Overview

The handling of data regarding academic publications will be made possible by the PublicationLibrary class. The PublicationLibrary class will employ internal data structures and databases to store data that will endure between executions of programmes that use it. Although it will initially only manage journal and conference publications, the class will eventually be able to add other types of publications. What information is required and optional in a citation will be determined using the IEEE format.
The PublicationLibrary class will maintain data for journal publications including the group of authors, the paper title, the journal name, the publication's page range, the volume and issue number, and the month and year of publication. The list of authors, the paper's title, the conference's name, venue, and year, as well as the publication's page range, will all be included in the information for conference publications. Additionally, each publication will have an alphanumeric string that writers may use to reference it in their work.
The PublicationLibrary class will have various methods, including addPublication, addReferences, addVenue, addPublisher, addArea, and getPublications, that will enable the gathering of information for the system and resolve queries.

Files and external data

There will be total 13 files to execute the program.

1. RunApp
2. PublicationLibrary
3. Author
4. Area
5. Editor
6. Publication
7. publicationReference
8. Publisher
9. ResearchArea
10. PaperCoversion
11. DatabaseConnection
12. DbAccess
13. Venue

RunApp: It contains the main method. The purpose of this program is to get input from the user for the adding the publications, references, Venue, publishers.

PublicationLibrary: It contains the main logic of the problem statement, which gets the input and stores into database and retrieve as and when needed.

DatabaseConnection: It connects the code with the MYSQL database. The class will implement the Singleton pattern, which ensures that only one instance of the class is created.

Data structures and their relations to each other along with Key algorithms

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To manage the information about publications, a Java class called PublicationLibrary is created. Here, it will restrict the class to manage journal and conference publications, but the design should be ready to add other forms of publications in the future. We will use internal data structures to store information. We will also ensure that the information managed by the class should survive between the executions of programs that use the PublicationLibrary class.
The following key algorithms and data structures for the PublicationLibrary class can be implemented:

HashMap: It is used to store the information about each publication. The key of the HashMap will be the publication identifier, and the value will be a Map that stores all the information about the publication.

List: List is used to store the references for each publication. We can add a Set of strings that contains the publication identifiers cited by the paper.

Set: We use Set to store the research areas and the parent areas for each research area. Each research area can be a subset of zero or more other research areas.

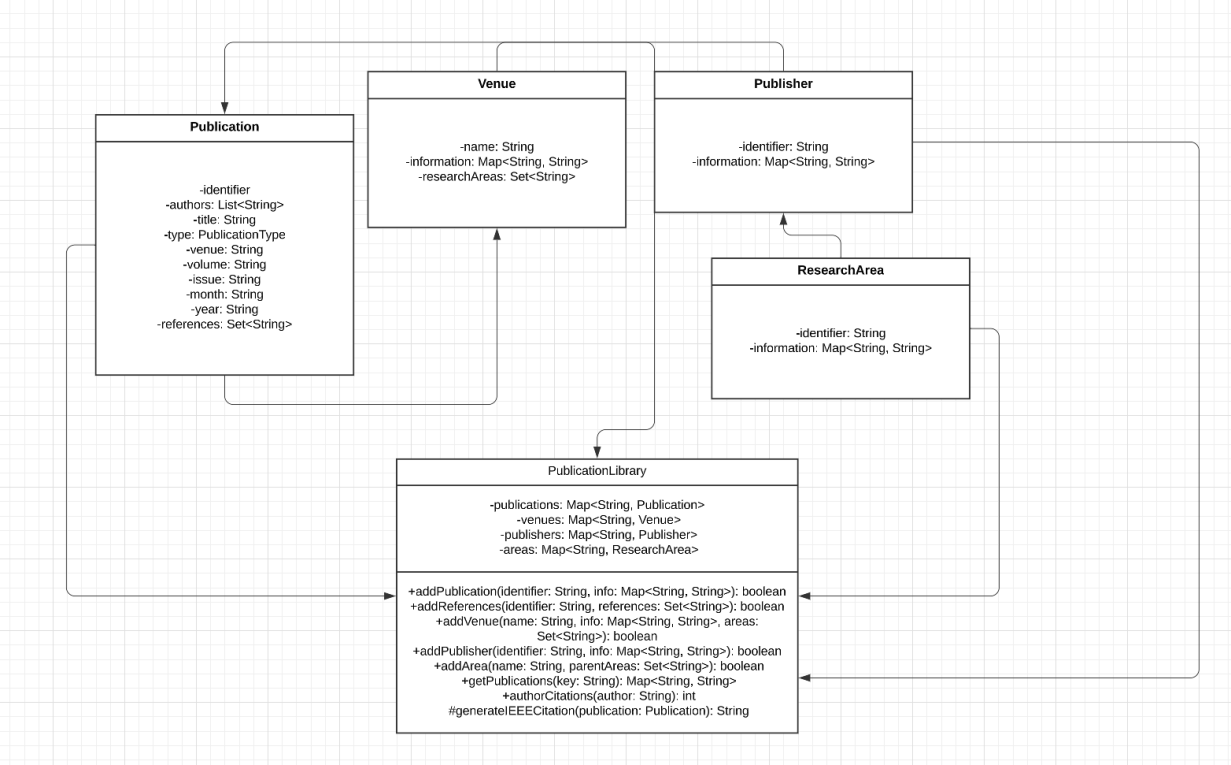
Assumptions

- Author's full names will be unique, will not be hyphenated names, and are case insensitive.
- Input will be taken from the console.
- Data won't be removed from library.
- The input to generate IEEE format will be provided in the file format.

Choices

Data insertion was done using the prepared statement.

Key Algorithm and Design Elements



Database design and its tables for the "PublicationLibrary" class.
the following are the tables created:

- Publication
- Author
- area
- Organisation
- Organiser
- addReferences
- editor
- venue
- venue_research
- Publisher
- ResearchArea

Limitations

I tried to add the data using the defined methods but was unable to join the links, so I have implemented the add methods using switch case for adding all the details. As I was sick for few days and had a short time to complete the project, the methods *getPublications, authorCitations, seminalPapers, collaborators, authorResearchAreas and Paper conversion* are not written in proper manner. Still, I have accomplished the external documentation, intermediate milestone, blackbox test cases, final test plan. Usually in 2 weeks of time, we try to complete the assignment hardly and this time it was a big final project, I wish I had some more time to accomplish this gigantic project.