Bilkent University

Department of Computer Science

CS 353 - Database Systems

ScienceKeep

Scientific Papers Data Management System

Project Final Report

Group 6

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1.Description Of The System

ScienceKeep is a is a web-based application with a purpose of helping to manage scientific papers in conferences and journals. In the system information about the authors, editors, conference-chairs, reviewers, journals, conferences, submitted papers and institutes can be found. In the system there are different types of memberships with different functionalities. The user types are as follows; author, subscriber, conference-chair and editor. In order to use the system a registration is to the system is required. After registration, users can login to the system with their unique member ID and passwords. In the system users can search all the papers that are published, topics and authors according to the keywords they have given. In the conferences page users can see the list conferences with their names, capacity and locations and sort those accordingly as well. Users can also enter to a conference page by clicking to the conference name from this page. In a conference page users can see the detailed information about a conference and also submit their papers to the conference. In the journals page users can see the name of the journals, their cost, place of publications and ISBN numbers and sort those accordingly as well. From this page user can enter to a journal page by clicking to the name of the journal. In a journal page users can see the detailed information about a journal and also submit their papers to the journal. In the author page users can see the name of the authors, their paper count, citation count sort those accordingly as well. User can also go the desired authors profile from this page, where they can find detailed information about an author and information about their papers. Users also have a personal profile and and they can also update their profile information. When a paper is submitted to the journal or conference those papers appears to editor as awaiting papers. In the editor page editor can see awaiting papers and list of reviewers. An editor can assign a paper to a reviewer to publish a paper submitted by an author. In the reviewer page reviewer can see the papers that is assigned to him or her and can decide whether to accept to the or decline it. When a paper is accepted by a reviewer it is published in the submitted journal conference. When an author submits a paper she/he can also make a citation to an another paper. If the paper submitted by this author is published then citation counts of the referenced papers and authors increase as well.

2.Participation

Emre Gürçay: Has written huge part of SQL's everywhere throughout the database and tested them in his dijkstra database to make sure they work. Having most SQL's beforehand have been extremely useful in coding the system, otherwise would take much longer. He also coded the submit paper page as well as journal page and edit profile page.

Hüseyin Emre Başar: Created specific profile page, edit profile page and conference page by using PHP and HTML, fixed dynamic link bugs on the reviewer's page, helped on the PHP codes for listing all conferences, journals and authors. Debugged SQL codes and if it was not enough, rewritten it. Helped on connections which enables users to navigate among site.

Erdem Adaçal: For front-end side of the project, has written fully Homepage, responsive header menu that is included by all pages, Search Results Page, My Profile Page, responsive 'Sort By' mechanism that is used by some pages, responsive list table that is used by List All Conferences, List All Journals, Authors, Browse Topics, Search Results by using HTML, CSS, Javascript, jQuery. For back-end side of the project, I wrote Logout system, Conferences, Search box, search results page, profile page, different pages and redirections depending on memper type with PHP. Fixed some SQL bugs in Authors and Journals page.

Mehmet Erim Erdal: Created small SQL statements when Emre Gürçay's SQL's were not used. Created Login and Sign Up pages (Used a BootStrap for them, integrated in to our system), written SQL's for it and linked these pages with database, written most PHP codes for it. Written SQL for Topics section and linked it with Search button. Created and designed Contact section, PHP HTML included. Helped in coding PHP for listing Journals and Conferences. Helped in both PHP, HTML CSS design for both. Reviewer pages and Editor user specific pages.

