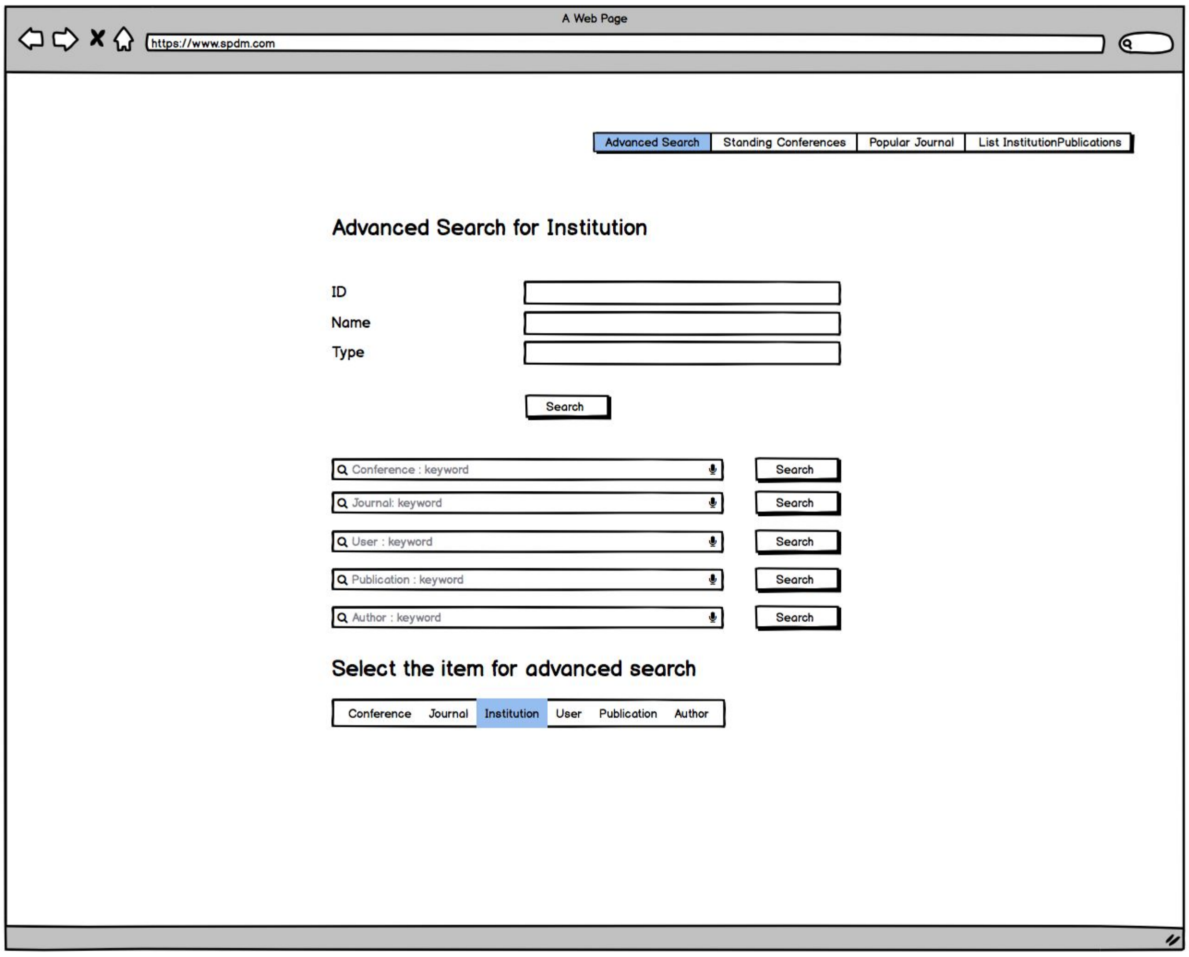
**Input:** @title, @volume, @journalDate

**Process:** For the advanced search of journal, title, date, and volume must be specified in the input bars listed at top.

