

Resubmitting: We replaced the previous feature 1 entirely. All the information presented here is new.

Feature: Generate Bibtex Keys

For each entry in the database, users can generate the Bibtex key using JabRef. This key could be used as a citation when someone is writing a thesis. Since JabRef is an application for managing bibliography references, one of its main functions is to collect citations and to make them easier for referencing. If we remove this function, the system will only be able to collect information but would not be able to use them. Hence, generating Bibtex keys is an essential feature of this project.

Control Flow:

The sequence diagram of generating a Bibtex key sequence is shown below.

ArgumentProcessor and BibtexKeyGenerator are key classes for this feature.

ArgumentProcessor is a class used for dealing with operations, such as exporting files, to save files, etc. The fundamental logic of generating the Bibtex key is defined in the BibtexKeyGenerator class. Localization is used for setting up language, usually, there are no changes to be made. MetaData and BibEntry are basic classes for database, from where the system could retrieve the entries.

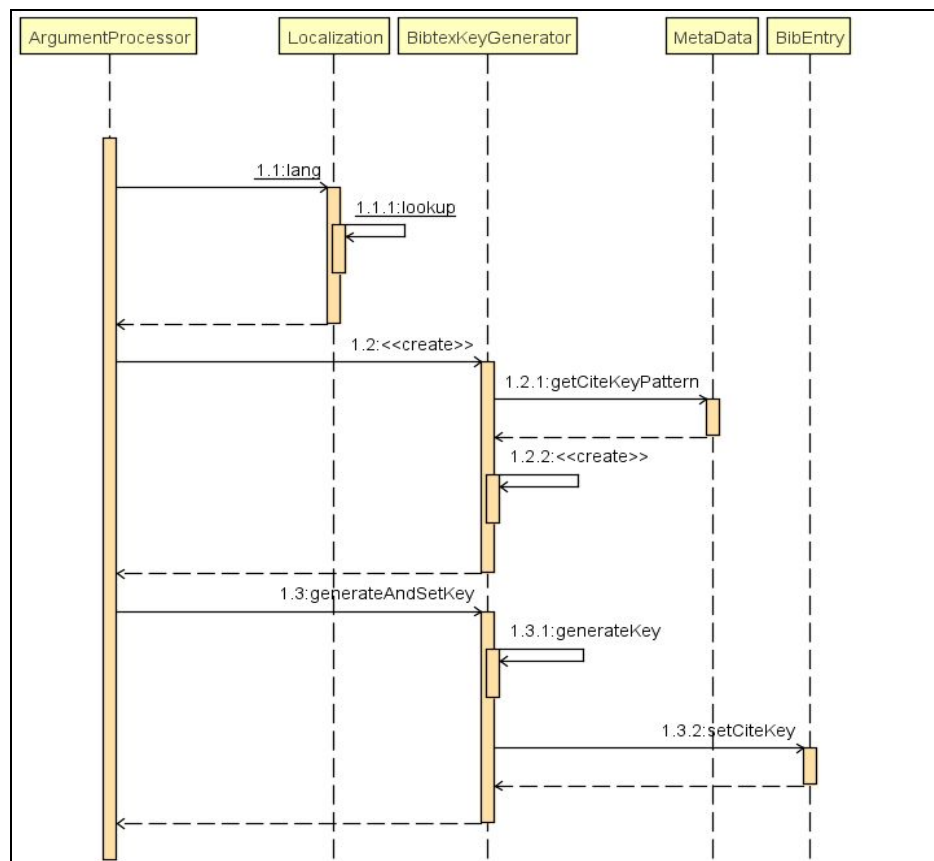


Figure (1) : Sequence diagram of generating Bibtex keys

1. Button

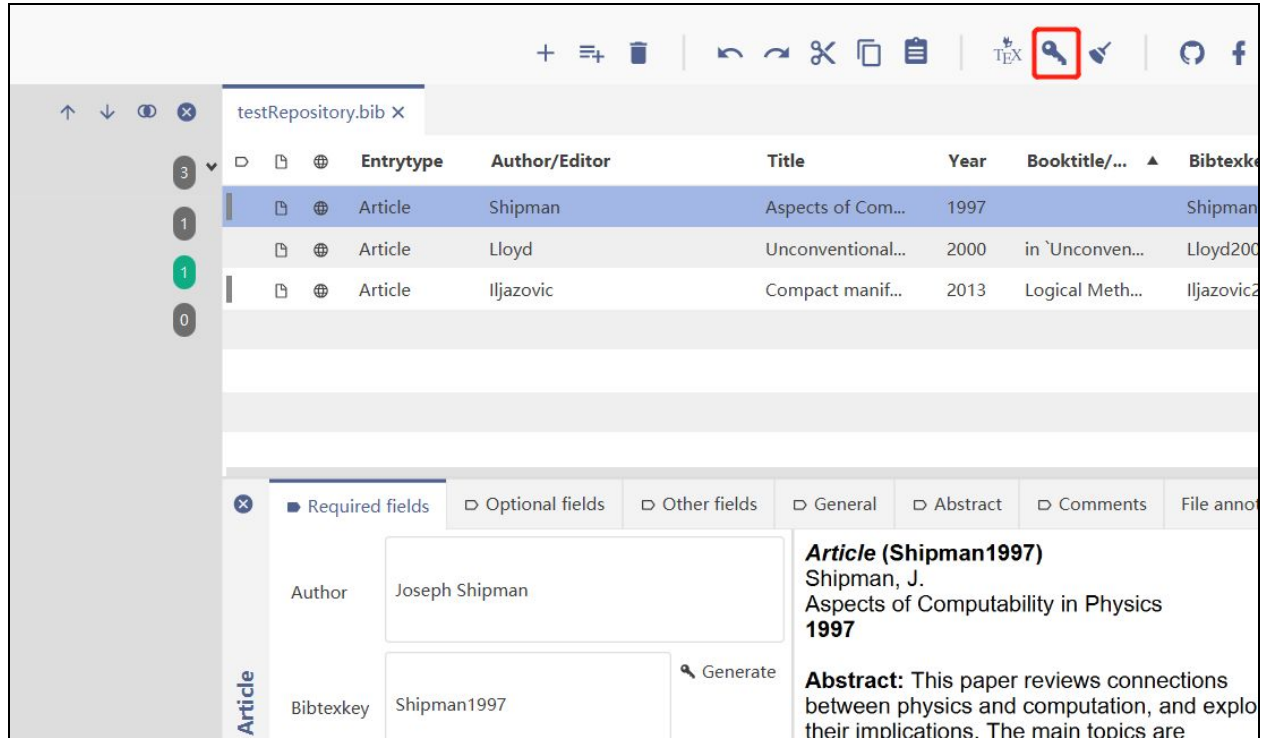