3.E/R Diagram
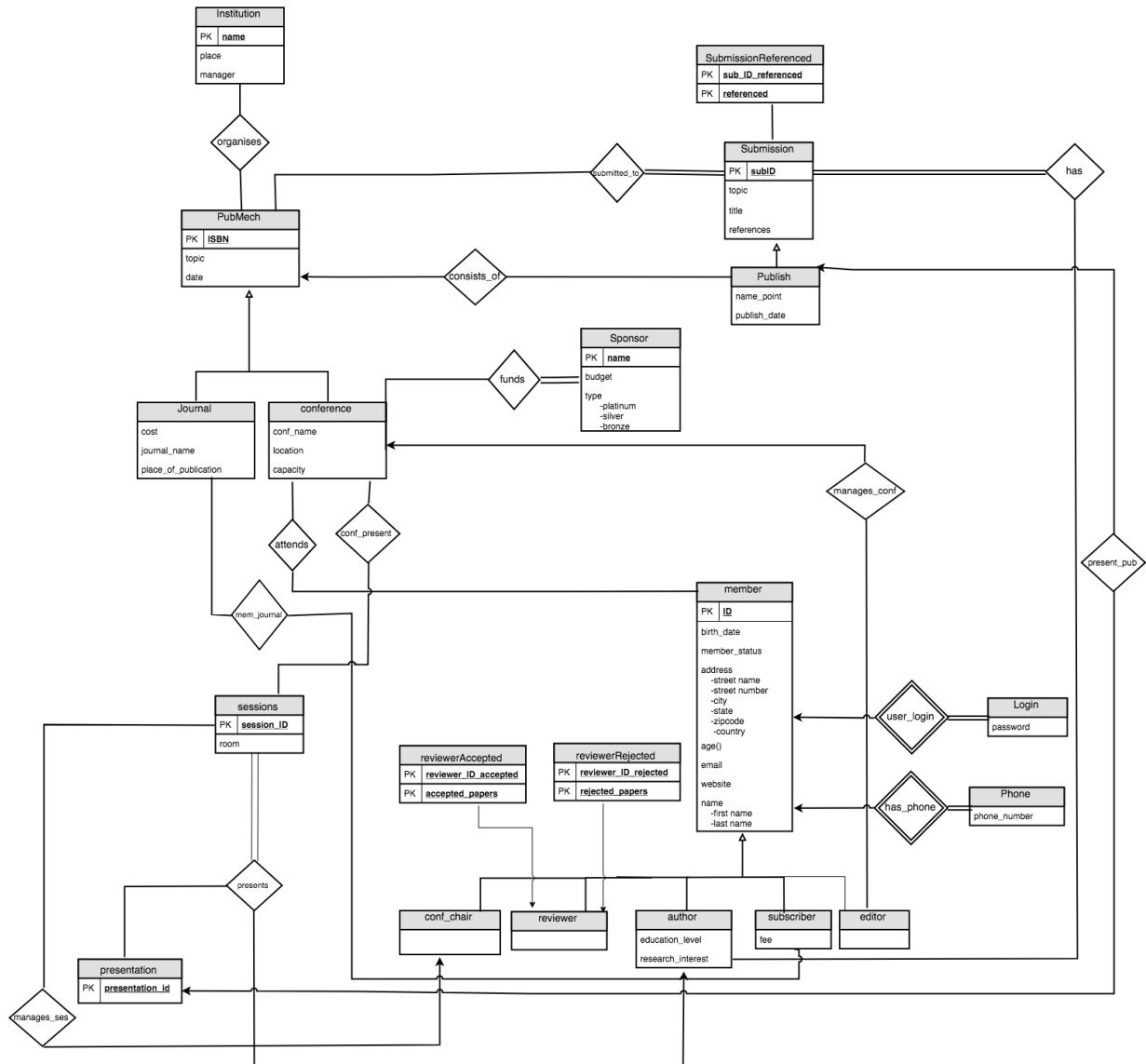
4.Final List of Tables

Institution
Institution(<u>name</u>, place, manager)

pubMech
pubMech(<u>ISBN</u>, topic, date)

journal
journal(<u>journal_ISBN</u>, cost, journal_name, place_of_publication)
FOREIGN KEY journal_ISBN REFERENCES pubMech(ISBN)

Conference
conference(<u>conf_ISBN</u>, conf_name, location, capacity)
FOREIGN KEY conf_ISBN REFERENCES pubMech(ISBN)

Submission
Submission(<u>sub_ID</u>, topic, title)

submissionReferenced
submissionReferenced(<u>sub_ID_ref</u>, <u>referenced</u>)
FOREIGN KEY sub_ID_ref REFERENCES submission(sub_ID)

publish
publish(<u>sub_ID_publish</u>, name_point, publish_date)
FOREIGN KEY sub_ID_publish REFERENCES submission(sub_ID)

citation
citation(<u>citation_name</u>)

sponsor
sponsor(<u>name</u>, budget)

member
member(<u>ID</u>, birth_date, member_status, email, website, firstname, lastname, zip_code, city, country, street_name, street_number)

sessions
sessions(<u>sessions_ID</u>, room)

presentation
presentation(<u>presentation_ID</u>)

author
author(<u>author_ID</u>, education_level)
FOREIGN KEY author_ID REFERENCES member(ID)

