

**Online Publication Management System
Individual Project Report**

**CMPE 138
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Introduction

The following document describes the design and implementation of the Online Publication Management System. The system is a web service that allows users to add, update, remove, or search for scientific publications in Computer Engineering.

Database Design

The relational database management system consists of two tables, Publication and Author. The Publication table consists of the attributes pub_id, title, journal, year, and pages. The Author table consists of pub_id and name. Author is used as a relational table for Publication to represent multiple authors of a publication. Figure 1 illustrates the design of the database.

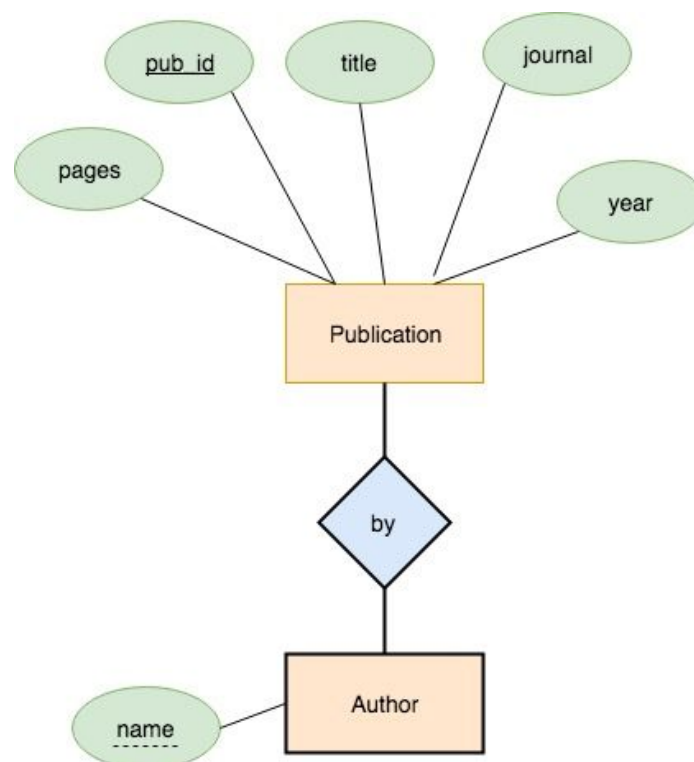


Figure 1. ER diagram of the database.

A python script is used to populate the database. The script parses an XML file and then inserts each publication and their respective authors into the database. If script also attempts to fix a poorly formed XML before it is parsed.

Web Service Design and Implementation

The management system is written in NodeJS and implements a RESTful web service using Express.js to allow consumers to interact with the service. Three modules, found in the model directory of the service, are used to allow the application to interact with the database. The Authors and Publications module handles the inserting, updating, and removal of rows for

their respective tables. The Query module is used to handle any queries. Additionally, each function in these modules are wrapped in Promises to allow for asynchronous operations. The RESTful API provides HTTP request routes to for a consumer to add, update, remove, or query publications. The response of each request can be returned in either XML or JSON by specifying the content-type in the header of the request. For adding, updating, and removing a publication, the parameters should be provided in the body of the request. Table 1 outlines the API.

Description	Request Type	Endpoint	Response
Add a publication	POST	/publications/add	Returns true if successful along with the publication
Update a publication's title, year, journal, and/or author name	PUT	/publications/update/{pub_id}	Returns true if successful and the updated publication
Remove a publication by ID	DELETE	/publications/remove/id/{pub_id}	Returns true is successful
Remove a publication by title, year, author, and/or journal	DELETE	/publications/remove	Returns true if successful and the total number of publications removed
Query a publication by ID	GET	/publications/id/{pub_id}	Returns the total number of publications found and the publication
Query publications by title, year, journal, and/or author name. Can be sorted in ascending or descending order by title, author, year, or journal A subset of the query can also be specified.	GET	/publications/search?title?={title}&year?={year}&year_op?={year_op}&journal?={journal}&author?={author}&sort_by?={sort_by}&descending?={descending}&subset_start?={subset_start}&subset_end?={subset_end}	Returns the total number of publications found, and an array of the publications

Table 1. Description of the endpoints provided by the web service.