Figure (2): Button of generating Bibtex key

The button lies on the toolbar. The code which uses this is in the package `org.jabref.gui/JabRefFrame.java/ createToolbar()` function. Below is a piece of code for creating this button.

```
factory.createIconButton(StandardActions.GENERATE_CITE_KEYS, new  
OldDatabaseCommandWrapper(Actions.MAKE_KEY, this, stateManager)),
```

2. JabRefCli (package org.jabref.cli)

The events of clickable buttons are registered in this class. The one related to generating the Bibtex key is the one shown below, this function will be called in `ArgumentProcessor`. As the name shows, “`isGenerateBibtexKeys`” is called when the user clicks the generate Bibtex key button when it returns true, it will trigger the “`regenerateBibtexKeys`” function in `ArgumentProcessor`.

```
public boolean isGenerateBibtexKeys() {  
    return cl.hasOption("generateBibtexKeys")  
};
```

3. ArgumentProcessor (package org.jabref.cli)

The specific operations are defined in this class. It contains a JabRefCLI object.

```
private final JabRefCLI cli;
```

When the option is to generate Bibtex keys, it will trigger the regenerateBibtexKeys() function which is also defined in this class. The call graph is shown below.

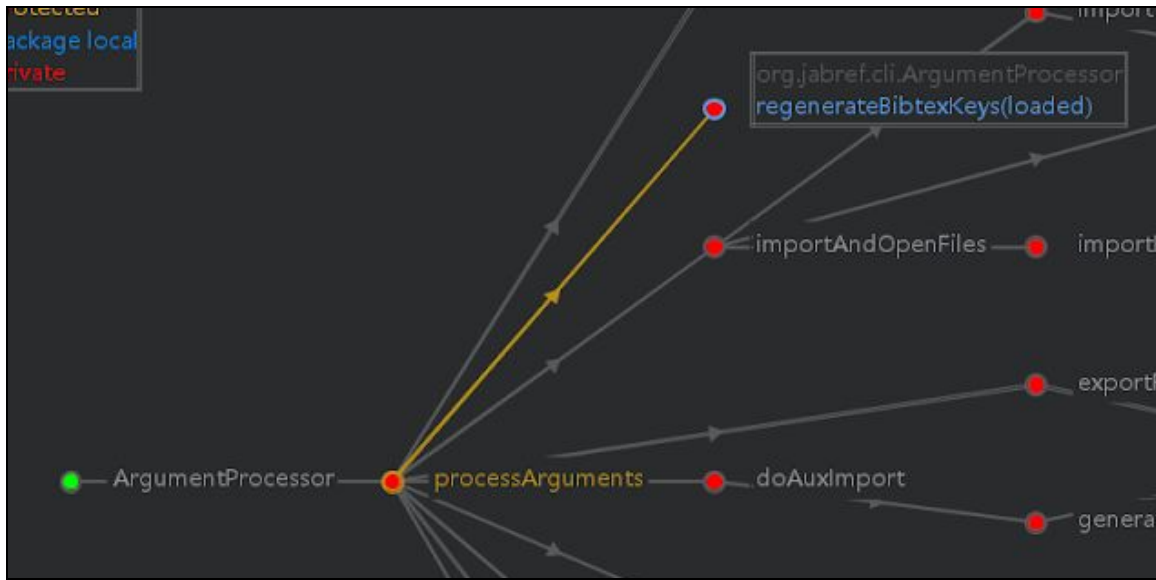


Figure (3): Call graph of regenerateBibtexKeys()