authorInterest
authorInterest(<u>author_ID_interest</u>, <u>research_interest</u>)
FOREIGN KEY author_ID_interest REFERENCES author(author_ID)

subscriber
subscriber(<u>subscriber_ID</u>, fee)
FOREIGN KEY subscriber_ID REFERENCES member(ID)

student
student(<u>student_ID</u>, gpa)
FOREIGN KEY student_ID REFERENCES member(ID)

reviewer
reviewer(<u>reviewer_ID</u>)
FOREIGN KEY student_ID REFERENCES member(ID)

reviewerAccepted
reviewerAccepted(<u>reviewer_ID_accepted</u>, <u>accepted_papers</u>)
FOREIGN KEY reviewer_ID_accepted REFERENCES reviewer(reviewer_ID)

reviewerRejected
reviewerRejected(<u>reviewer_ID_rejected</u>, <u>rejected_papers</u>)
FOREIGN KEY reviewer_ID_rejected REFERENCES reviewer(reviewer_ID)

editor
editor(<u>editor_ID</u>)
FOREIGN KEY editor_ID REFERENCES member(ID)

confChair
confChair(<u>conf_chair_ID</u>)
FOREIGN KEY conf_chair_ID references member(ID)

memberPhone
memberPhone(<u>member_phone_ID</u>, <u>phone_number</u>)

FOREIGN KEY member_phone_ID REFERENCES member(ID)

login
login(login_ID, password)
FOREIGN KEY login_ID REFERENCES member(ID)

presents
presents(sessions_ID, presentation_ID, presenter_ID)
FOREIGN KEY sessions_ID REFERENCES sessions(sessions_ID)
FOREIGN KEY presentation_ID REFERENCES presentation(presentation_ID)
FOREIGN KEY presenter_ID REFERENCES member(ID)

organises
organises(org_name, org_ISBN)
FOREIGN KEY org_name REFERENCES institution(name)
FOREIGN KEY org_ISBN REFERENCES pubMech(ISBN)

submitted_to
submitted_to(submit_ID, submit_ISBN)
FOREIGN KEY submit_ID REFERENCES submission(sub_ID)
FOREIGN KEY submit_ISBN REFERENCES pubMech(ISBN)

has
has(hsub_ID, hID,)
FOREIGN KEY hsub_ID REFERENCES submission(sub_ID)
FOREIGN KEY hID REFERENCES member(ID)

mem_journal
mem_journal(mem_ISBN, mem_ID)
FOREIGN KEY mem_ISBN REFERENCES pubMech(ISBN)
FOREIGN KEY mem_ID REFERENCES member(ID)

conf_present
conf_present(conf_ISBN_present, conf_session_id)
FOREIGN KEY conf_ISBN_present REFERENCES pubMech(ISBN)
FOREIGN KEY conf_session_id REFERENCES sessions(session_ID)

present_pub
present_pub(presentation_ID, sub_ID)
FOREIGN KEY presentation_ID_pub REFERENCES presentation(presentation_ID)
FOREIGN KEY sub_ID REFERENCES submission(sub_ID)

funds
funds(<u>funds_conf_ISBN</u>, <u>funds_name</u>)
FOREIGN KEY funds_conf_ISBN REFERENCES pubMech(ISBN)
FOREIGN KEY funds_name REFERENCES sponsor(name)

reviewerAssigned
reviewerAssigned(reviewer_ID_assigned, editor_ID_assigned, <u>assigned_paper_ID</u>)
FOREIGN KEY reviewer_ID REFERENCES reviewer(reviewer_ID)
FOREIGN KEY assigned_paper_ID REFERENCES submission(sub_ID)

attends
attends(<u>attend_ID</u>, <u>attend_conf_ISBN</u>)
FOREIGN KEY attend_ID REFERENCES member(ID)
FOREIGN KEY attend_conf_ISBN REFERENCES conference(conf_ISBN)

manage_ses
manage_ses(<u>man_ses_ID</u>, <u>man_ID</u>)
FOREIGN KEY man_ses_ID REFERENCES sessions_ID
FOREIGN KEY man_ID REFERENCES confChair(conf_chair_ID)

5.Implementation Details

Our Scientific Paper Management System, ScienceKeep consists of two main parts, namely database component and website component. We have used the database provided by school, MariaDB which works with MySQL. In order to have a consistency between our implementations, such as a GitHub account, we have all used Cyberduck to connect to Erim Erdal's MariaDB, therefore with Cyberduck File Manager we achieved consistency between our implementations. This way we could immediately see if either of us made a change to a file. In order to automate database creation and populate the database, we created SQL statements and put them on codeshare.io, which we used them later in MariaDB from Terminal, both for testing and having a data. The data for our Scientific Paper Management system is improvised from other scientific paper database management systems.

