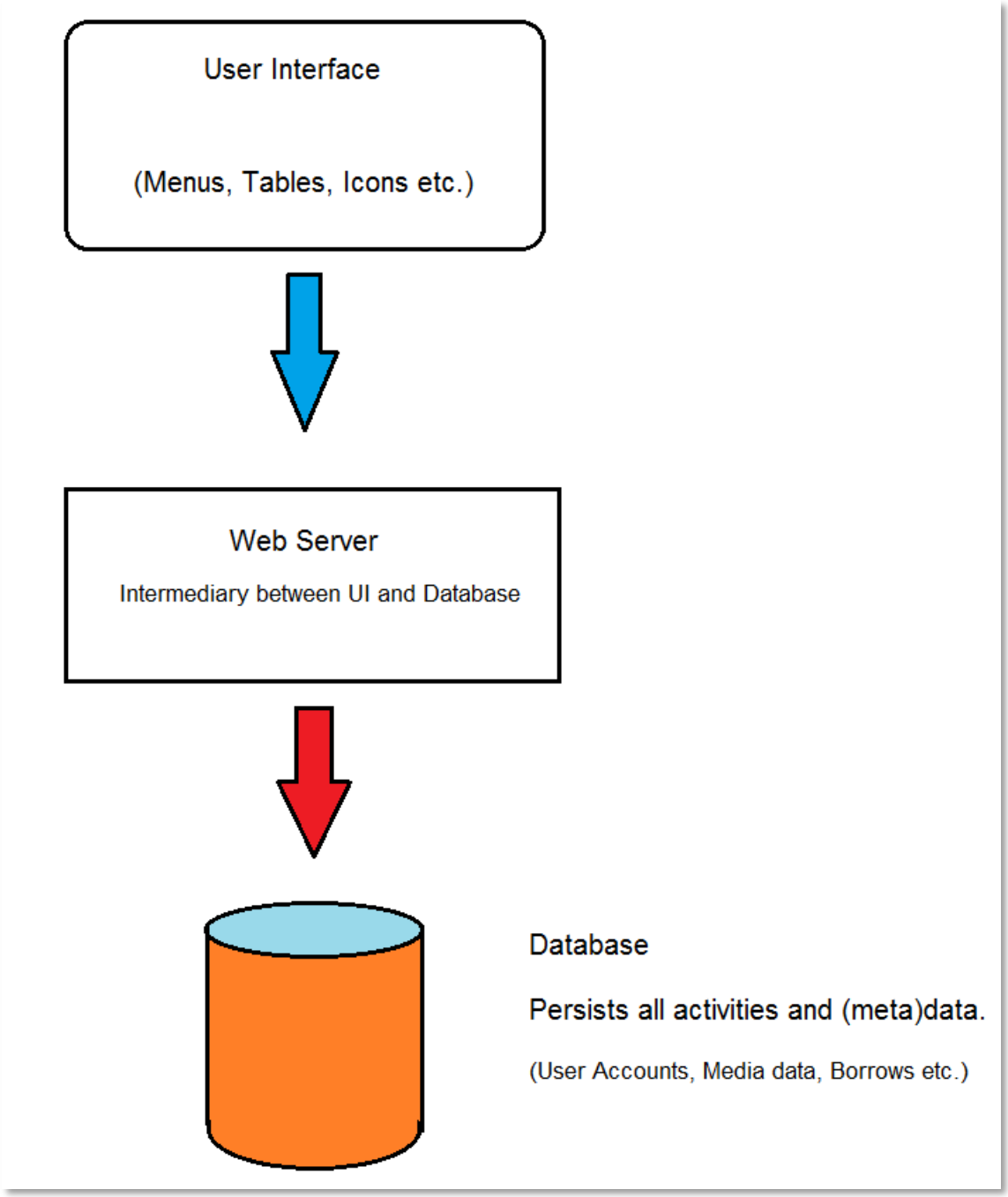
BiB

Open Source **Library Management Software** for Primary Schools

About

BiB is a web-based application for Librarian administration of media. It is an "open source" software **(MIT licensed),** which imposes no restrictions and can be modified and redistributed freely. It can run on all modern operating systems (Windows, macOS and Linux). The only real requirement is the existence of a modern browser such as *Chrome, Firefox, Internet Explorer 11* or *Edge.* Depending on the selection of the operating system, it can basically be assumed that at least one of the mentioned variants will be available. BiB is operated via a graphical interface via mouse and provides various menus depending on the context. In addition to classical library functions such as media rental, automated enrichment of media data can also be carried out using ISBN numbers. However, a working Internet connection is required for this functionality to operate. For other operations, BiB can be operated without an existing Internet connection, which is also an advantage in terms of data protection, since accidental data loss is impossible. From the outside, BiB is just a web page with some additional features such as context menus and tables. Technically, however, it consists of three separate elements, each covering one aspect of the overall structure. The graphical interface is the place where all interactions take place. A database, which manages all entries, is connected to it, so that these can be saved and imported at any time. And as a link between the graphical interface and the database, a web server, which