JabRef as BibTeX-based literature management software

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JabRef e. V.

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Agenda

1. JabRef: A GUI for BibTeX-Based Reference Management
2. Features of JabRef
3. Using JabRef as a Study Subject in Software Engineering Education
4. Summary

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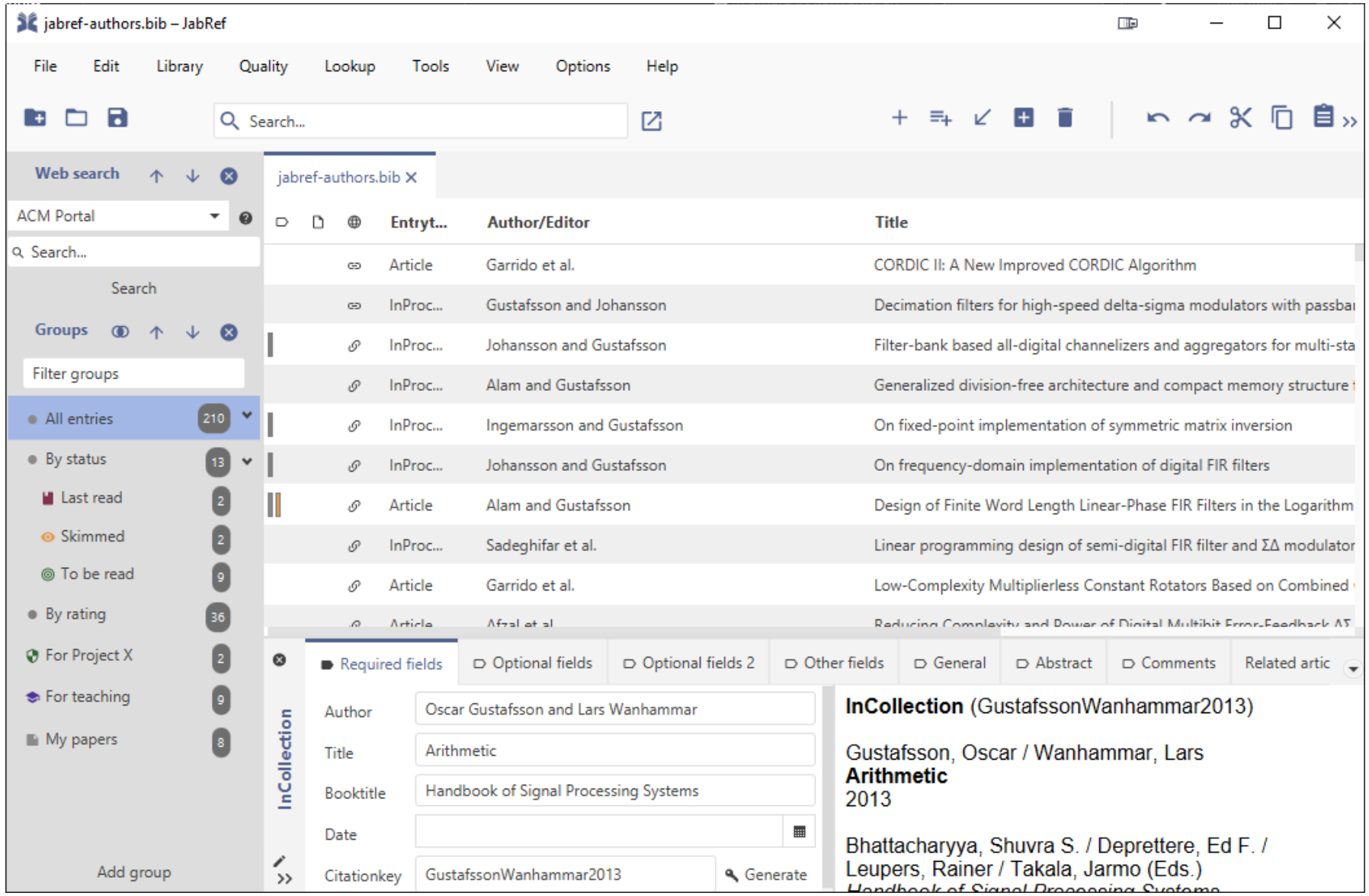
JabRef: A GUI for BibTeX-Based Reference Management



JabRef's Core Principle: Utilizing BibTeX as Internal Data Format

```
@Article{Steinmacher2015,
  author    = {Igor Steinmacher and others},
  …
}
```

- `public enum StandardEntryType implements EntryType { Article("Article"), …}`
- `public enum StandardField implements Field { AUTHOR("author", FieldProperty.PERSON_NAMES), …}`
- `private ObservableMap<Field, String> fields = FXCollections.observableMap(new ConcurrentHashMap<>());`

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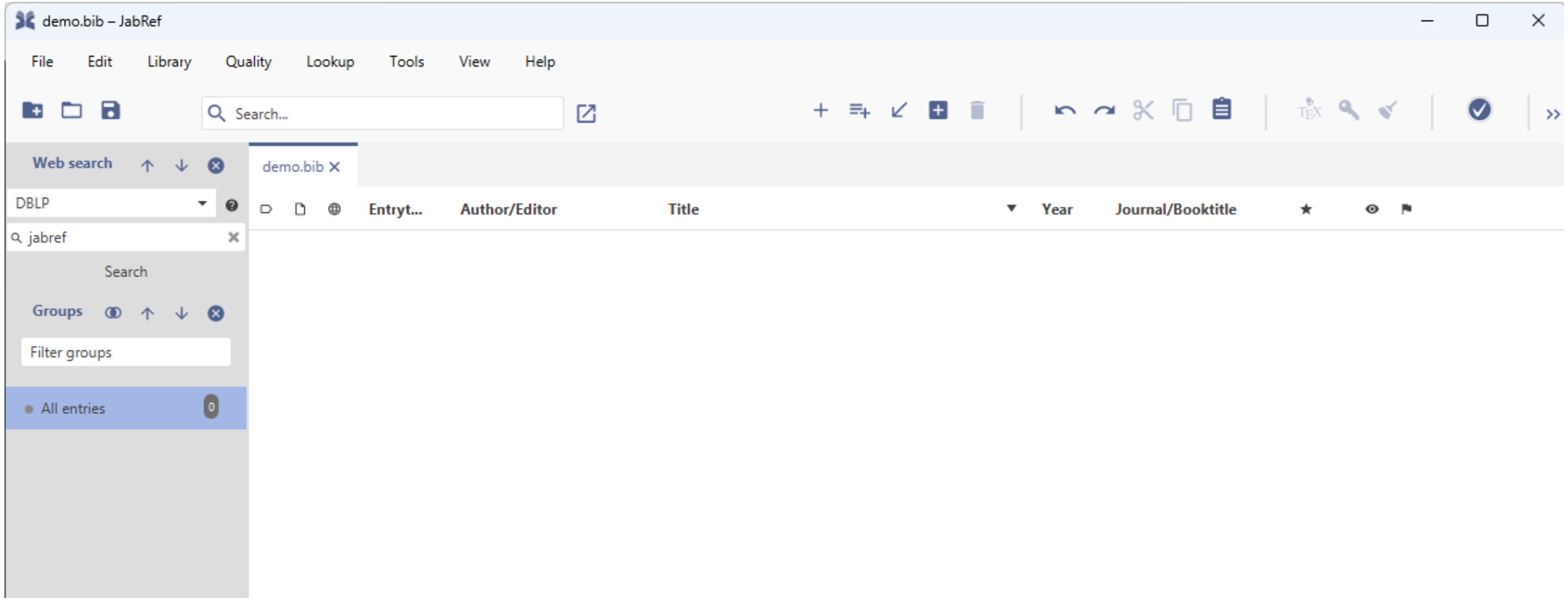
Integrated Web Search