**SQL Statements:**
Searching for Journals

```
SELECT *
FROM journals
WHERE title = @title AND volume = @volume AND
        journalDate = @journalDate;
```

## 5.8. Advanced Search For Institution



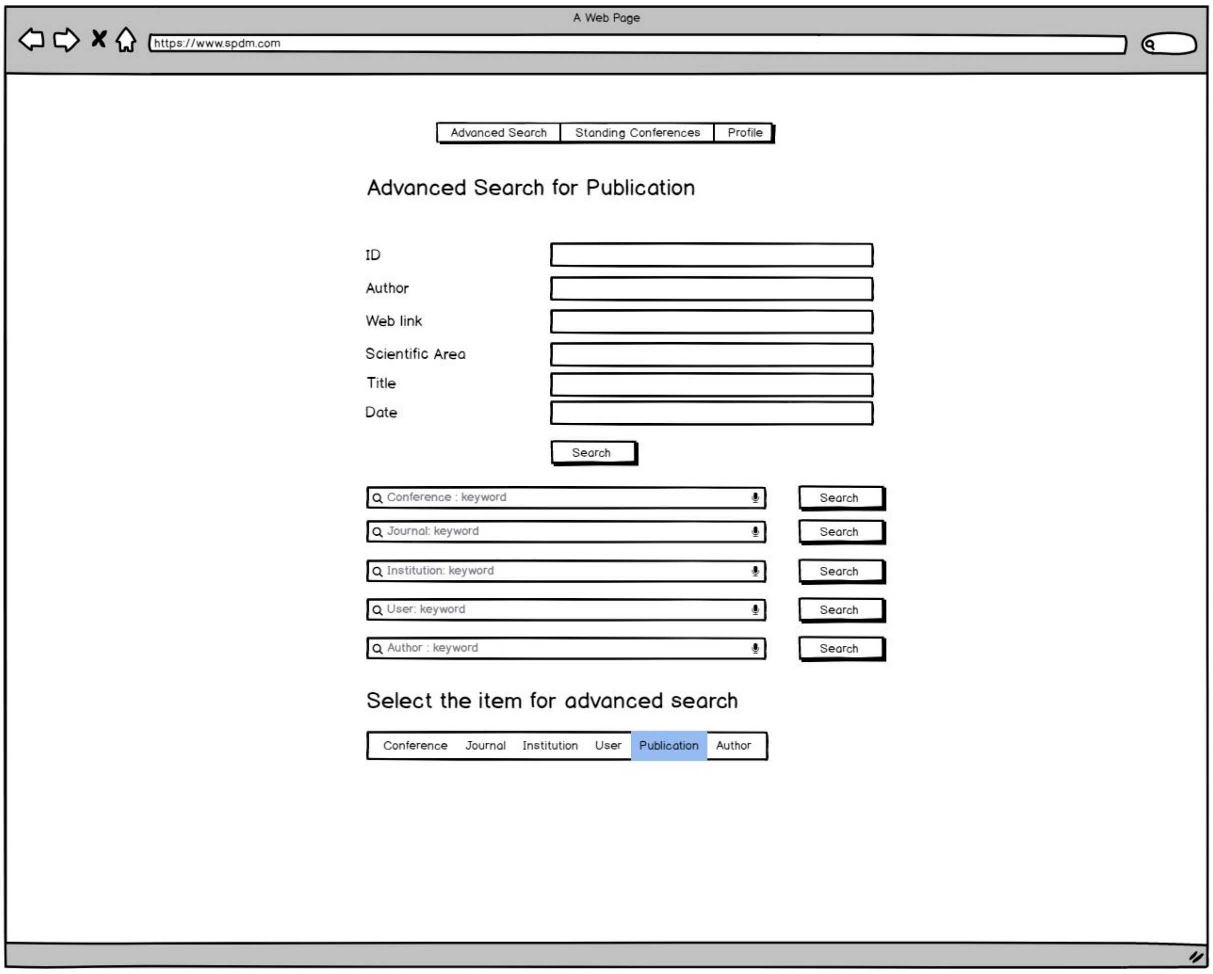
**Input:** @ID, @name, @type

**Process:** For the advanced search of ID, name, and type must be specified in the input bars listed at top.

**SQL Statements:**
Searching For Institution

```
SELECT *
FROM  institutions
WHERE (ID = @ID OR name = @name ) AND type = @type;
```