translates queries of the graphical interface into corresponding database commands. Through these three elements: **UI**, **web server** and **database** will ensure that BiB may be adjusted as a whole or some of its components in the future. This structure allows BiB to be used even in more complex scenarios where, for example, a single machine does not harbor all aspects, but is distributed over several machines. As mentioned above, BiB is a free, open-source software. However, this also applies to all other elements to which BiB is based, such as the previously mentioned database and the web server.

BiB's technology stack

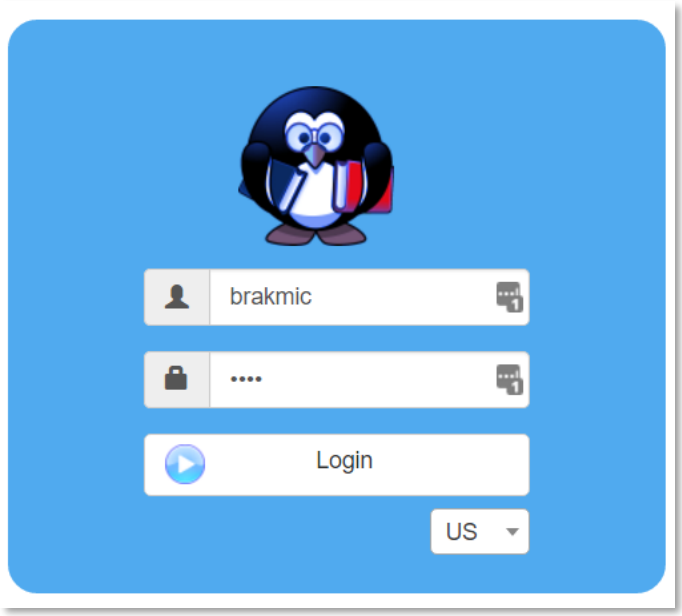


Technically speaking, BiB is an application that makes it possible to send commands to the database using easily accessible elements such as menus. Since all activities in the graphical interface will eventually be stored in the database, BiB is designed to abstract the complexity of the database level as far as possible, so that in the graphical interface there's almost no indications of the presence of a database, or even of a web server. All interactions that are made by users must take place in a context easy to understand. A typical "librarian context" knows terms such as "lending", "reading accounts" or "overdue". While the database level deals with "tables", "relations", or "primary keys". Therefore, it is understandable why such systems should be designed so that users should rarely come into contact with non-contextual infrastructure elements.

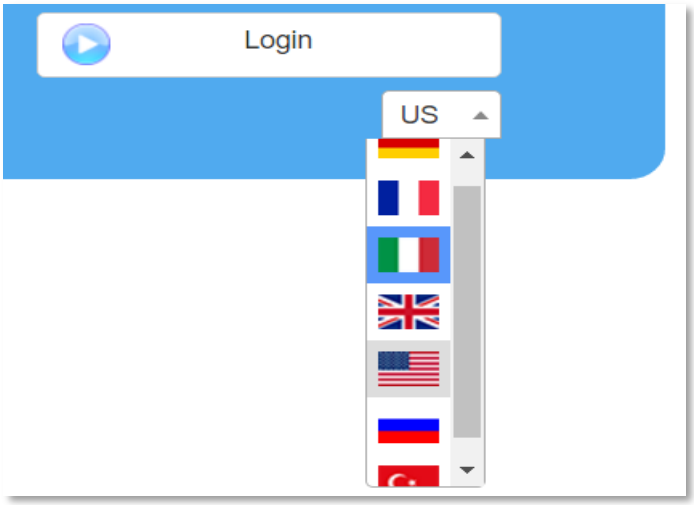
Here's an overview of the technologies that constitute BiB's stack.