Integrated Web Search: Access to Multiple Catalogues

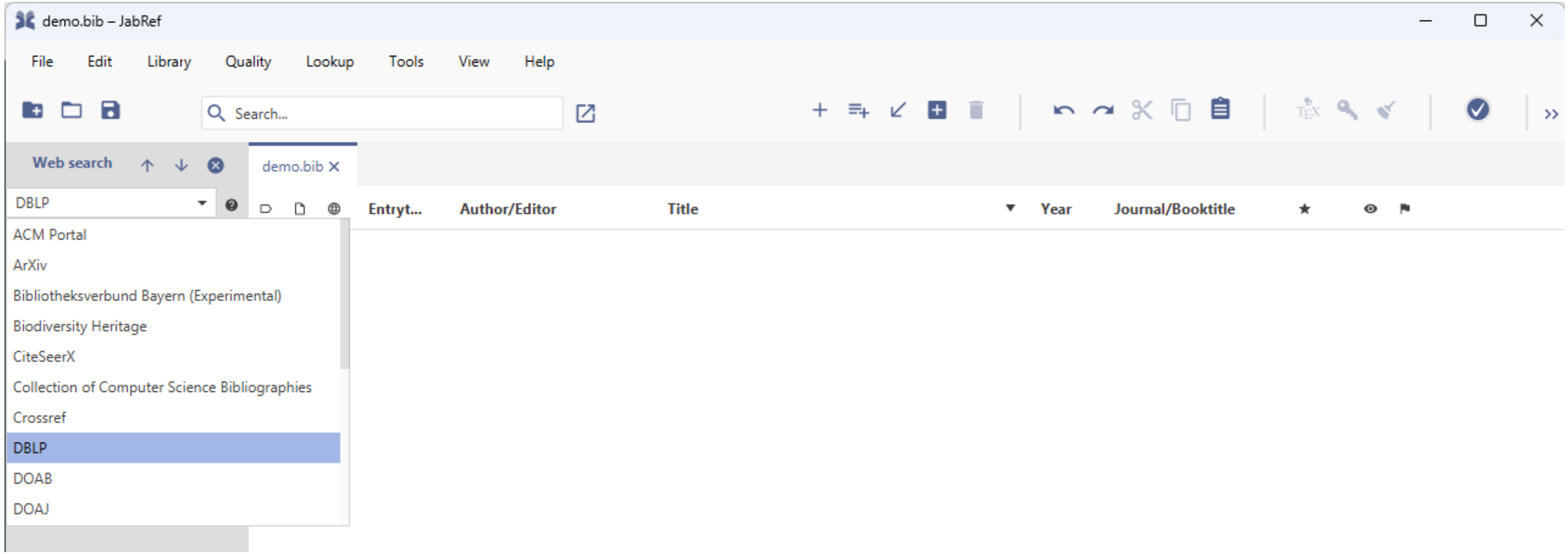


Illustration: Integrated Web Search Results

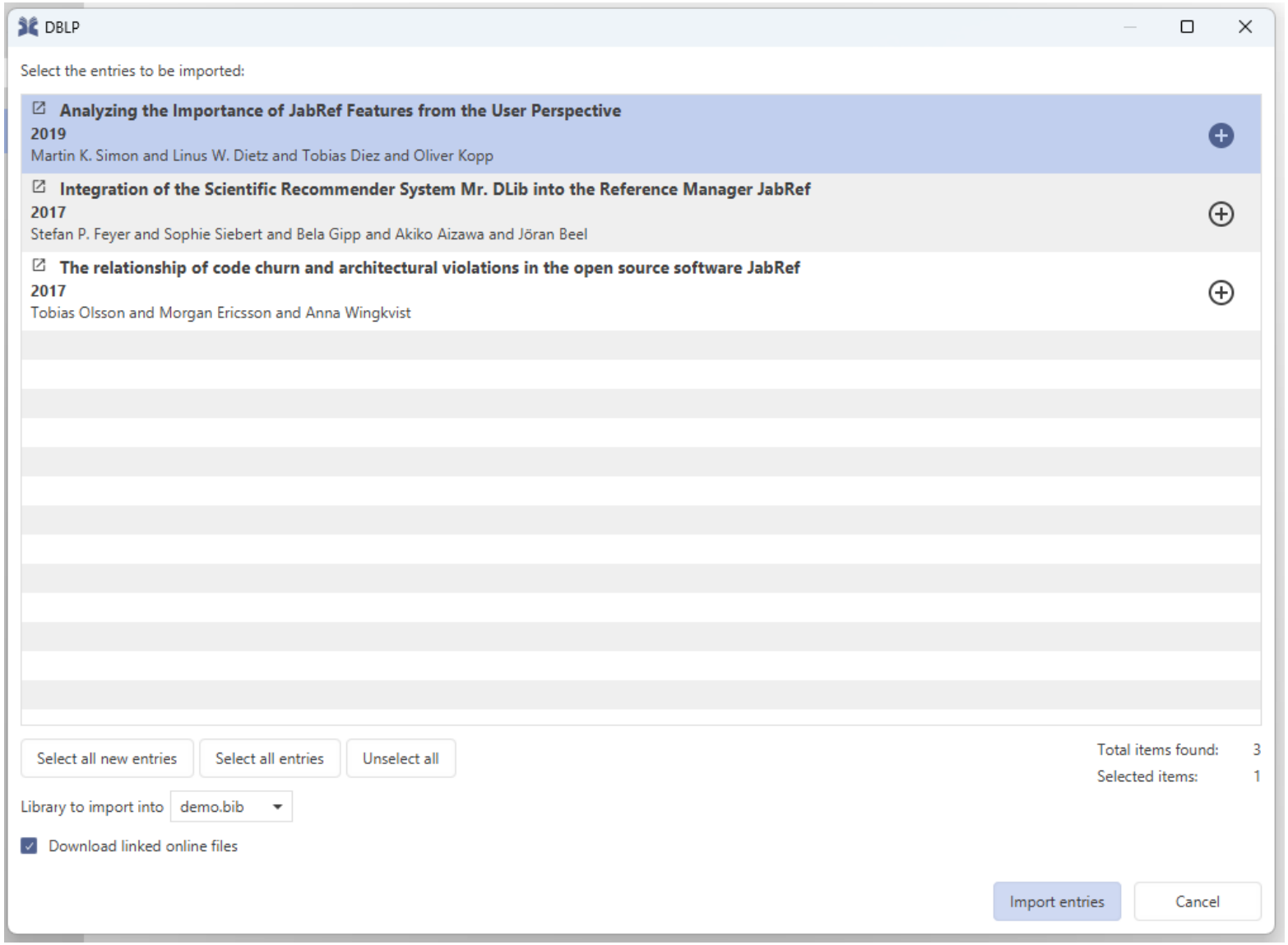