## 5.9. Advanced Search For Publication



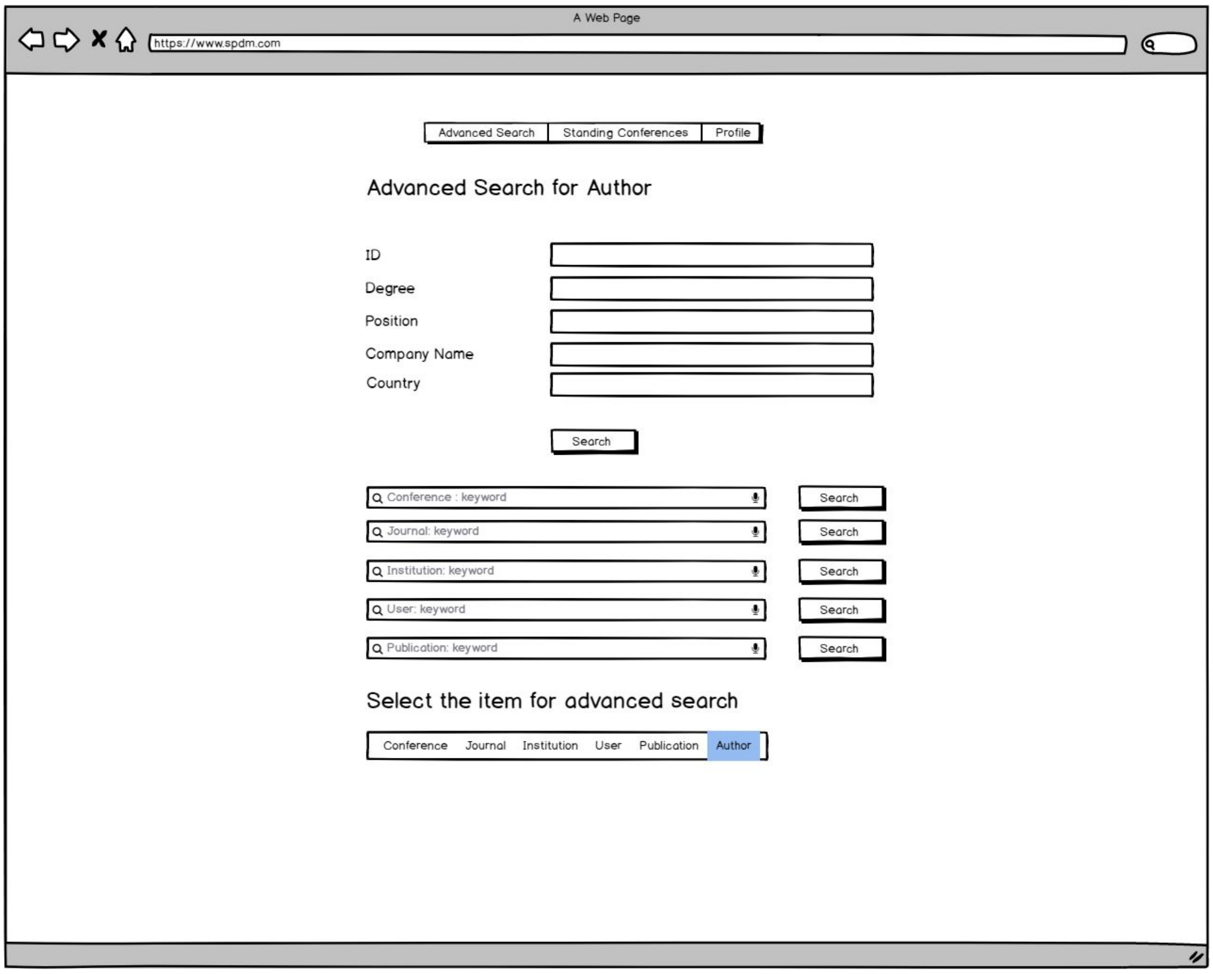
**Input:** @publication_ID, @author, @title, @publicationDate, @scientific_area, @weblink

**Process:** For the advanced search of ID, author, web link, scientific area, title, and date must be specified in the input bars listed at top.