For the user interface and application functionalities of our Scientific Paper Database Management System, we used HTML, CSS and JavaScript. HTML is used to design the user

interface and the styles of the pages are implemented using CSS. JavaScript is used to provide pop-ups and other error types situationally. To provide an even better user interface design, the current Bootstrap Framework (3.3.7) is used.

PHP is used throughout the entire system to provide system operations. PHP files are embedded with their respective HTML components for each page that Database System can redirect, and the files are named with the extension .php. Hence if one would like to check for HTML codes, they must enter the respective .php file. There are many situations where we have used HTML codes integrated with PHP codes because there are many places where we create dynamic HTML components, which require information from database, therefore we integrated PHP in those places. Also jQuery library is used to use JavaScript.

6. Advanced Database Features

View 1

```
create view author_citation_count (author_ID, author_citation_count)
as select distinct author_ID, count(*) as author_citation_count
from (author join (has join (submission join publish))), submissionReferenced
where  sub_ID = sub_ID_publish and title = referenced and hID = author_ID and hsub_ID
= sub_ID
group by author_ID;
```

View 2

```
create view published_paper_count (published_author_ID, firstname, lastname,
published_paper_count)
as select author_ID, firstname, lastname ,count(title) as published_paper_count
from (member join (author join ( has join (publish join (submission )))))
where author_ID =  ID and author_ID = hID and hsub_ID = sub_ID and sub_ID =
sub_ID_publish
group by firstname, lastname;
```

```
+----------------+------------+----------------------+----------------------+
| firstname      | lastname   | published_paper_count | author_citation_count |
+----------------+------------+----------------------+----------------------+
| aa             | aa         |                    6 |                   17 |
| gg             | ggg        |                    7 |                   18 |
| hh             | hhh        |                   10 |                   25 |
| ii             | iii        |                    2 |                    6 |
+----------------+------------+----------------------+----------------------+
```

Output of View 1 and View 2

View 3

create view all_author_papers_citation (title)
as select distinct title
from (submissionReferenced join (submission natural join (has natural join author))),
publish
where sub_ID_publish = sub_ID AND author_ID = hID AND hsub_ID = sub_ID AND
referenced = title;

```
+------------------------------------------+
| all_author_papers_citation               |
+------------------------------------------+
| Algorithms Upsides                       |
| Computer Organization Downsides          |
| MIPS Architecture Is Not Reliable        |
| Algorithms in Life                       |
| Shortest Path                            |
| Webscale Netflix                         |
| Will Robots Replace Accountants?         |
| Disney Complex Algorithms Theory         |
| Tree Insertions                          |
| Is Linux Safe?                           |
| Machine Learning in Medicine             |
| Big Data Upsides                         |
| Netflix to Future?                       |
| 6 Level Paging Is The Next Level         |
| Can Robots Do It?                        |
| Cookies                                  |
+------------------------------------------+
```

Output of View 3

View 4

create view submitted_not_published (title, topic, sub_ID)
as SELECT distinct title, topic, sub_ID
from submission
where not exists (select sub_ID_publish from publish where publish.sub_ID_publish =
submission.sub_ID);