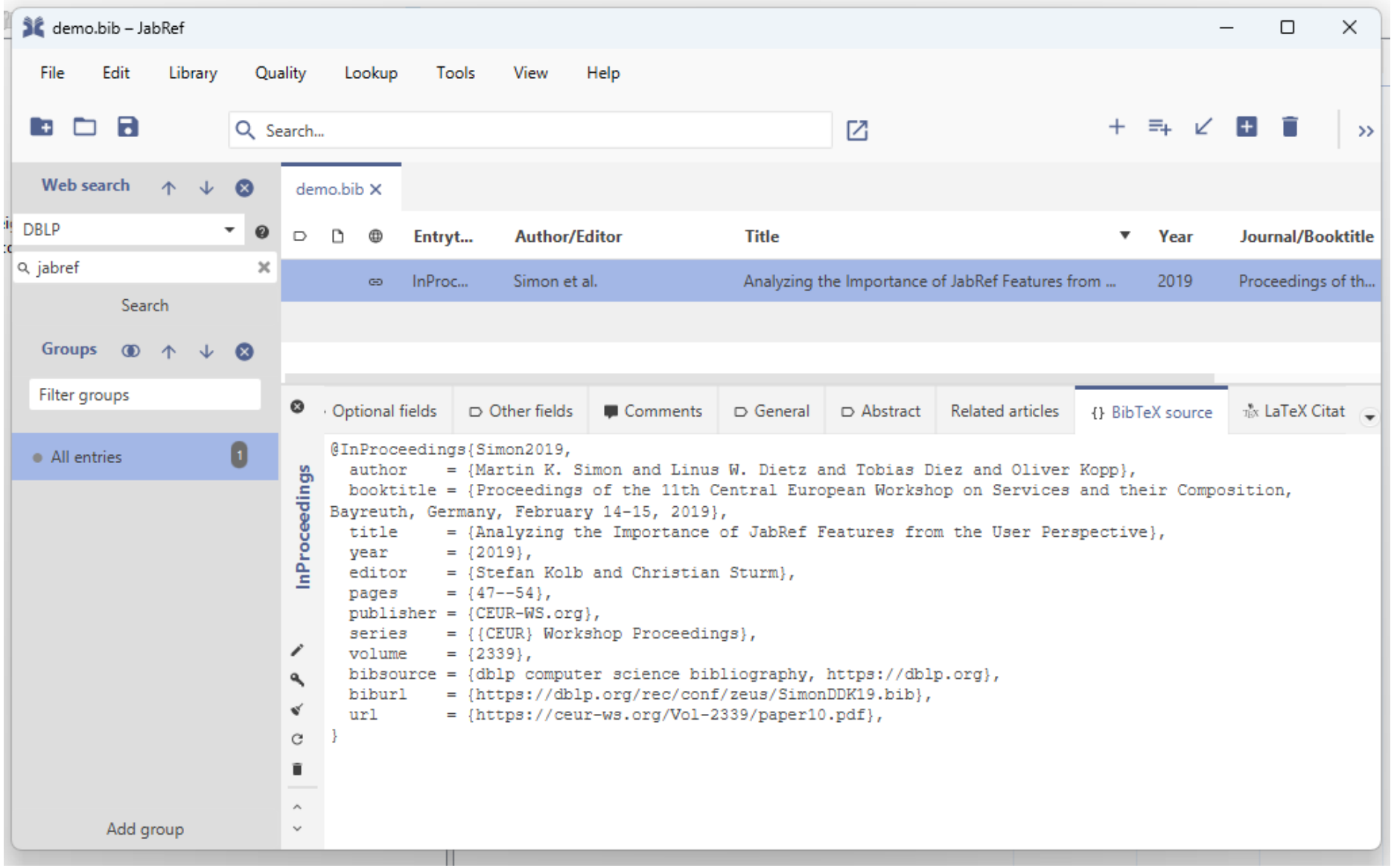
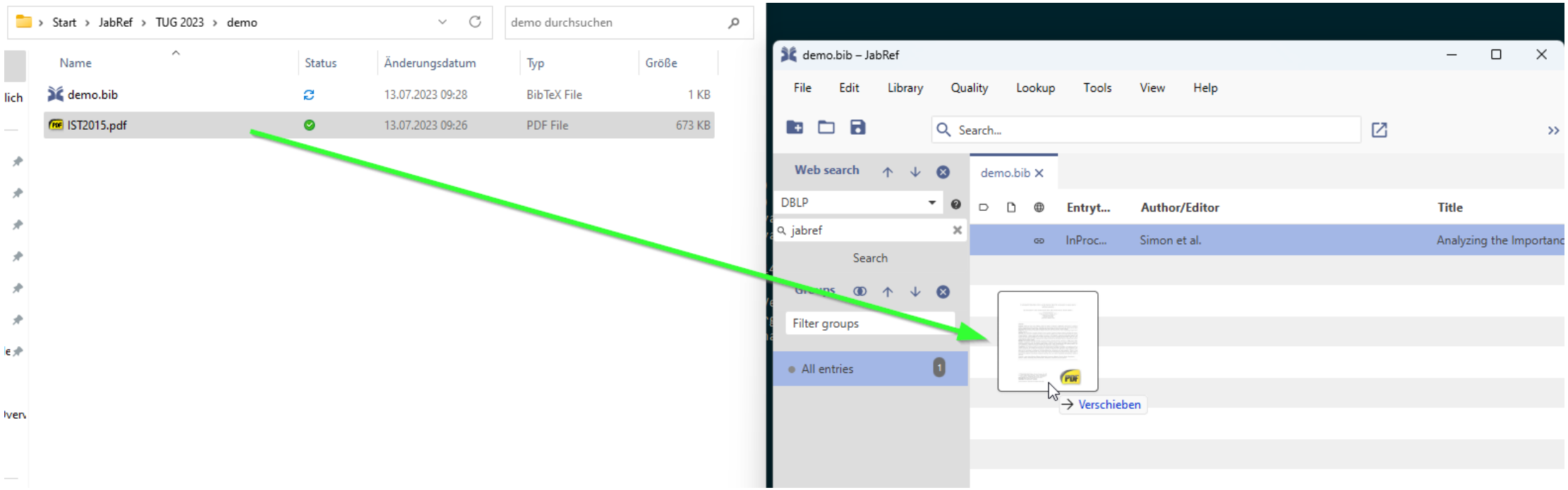


Illustration: Integrated Web Search Result



Drag and Drop to import a PDF (including meta data)