The piece of code below is in the processArguments function, which could be seen in Figure (3).

```
if (cli.isGenerateBibtexKeys()) {  
    regenerateBibtexKeys(loaded);  
}
```

The realization of regenerateBibtexKeys is shown below:

```
private void regenerateBibtexKeys(List<ParserResult> loaded) {  
    for (ParserResult parserResult : loaded) {  
        BibDatabase database = parserResult.getDatabase();  
  
        LOGGER.info(Localization.lang("Regenerating BibTeX keys according to  
metadata"));  
  
        BibtexKeyGenerator keyGenerator = new  
        BibtexKeyGenerator(parserResult.getDatabaseContext(),  
        Globals.prefs.getBibtexKeyPatternPreferences());  
        for (BibEntry entry : database.getEntries()) {  
            keyGenerator.generateAndSetKey(entry);  
        }  
    }  
}
```

```

    }
}
}

```

In this function, several components are involved, including Bibdatabase and BibkeyGenerator. The specific functions about how to generate a Bibtex key is defined in BibtexKeyGenerator.

4. BibtexKeyGenerator (package org.jabref.logic.bibtexkeypattern)

The function generateKey defined in the BibtexKeyGenerator calls all methods related to manipulating data with databases for generating Bibtex keys, including generating different fields for the key, such as year, author, etc. The input parameter of this function is a BibEntry object, which represents a BibTex entry. It could be found in package org.jabref.model.entry. In the BibtexKeyGenerator class, generateAndSetKey() is called by regenerateBibtexKeys() function in the ArgumentProcessor class. Below is the sequence diagram.

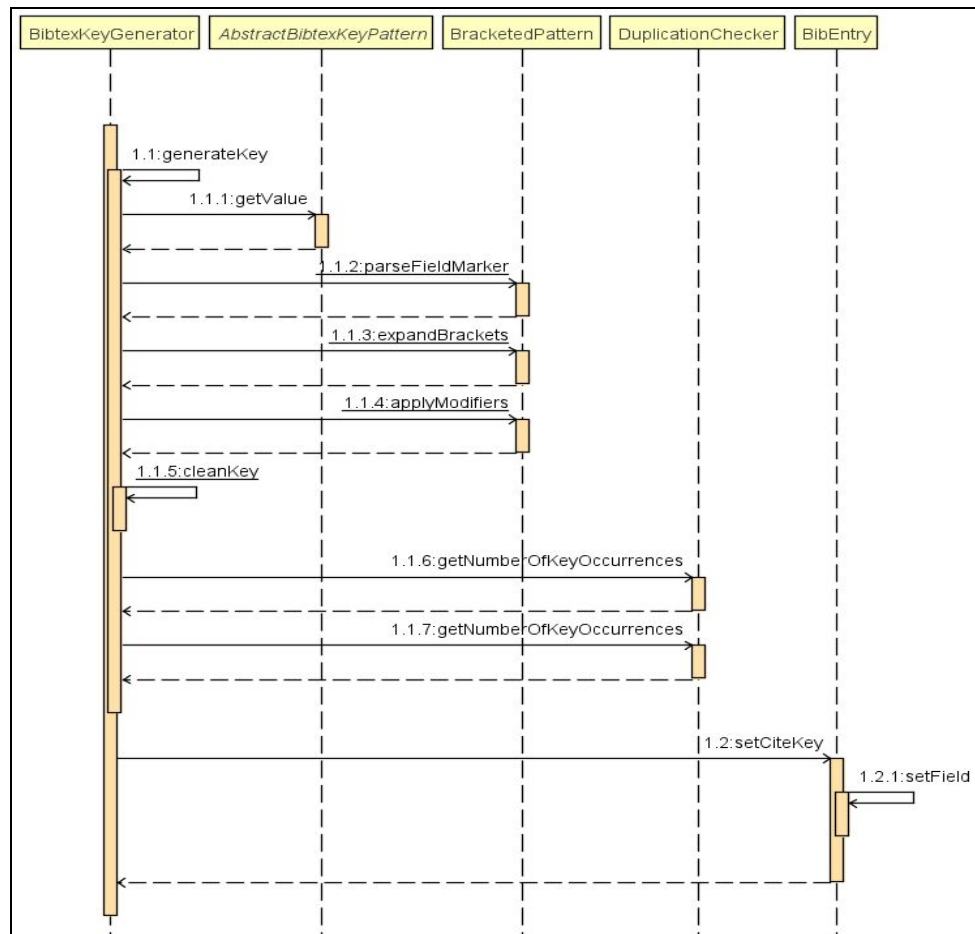


Figure (4): generateAndSetKey() sequence diagram