Output of View 4

Trigger 1
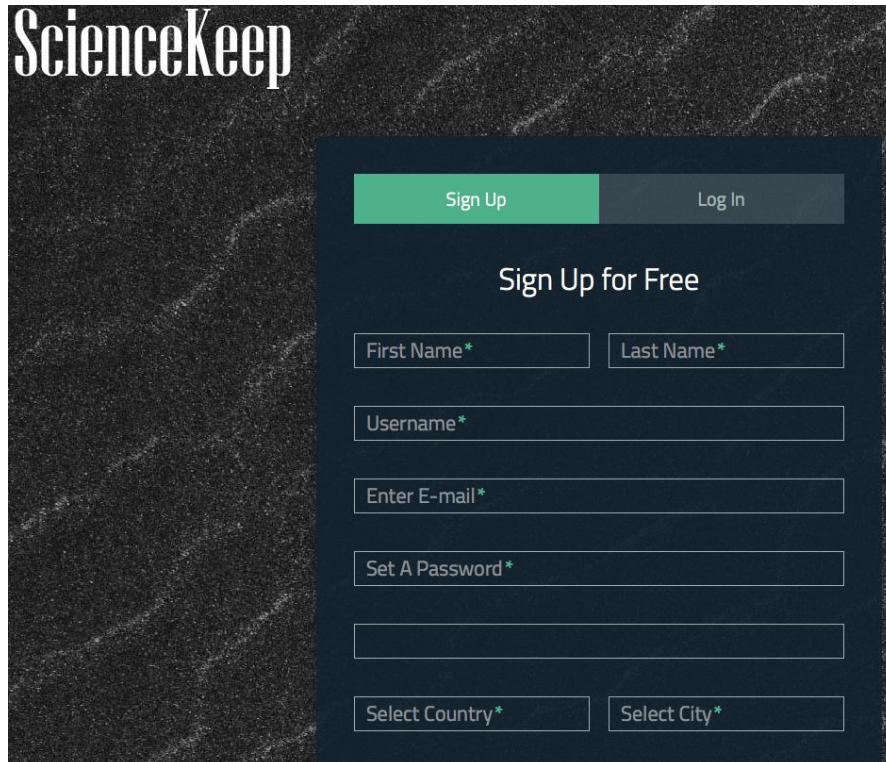
```
CREATE TRIGGER conference_update  After INSERT ON attends
  AS
  BEGIN
   UPDATE conference,
   SET size = (size -1) where size >  0,
   WHERE attends.attend_conf_ISBN = conference.conf_ISBN;
  END
```

7. User Manual

7.1 Sign Up

Here you can fill out the form in order to create an account. Full sign up form can not be shown in a single picture but you should select your member status too.

Figure -1- Sign Up

7.2 Log In

You can use the information you provided to sign up to log in.

Figure -2- Log In

7.3 Home Page

From Homepage you can see the options you have to navigate through the database. You can log out by clicking Logout. In this figure, there is a section called Editor's Page. It is visible because this is a editor account.
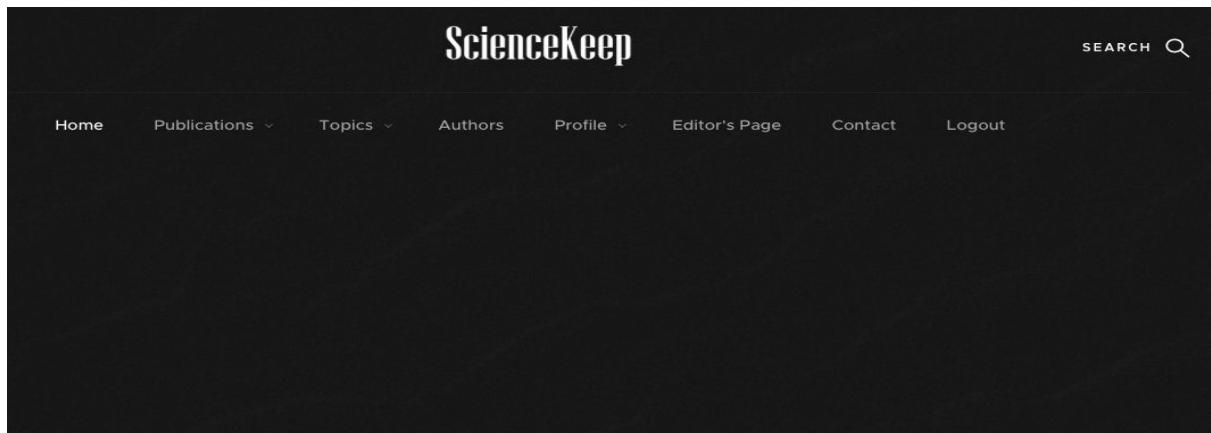
Figure -3- Home Page