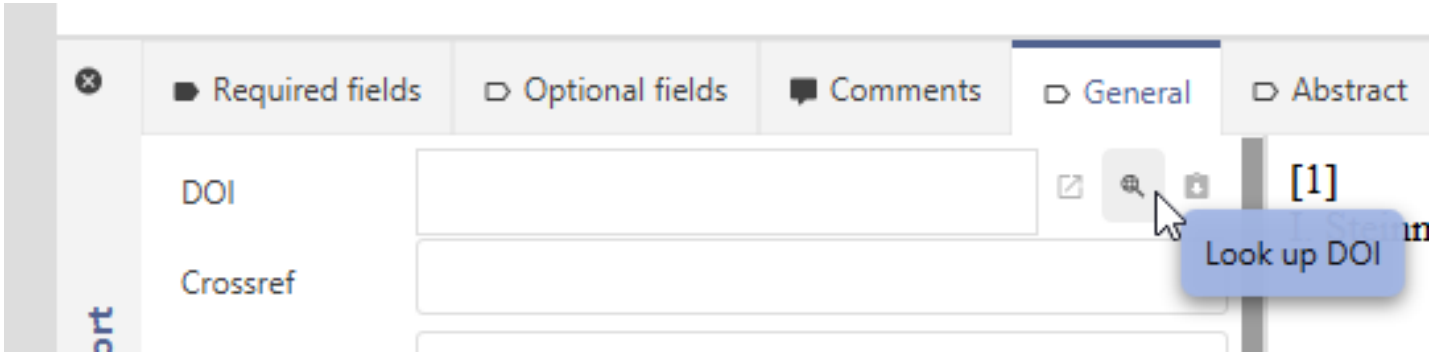


Resulting BibTeX

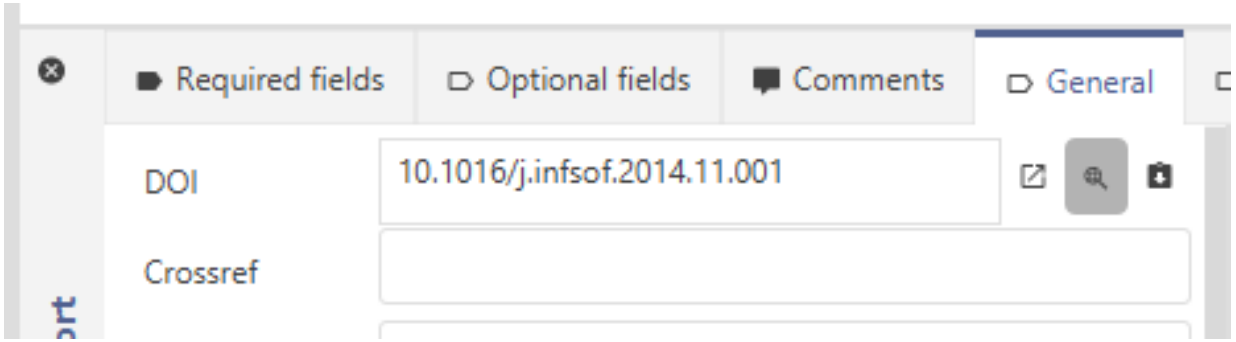
```
@TechReport{Steinmachera2014,
  author   = {Igor Steinmachera and b and Marco Aurelio Graciotto Silvaa and Marco Aurelio
Gerosab and David F. Redmilesc},
  title    = {A systematic literature review on the barriers faced by newcomers to open
source software projects},
  year     = {2014},
  number   = {on},
  file     = {:IST2015.pdf:PDF},
  keywords = {Open Source Software, Software Engineering, Newcomers, Beginners, Novices,
Joining, Contribution, Barriers to Entry, Onboarding, Open Collaboration, Socialization,
Systematic Literature Review},
}
```