**SQL Statements:**
Searching for specific publication

```
SELECT *
FROM publications
WHERE publication_ID = @publication_ID AND author = @author AND
        title = @title AND publicationDate = @publicationDate AND
        scientific_area = @scientific_area AND weblink = @weblink;
```

## 5.10. Advanced Search For Author



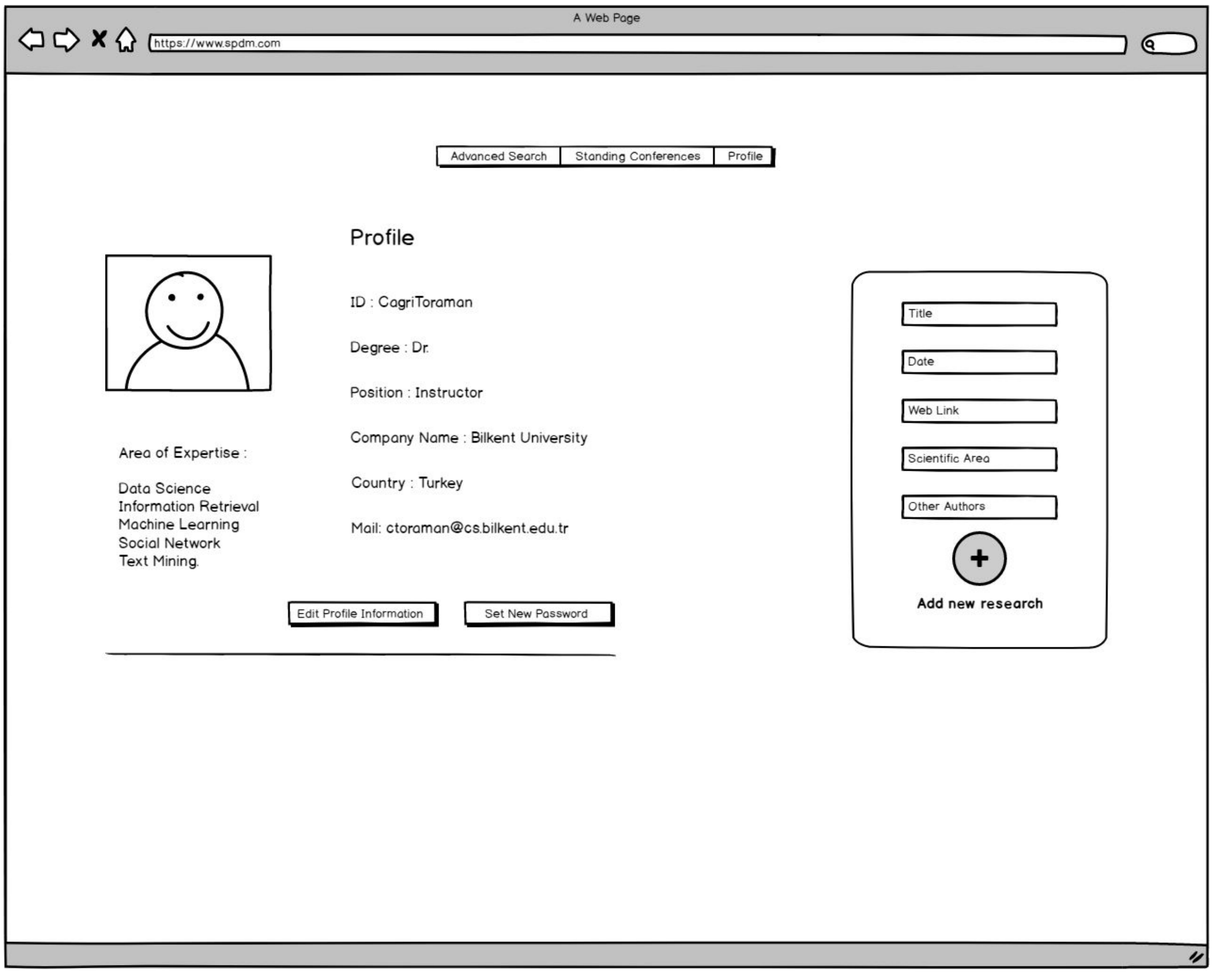
**Input:** @authorID, @degree, @position, @company_name, @country