7.4 List All Conferences

Here you can see all a list of all current conferences and their information. You can sort papers A-Z, Z-A, by capacity or by location name alphabetically.
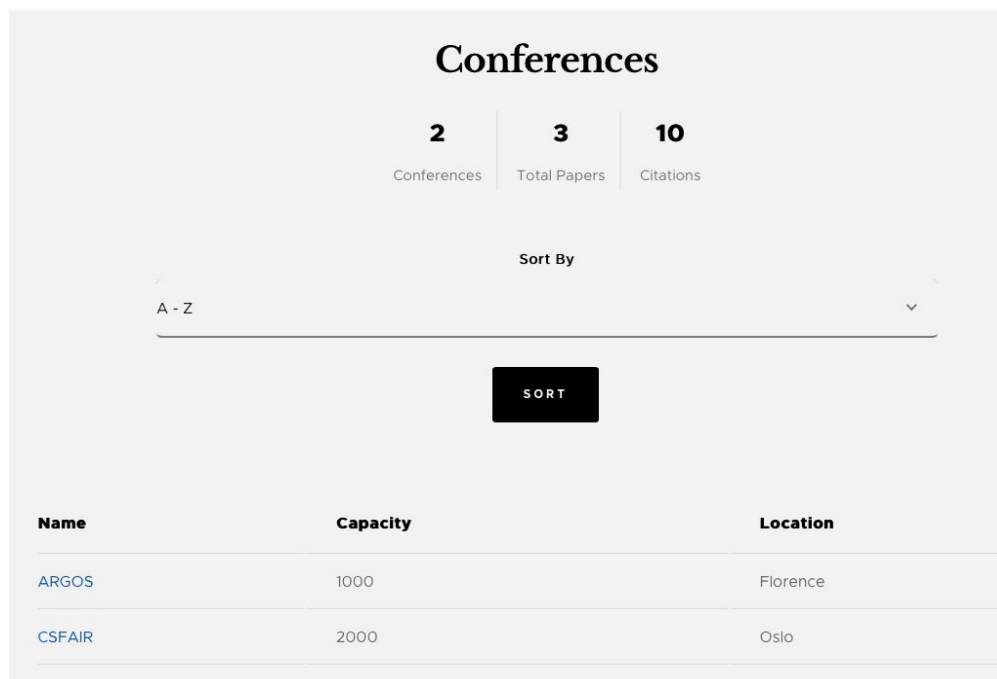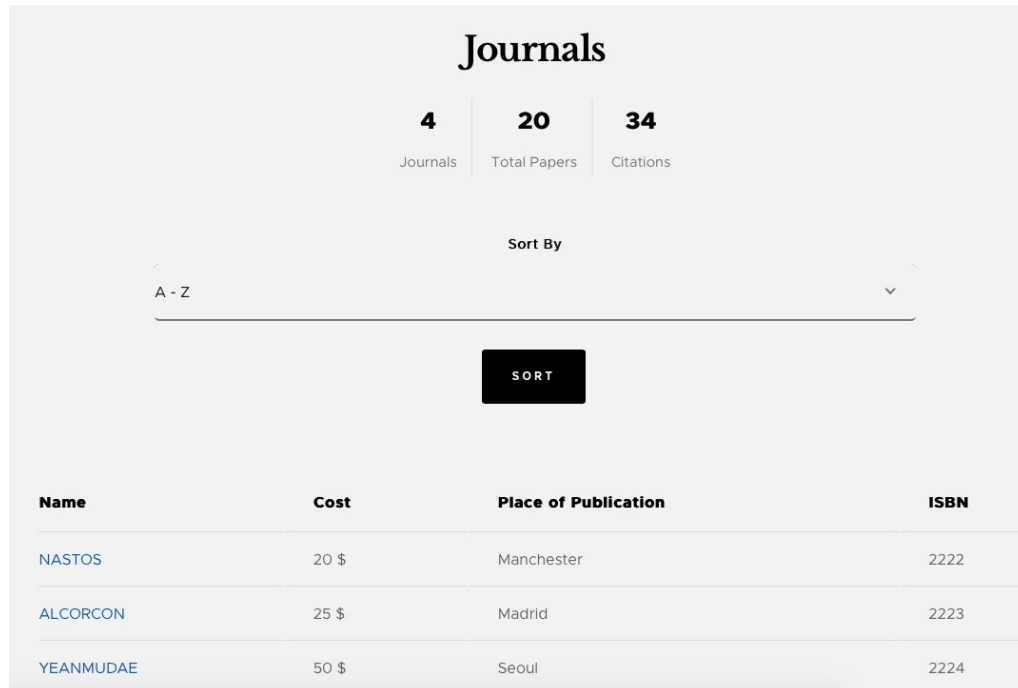
Figure -4- List All Conferences