Cleanup of the BibTeX data: 1) Look up DOI

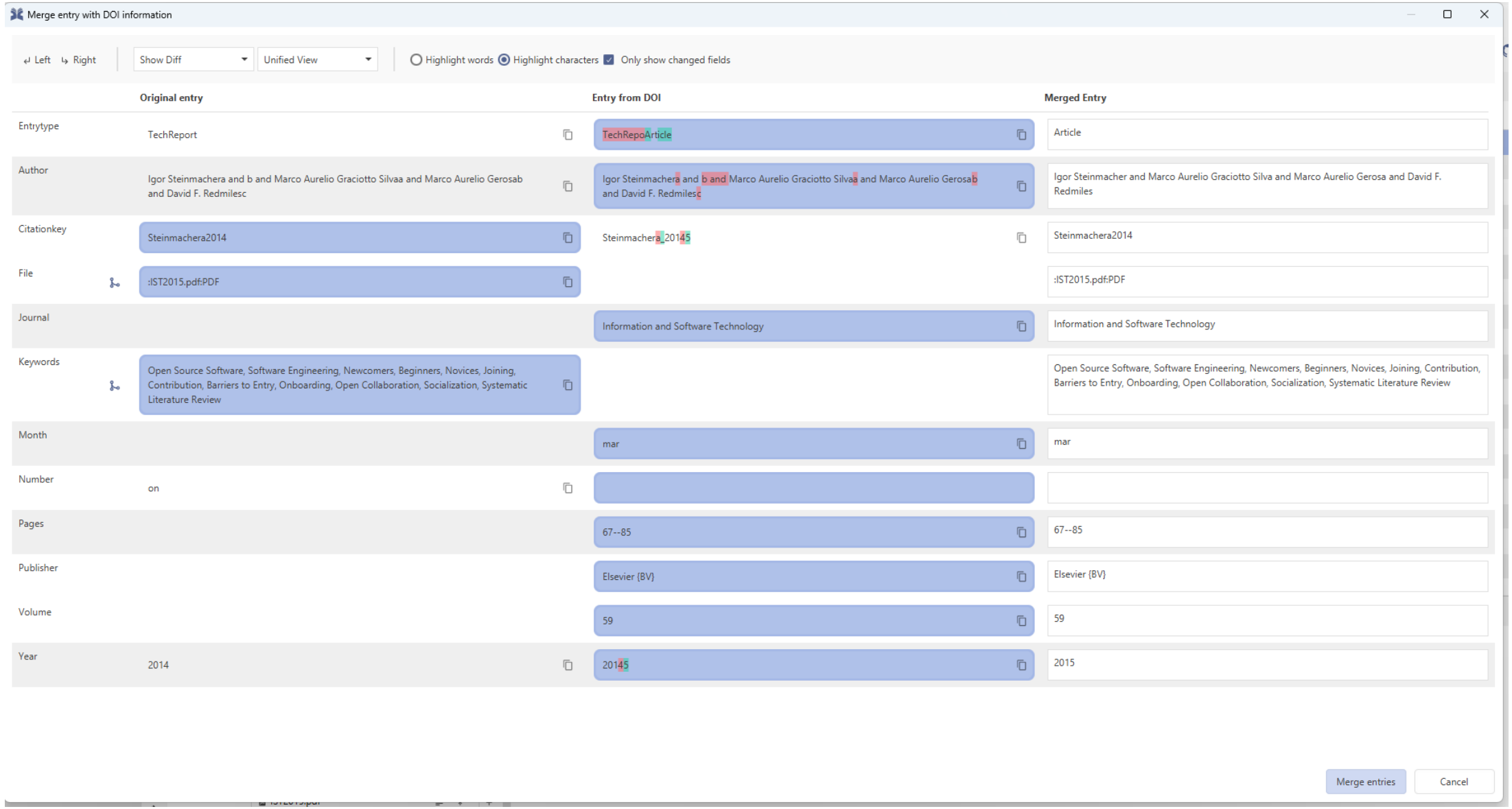
1. Lookup DOI



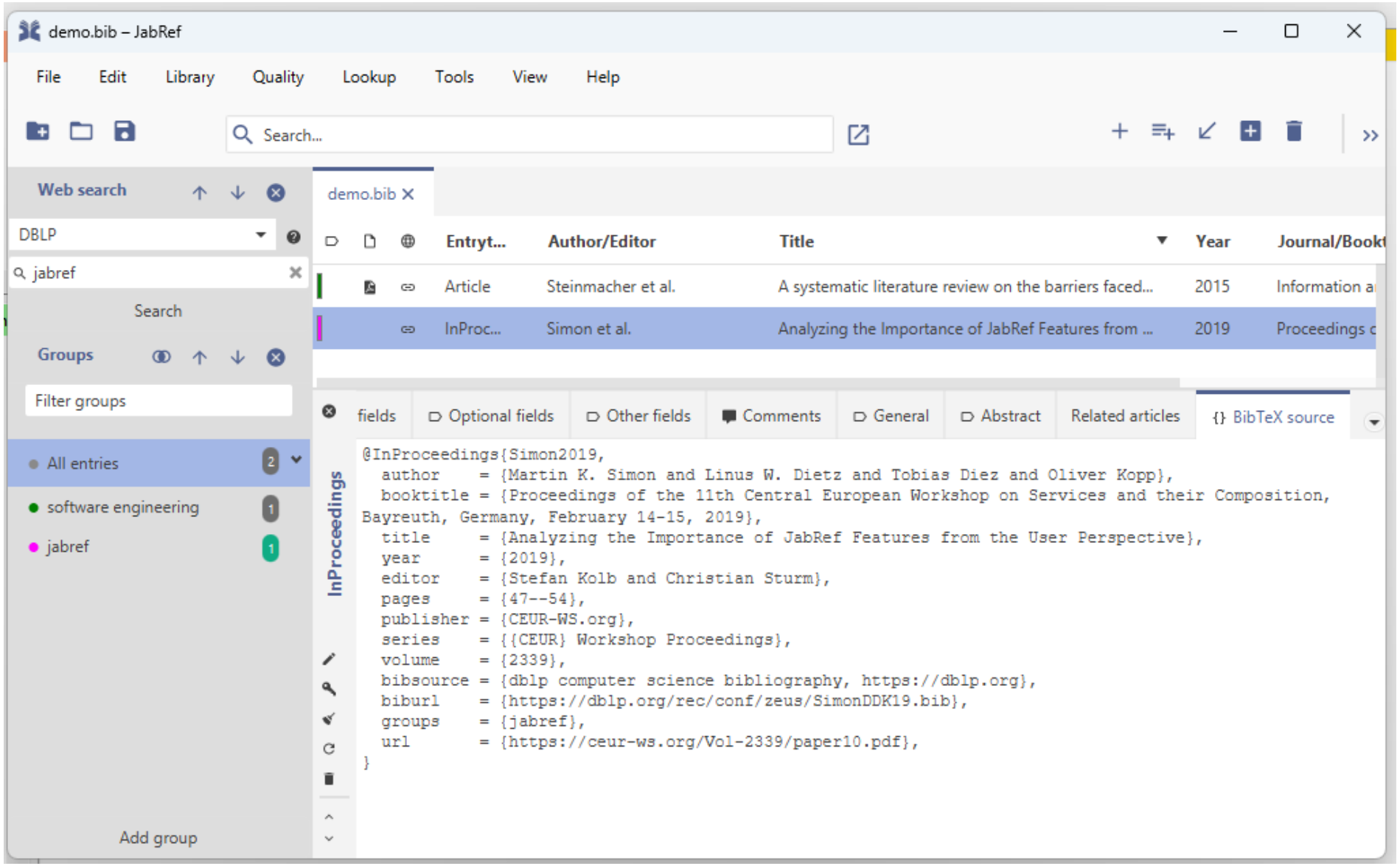
2. DOI determined



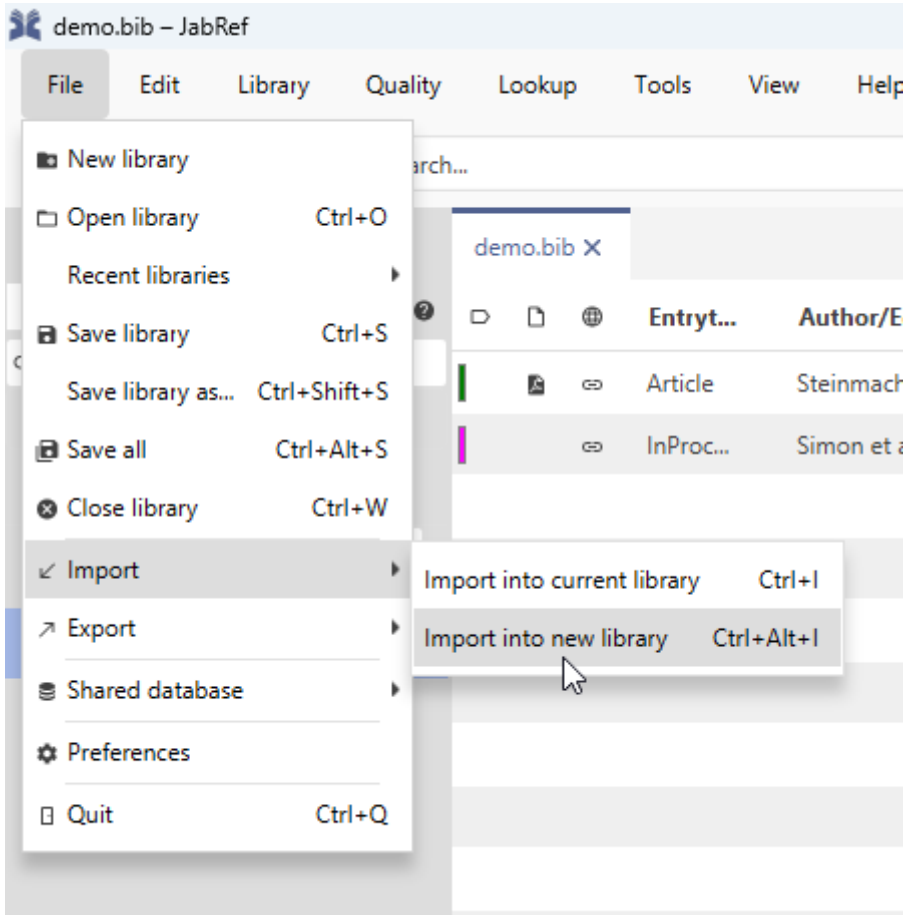
Cleanup of the BibTeX data: 2) Fetch BibTeX data from DOI