**Process:** For the advanced search of ID, degree, position, company name, and country must be specified in the input bars listed at top.

**SQL Statements:**
Searching for specific author

```
SELECT *
FROM authors
WHERE authorID = @authorID AND degree = @degree AND
          position = @position AND company_name = @company_name AND
         country = @country;
```

## 5.11. Profile: Add new research & Edit Info



Profile

ID : CagriToraman

Degree : Dr.

Position : Instructor

Company Name : Bilkent University

Country : Turkey

Mail: ctoraman@cs.bilkent.edu.tr

Area of Expertise :

Data Science
Information Retrieval
Machine Learning
Social Network
Text Mining.

**Input:**

- **For "Edit Profile Info":**
  @newID, @newdegree, @newposition, @newcompany_name, @newcountry, @newareaOfExpertise, @newmail
- **For "Add new research":**
  @Title, @ID, @author, @date, @web_link

**SQL Statements:**

- Edit Profile Info
- Add new research

**Process:** Users may edit the related information in any time. They can edit their ID, degree, position, company name, country, and mail. There are two additional functionalities of the profile page. One is that user can add a new research once the title, date, web link, scientific area, and other authors, who contributed to the paper, are specified at the given box. The other functionality allows user to reset profile's password.

**SQL Statements:**

**Edit Profile Info:**

Change user ID

```
UPDATE user
SET ID = @newID
WHERE ID = @ID
```

Change company name

```
UPDATE user
SET ID = @newcompany_name
WHERE ID = @ID
```

Change position

```
UPDATE user
SET ID = @newposition
WHERE ID = @ID
```

Change degree

```
UPDATE user
SET ID = @newdegree
WHERE ID = @ID
```

Change mail

```
UPDATE user
SET ID = @newmail
WHERE ID = @ID
```

Change area of expertise

```
UPDATE area of expertise
SET ID = @newareaOfExpertise
WHERE ID = @ID
```

**Add new research:**

```
INSERT INTO publications
VALUES(@Title, @ID, @author, @date, @web_link, @author)
WHERE ID = @ID
```

# 6. ADVANCED DATABASE COMPONENTS

## 6.1. Views

### 6.1.1 Standing Conferences View

Lists all conferences that are standing or planned in the future.

```
Create view stading_conferences
Select Date, conference_name
From Conference
Where Date >= @Date sort by Date
```

### 6.1.2 Popular Journal View

Lists all journals according to their popularity from selected scientific area.

```
Create view popular_journal
Select *
From Journal
Where scientific_area = @scientific_area
Sort by subscriber_count order by Desc
```

### 6.1.3 Endorsement Count View

The endorsement count of user's skill can be viewed by other users and the user him/herself

```
create view endorsed
select author_id,area of expertise, expertise degree
from Author A Natural join Skill S
where A.author_id = S.author_id And count > @count
```

### 6.1.4 Title to Author's other Publications View

View the title of other publications of a specific publication's authors.

```
Create view Author_publications
Select author_name, P2.title
```

```
From Publication P2 Natural join (    Select u_name as author_name
                                      From Author A Natural Join Publication P
                                      Where A1.u_name = p.author
                                      And P.title = @title)
Where P2.author = author_name
```

### 6.2. Stored Procedures

**Procedure for getting every information about a user**
**@INPUT: USER ID**
**@OUTPUT: ID, MAIL, USERNAME, PASSWORD, PRIVILIDGE, CREATION DATE**

```
DELIMITER //
CREATE PROCEDURE getUser(
    IN userID INT UNSIGNED
    )
    BEGIN
      SELECT * FROM users WHERE ID = userID;
    END //
DELIMITER ;
```