7.5 List All Journals

Similarly, you can see all current journals and their information.
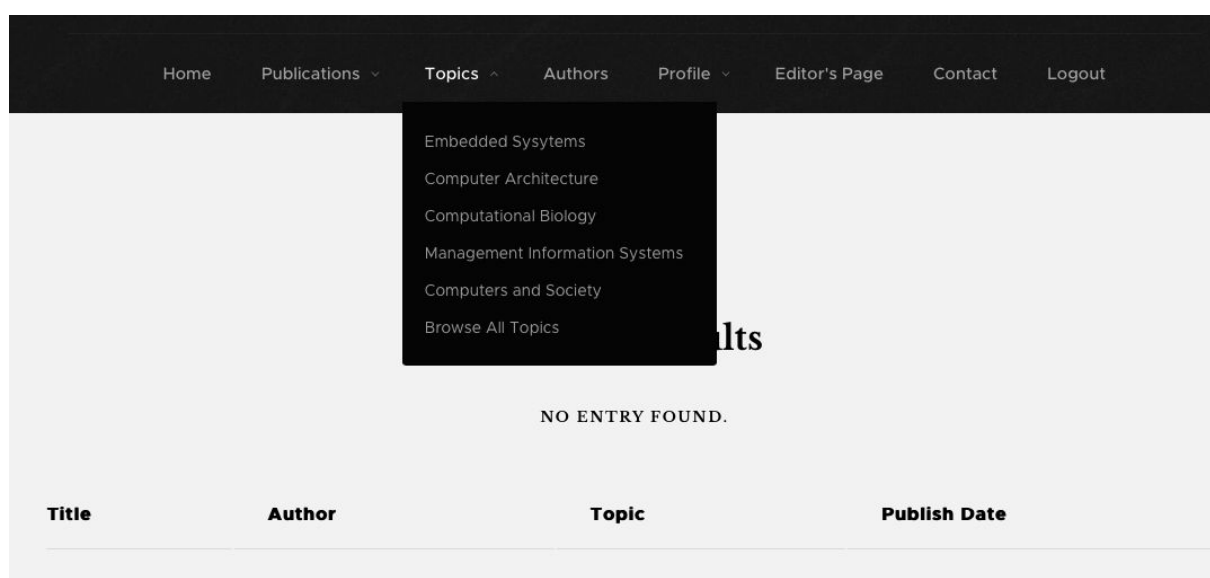
Figure -5- List All Journals

7.6 Topics

In Topics section, you can make a search depending on the topics listed.

Figure -6- Topics

7.7 Authors

In authors, you can see a list of all current authors. Links are provided in their names which can be clicked which redirects you to the profile of the author.

Figure -7- Authors

7.8 My Profile

My profile shows the profile of the currently logged in user. Where you can see the papers you have published, your ScienceKeep score etc.

Figure -8- My Profile

7.9 Edit Profile

You can edit your profile, change the necessary information provided from here.

Figure -9- Edit Profile

7.10 Editors Page

Editors Page starts with the same look of My Profile, however it can be only reached if the user's member status is editor. Here you can see the pending submissions and a list of reviewers, which you can assign a specific paper to a reviewer to review.

Figure -10- Editors Page Top

Figure -11- Editors Page Bottom

7.11 Contact

Here you can drop an opinion, see our motto and see our contact information.