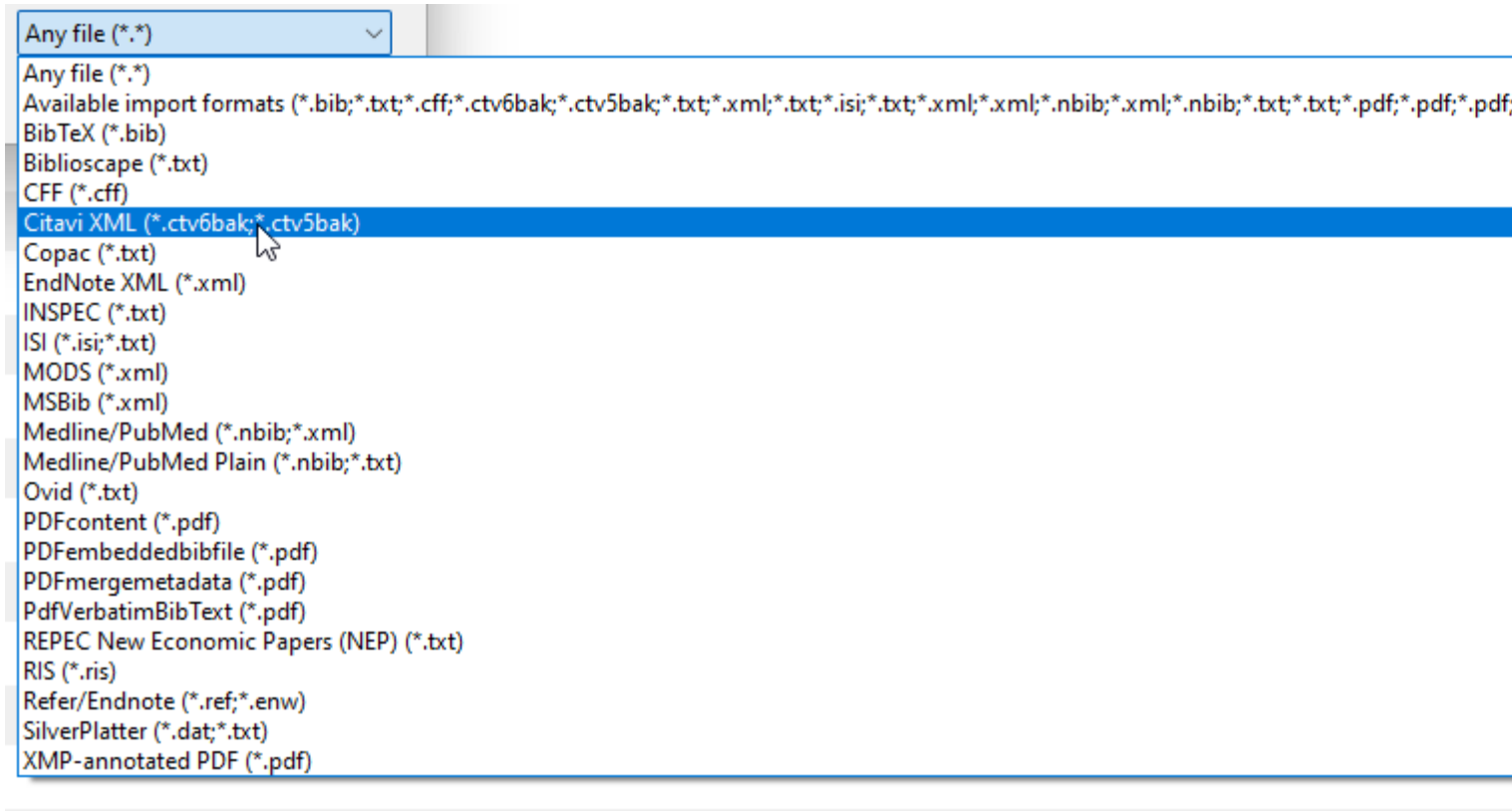


Organizing Entries into Groups

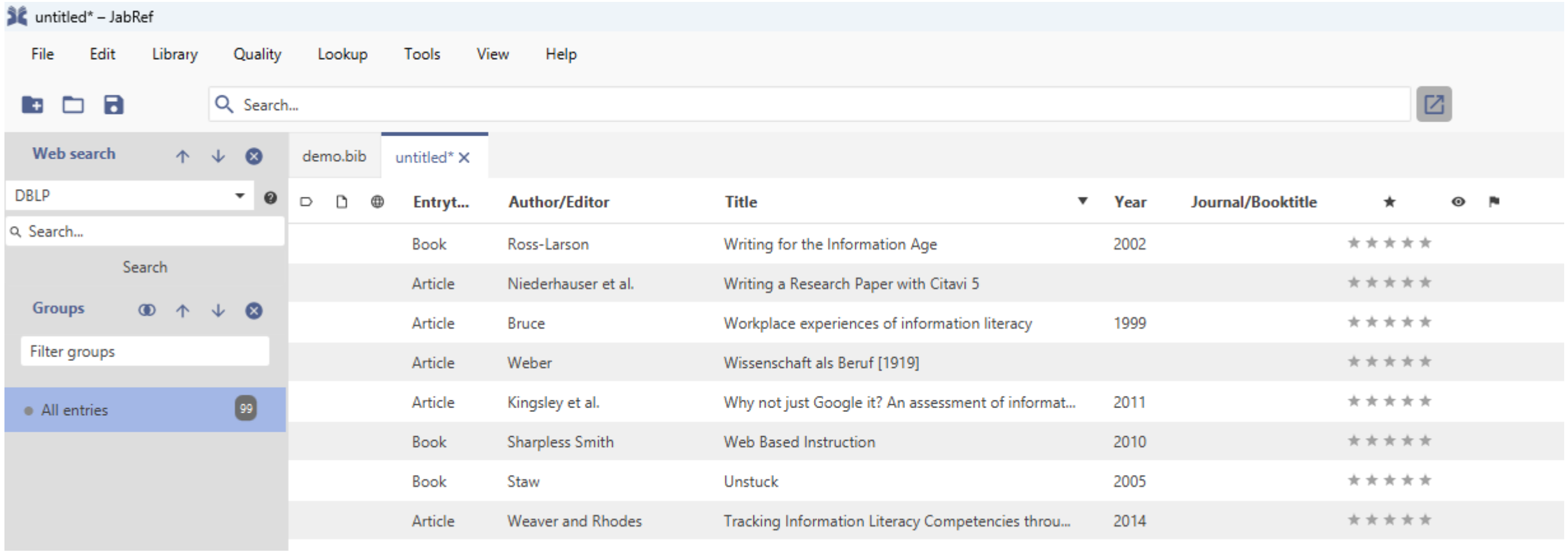


Converting and Importing Data from Various Formats and Tools

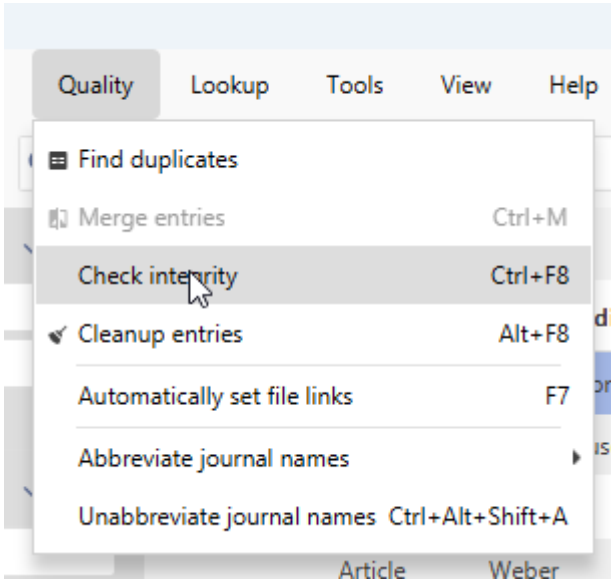


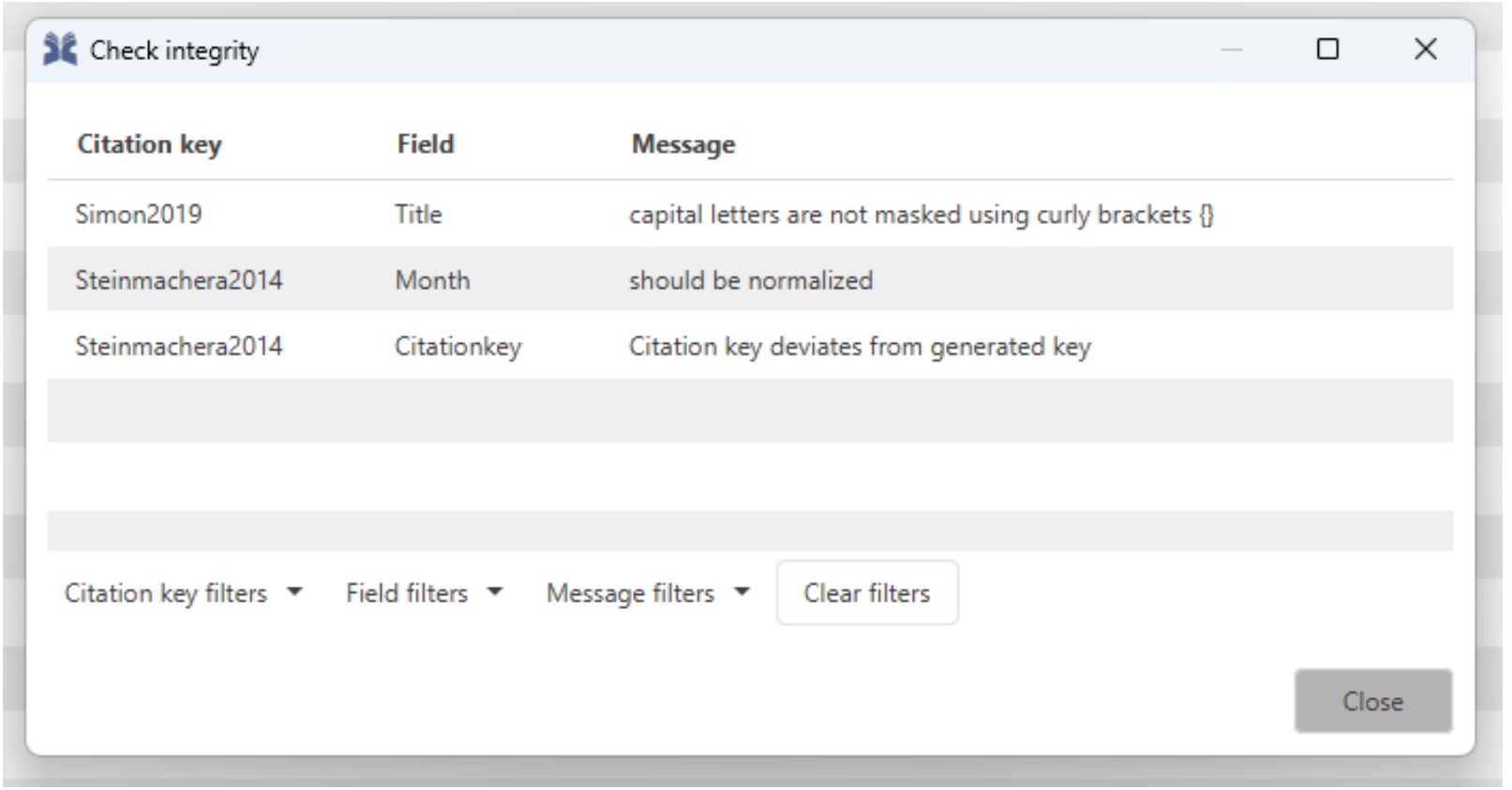


Result: Complete Import of All Entries as a New Library

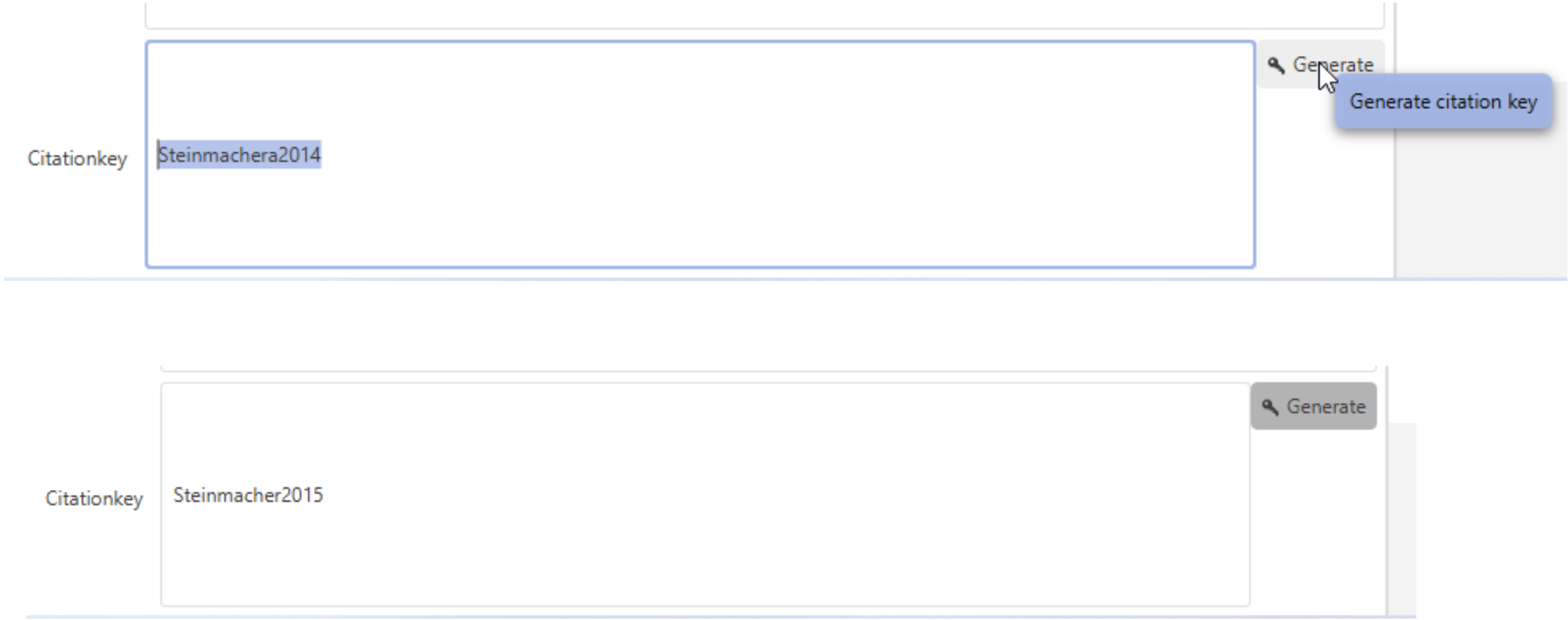


Conducting a Quality Check

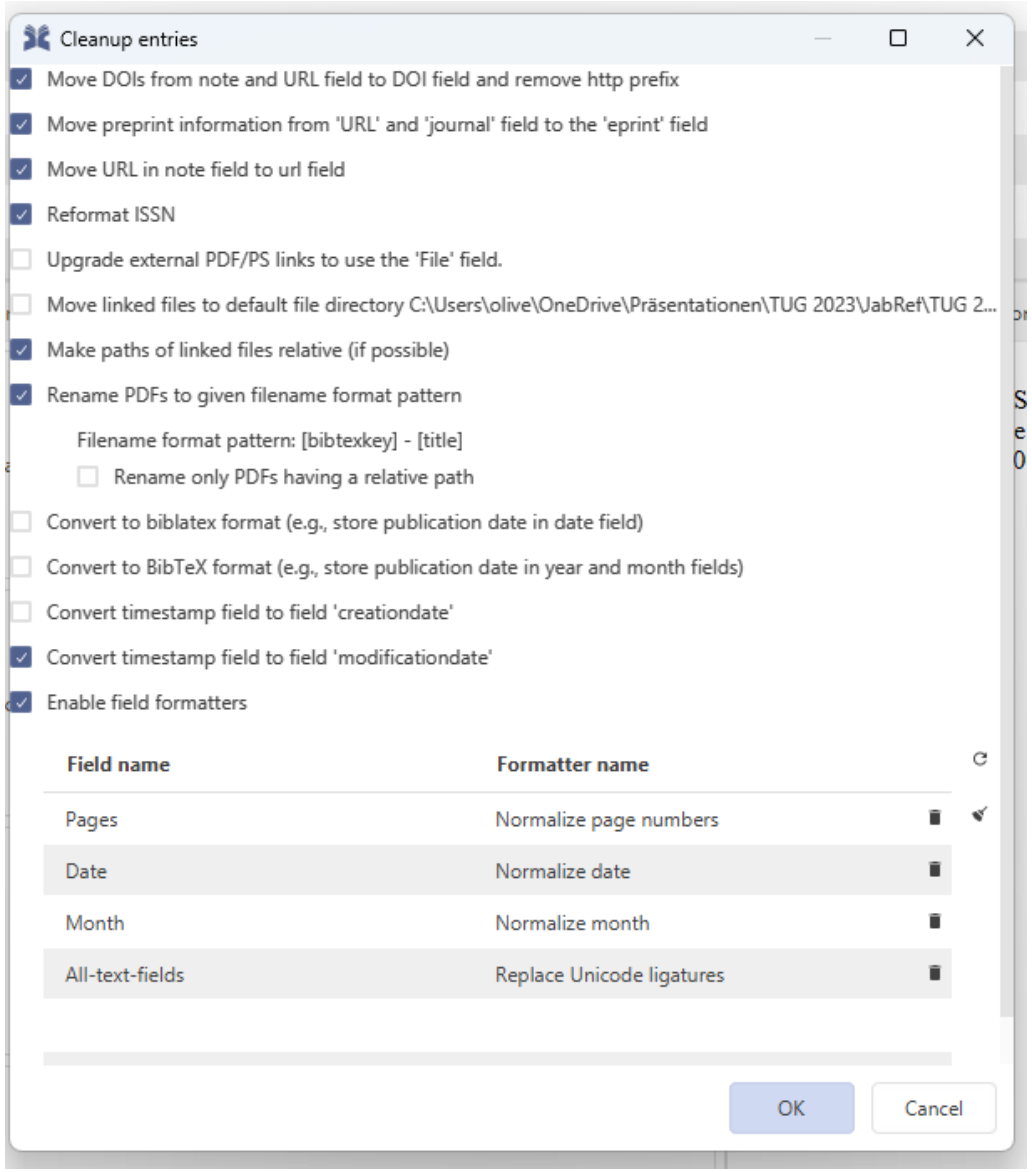




Manually Correcting the Citation Key



Automatic Fixing



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JabRef Open Source State as of 2023-07-13

- **GitHub Stars**: 3,200
- **Commits**: 18,799
- **Releases**: 101
- **Contributors**: 531 in total (2022: 431; 2018: 140)
- **Closed Pull Requests**: 6,119
- **Closed Issues**: 3,548
- **Main Developers**: 8 (participating as a freetime project)
- **Lines of Code**: 52k
- **Test Coverage**: 41%