**Procedure for inserting new subscription information**
**@INPUT: USER ID, PULICATION ID, DATE TO END OF SUBSCRIPTION**
**@OUTPUT NONE**

```
DELIMITER //
CREATE PROCEDURE subscribe (
    IN userID INT UNSIGNED
    IN subspublicationID INT UNSIGNED
    IN untill DATE
    )
    BEGIN
      INSERT INTO subscribes(subscriberID, publicationID,
subsUntill)
      VALUES     (userID, subspublicationID, untill);
    END //
DELIMITER;
```

**Procedure for inserting new assignment information**
**@INPUT EDITOR ID, REVIEWER ID, PULICATION ID**
**@OUTPUT NONE**

```
DELIMITER //
CREATE PROCEDURE assign (
    IN inputEditorID INT UNSIGNED
    IN inputReviewerID INT UNSIGNED
    IN inputPublicationID INT UNSIGNED
    )
    BEGIN
      INSERT INTO assigned(editorID, reviewerID, publicationID)
      VALUES (inputEditorID, inputReviewerID, inputPublicationID);
    END //
DELIMITER;
```

**Procedure for inserting new citation information**
**@INPUT ID OF THE CITING PAPER, ID OF THE CITED PAPER**
**@OUTPUT NONE**

```
DELIMITER //
CREATE PROCEDURE cite (
    IN citedID INT UNSIGNED
    IN citeeID INT UNSIGNED
)
    BEGIN
      INSERT INTO cited(citedPublicationID, citingPublicationID)
      VALUES (citedID, citeeID);
    END //
DELIMITER;
```

**Procedure for inserting new submission information**
**@INPUT ORGANIZATION ID, SUBMITTION ID**
**@OUTPUT NONE**

```
DELIMITER //

CREATE PROCEDURE submit(
    IN inputOrganizationID
    IN inputPublicationID
)
    BEGIN
      INSERT INTO submitted(organizationID, publicationID)
      VALUES (inputOrganizationID, inputPublicationID);
    END //
DELIMITER ;
```

**Procedure for inserting new management information**
**@INPUT ORGANIZATION ID, EDITOR ID**
**@OUTPUT NONE**

```
DELIMITER //
CREATE PROCEDURE manage (
    IN inputOrganizationID
    IN inputEditorID
)

    BEGIN
      INSERT INTO manages(organizationID, editorID)
      VALUES (inputOrganizationID, inputEditorID);
    END\\
DELIMITER;
```

## 6.3. Reports

### 6.3.1 Institution Publication Report

The number of publications for each institution can be reported to the user.

```
Create view institution_Publcation_report
Select I.name, count(*)
From Institution I Natural join ( Select A.uname, count(*), inst_id
                                  From Author A, Publication P
                                  Where A.u_name = P.author
                                  Group By A.u_name)
Where I.ID = inst_id
Group By I.name
```

## 6.4. Triggers

- When a publication is accepted by any of the conferences or journals, it will be removed from the submission list so that it can be submitted to multiple publications but can only be published once.
- When a user subscribes a journal or a conference, subscription count will be incremented
- When a user unsubscribes a journal or a conference, subscription count will be decremented
- When another author endorses another author’s expertise, the endorsement count will be incremented
- Submissions can only be made to the future publications.

## 6.5. Constraints

  - Every conference and journal must have at least one editor.
  - For the papers, authors and date cannot be null.
  - Conferences must have valid address.
  - Skills of the authors must be endorsed by other users.
  - Institutions must have valid addresses.
  - User emails must be unique and valid.

# 7. IMPLEMENTATION PLAN

In our project, the data flow is managed and controlled by using MySQL Server. In order to implement the web service, we are planning to use HTML, Javascript, Django Python, Bootstrap. For the back-end, we will use PHP.

## 8. WEBSITE

The link of GitHub page of the project is the following:
https://github.com/cerenuysal/CS-353