Figure -12- Contact Top
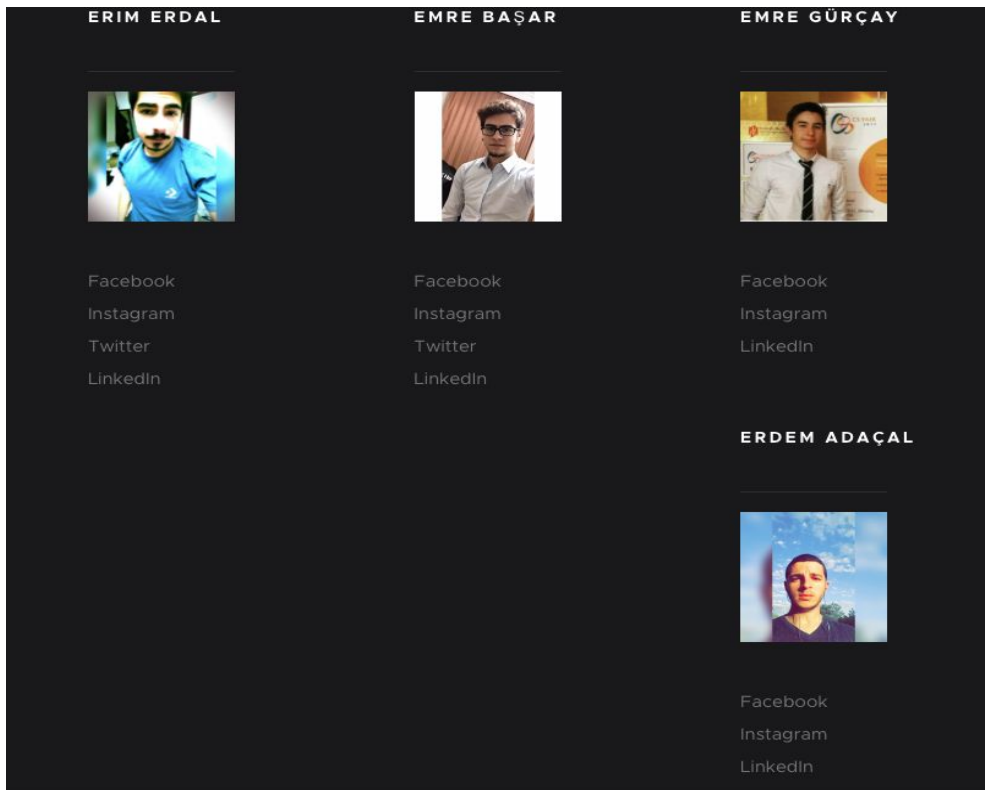
Figure -13- Figure Bottom

7.12 Search Bar

You can search through papers with options of searching paper name, author name and topic.
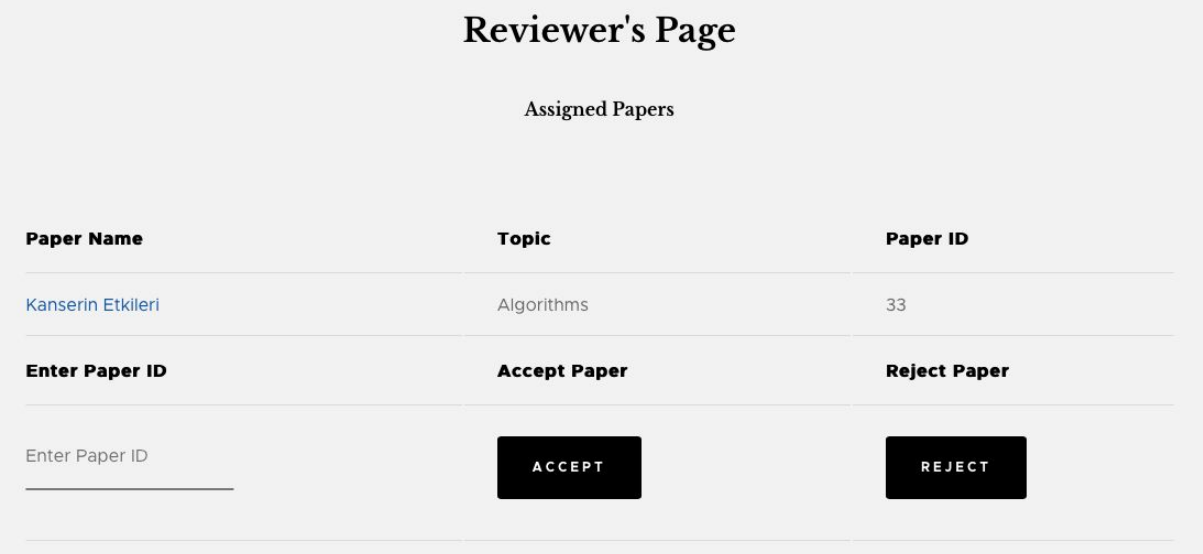
Figure -14- Search Bar

7.13 Reviewer's Page

You can reach this page only if you are a reviewer. You can use this page to accept a paper to become a publishment, or reject a paper.

Figure -15- Reviewer's Page

7.14 Conference Chair's Page

Only conference chairs can reach here which provides the functionalities special to a conference chair. Conference Chair can additionally reach to his sessions except the profile top stays the same.

	MY SESSIONS		
Session ID	**Room**	**Conference Name**	**Location**
1212	10	ARGOS	Florence
1313	9	ARGOS	Florence
1414	8	ARGOS	Florence

Figure -16- Conference Chair's Page