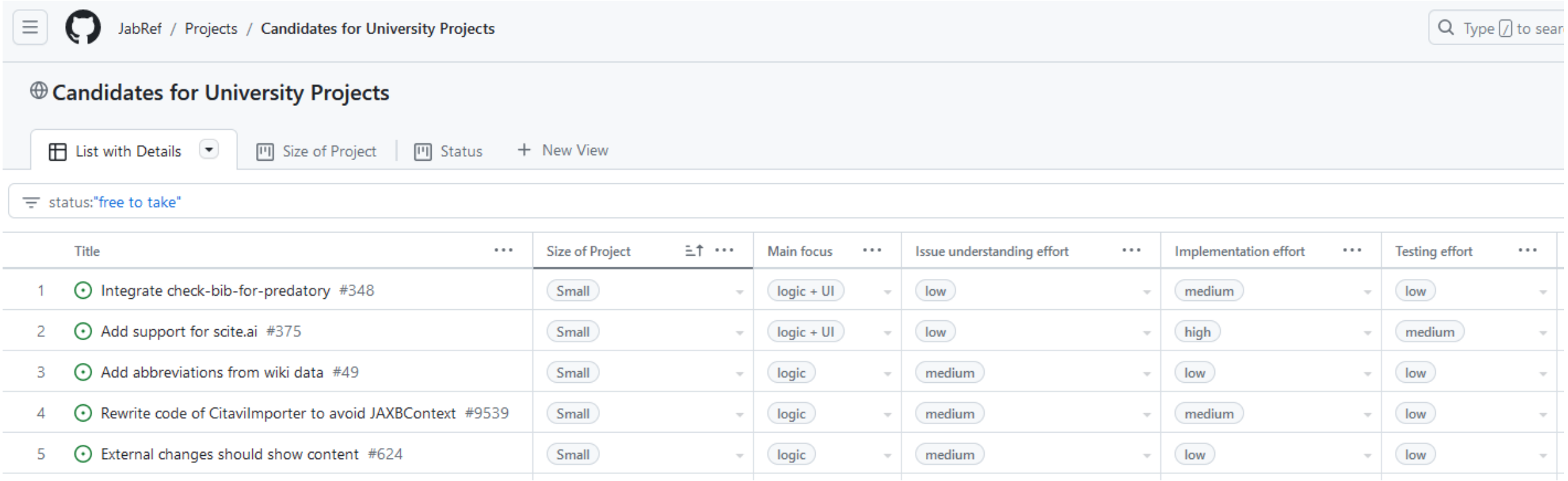
Using JabRef as a Study Subject in Software Engineering Education

- Observation
  - Teaching programming starts with simple projects
  - Teaching programming ends with large projects
  - Missing: Medium-sized project with simple functionality

- Idea of using JabRef as study subject
  - Opportunity of using a real-world tooling and code base
  - Sustainability of students' work: Exercise incorporated in a real-world product
  - Opportunity to raise visibility and recognition for students and research groups

https://devdocs.jabref.org/teaching

Board for Empowering Students to Select Issues



JabRef / Projects / Candidates for University Projects

Type / to sear

Candidates for University Projects

List with Details | Size of Project | Status | + New View

status:"free to take"

	Title	Size of Project	Main focus	Issue understanding effort	Implementation effort	Testing effort
1	Integrate check-bib-for-predatory #348	Small	logic + UI	low	medium	low
2	Add support for scite.ai #375	Small	logic + UI	low	high	medium
3	Add abbreviations from wiki data #49	Small	logic	medium	low	low
4	Rewrite code of CitaviImporter to avoid JAXBContext #9539	Small	logic	medium	medium	low
5	External changes should show content #624	Small	logic	medium	low	low

https://github.com/orgs/JabRef/projects/3/views/3

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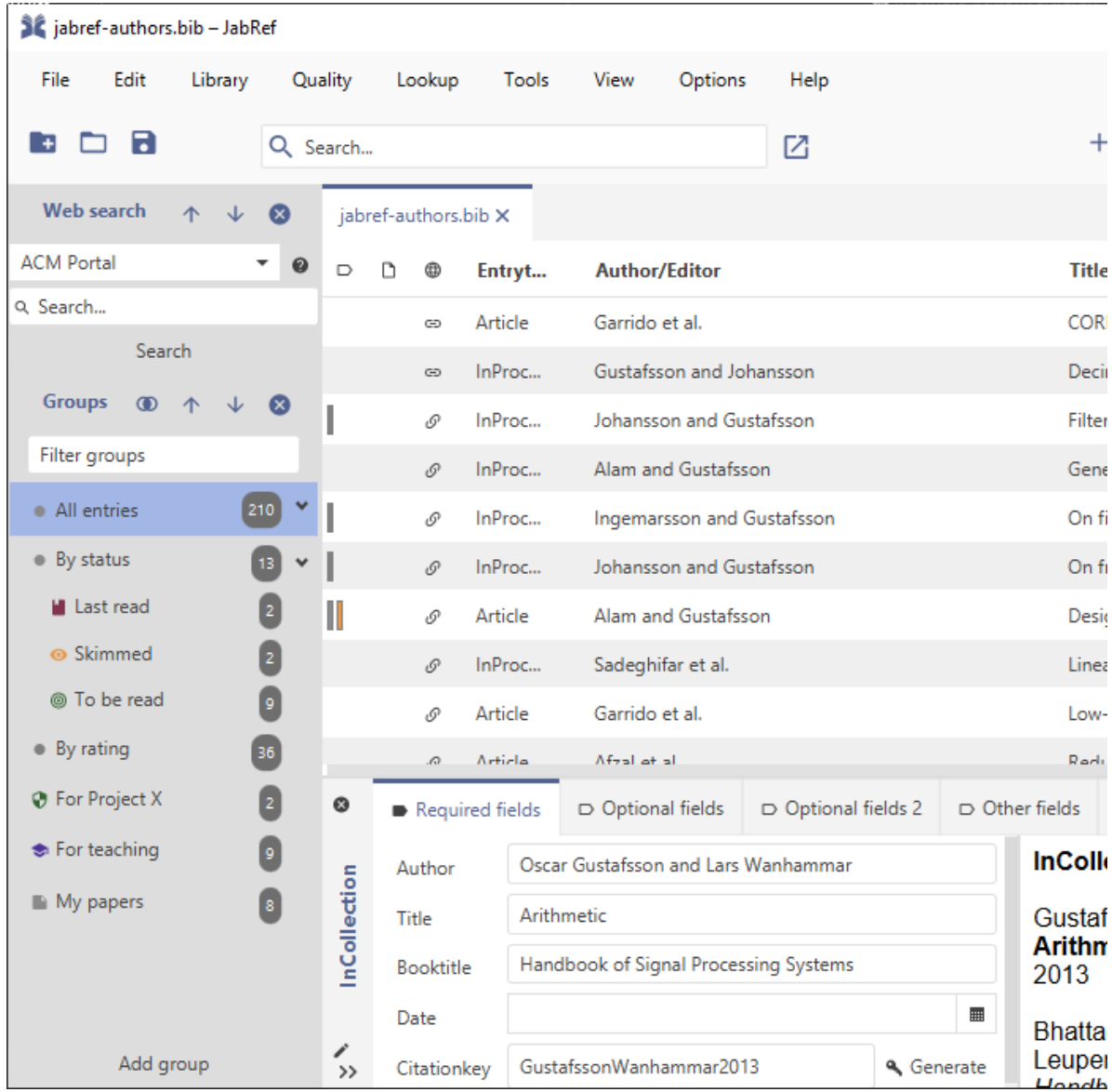
JabRef: A User-friendly, Graphical Tool for BibTeX-based Literature Management



- Collect
  - Perform online searches
  - Extract information from PDF files
- Organize
  - Facilitate grouping of entries
  - Enable data correction and enhancement
- Share
  - Synchronize and share .bib files using git