Name	Task	Manufacturer	Address	Open Source?
Angular 2	User Interface	Google	Http://angular.io	Yes
HapiJS	Web server	Wal-Mart	Https://hapijs.com	Yes
MariaDB	Database	MariaDB Corp.	Https://mariadb.com	Yes

Using BiB



Each session in BiB begins with a login. Optionally, the language to be used can be selected below the login button. BiB is multi-lingual and can be extended by providing additional configuration files for new languages.



Should problems occur during registration or other activities, BiB will inform you about these by means of small “toasts”. Here, for example, the information about a failed login attempt can be seen:

Similar messages are also displayed if attempts are made to start operations for which there are insufficient user-rights.

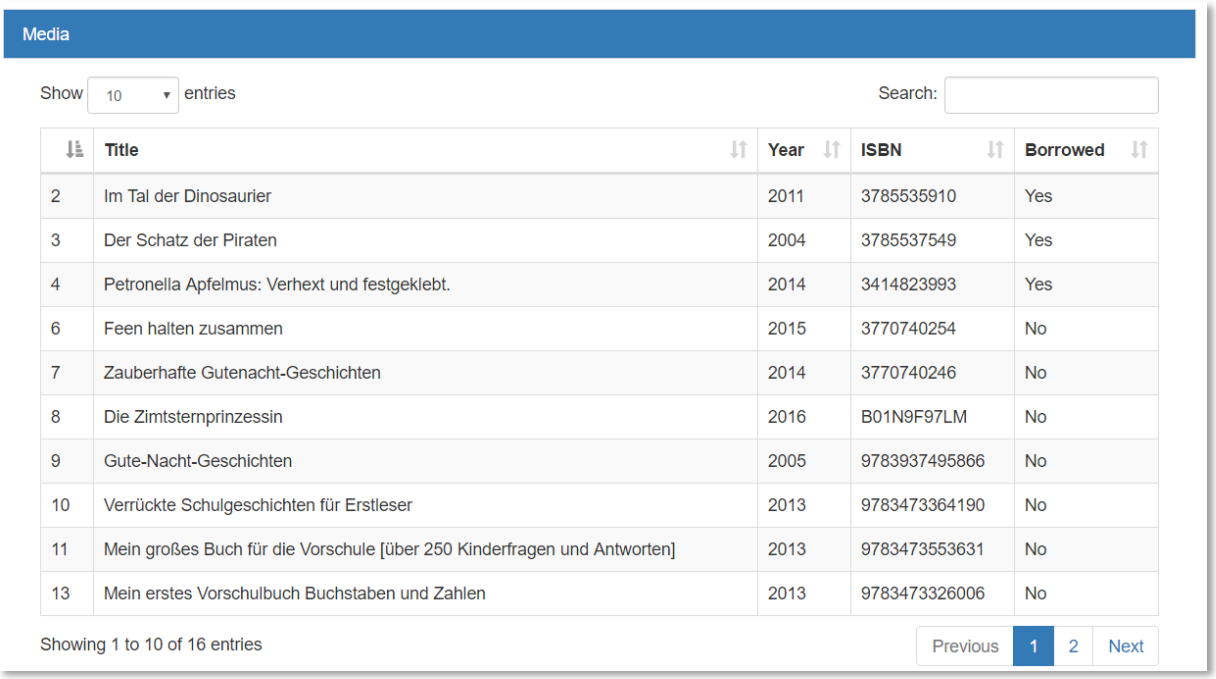
After a successful login, the default screen is presented. It comprises of three parts:

Sidebar menu on the right side, an **activity area** in the middleand the **statistical output** to the left.

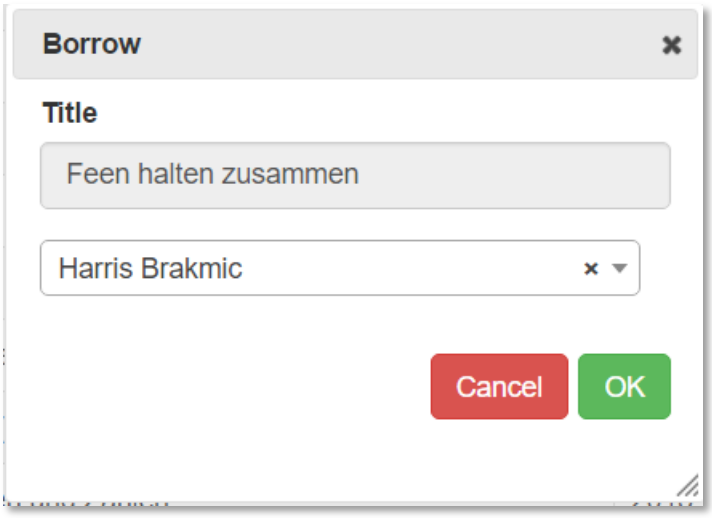
The menus on the left lead to functions that are known from the librarian's practice:

- Media Management
- Accounts
- Borrow
- Data-retrieval via ISBN

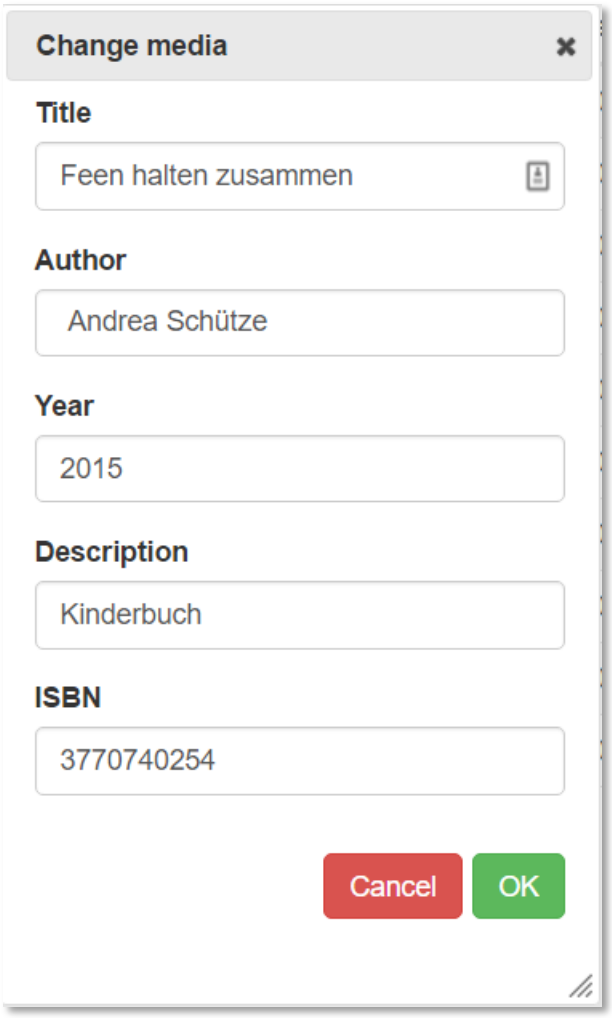
Media Management



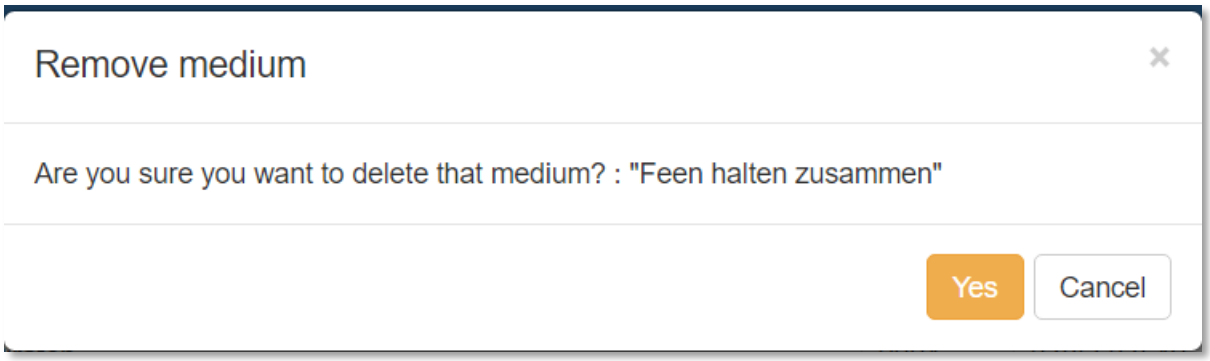
This option provides a tabular representation of all existing media as well as a context menu for lending and managing them. If the rental is selected, the following window appears with the request to select the desired reading account:



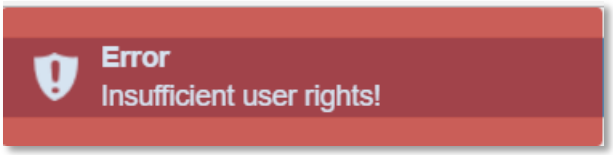
If, on the other hand, one of the options related to the media administration is selected, such a window is presented:



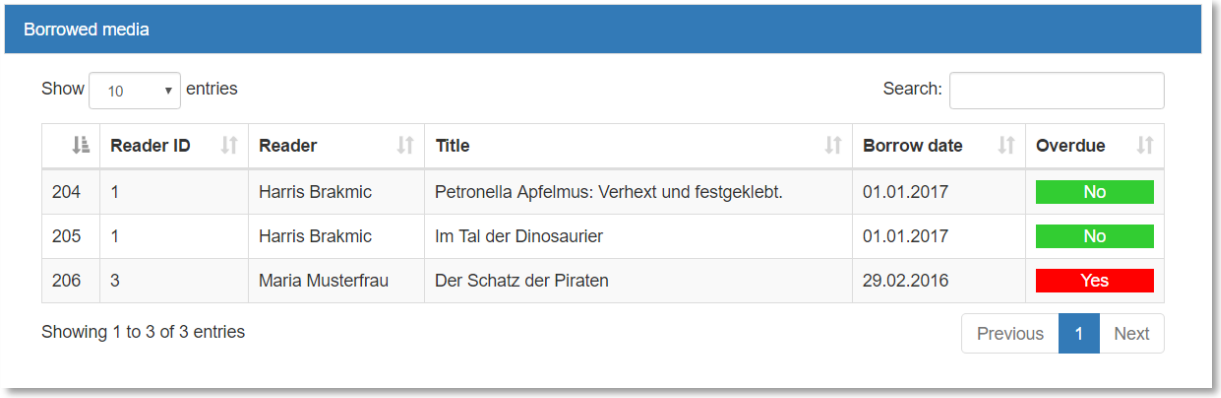
If an attempt is made to delete a medium, a confirmation message appears:



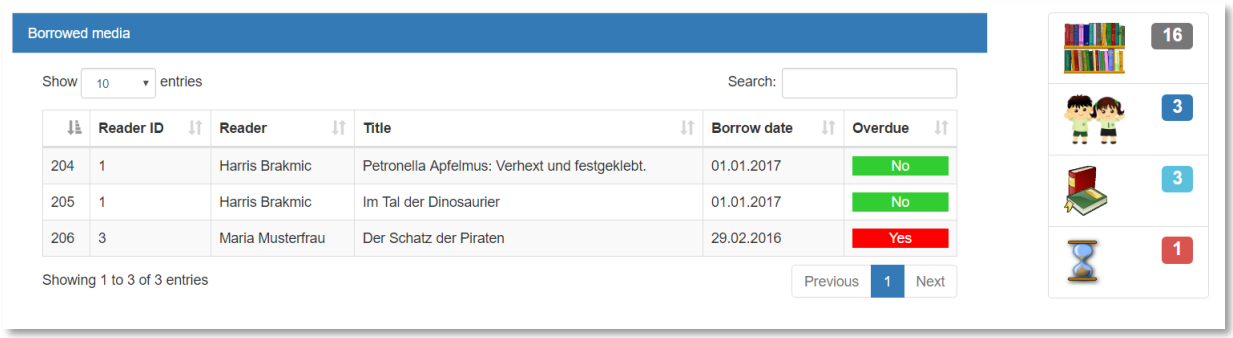
If the active user account does not have the necessary rights, such an operation is acknowledged with an error message:



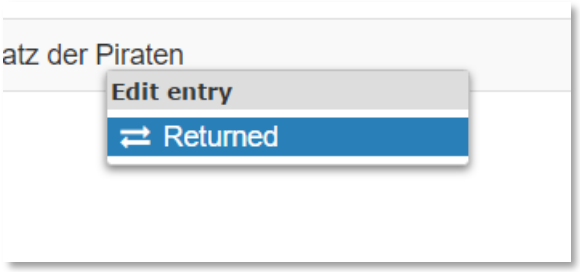
Loan Management



The list of the borrowed media contains all the important data like borrowing dates, the reading accounts and whether this is an overdue loan. Such entries are additionally marked in red to highlight them between the remaining entries.



If a medium is returned, its entry is removed from the borrow list via context menu:



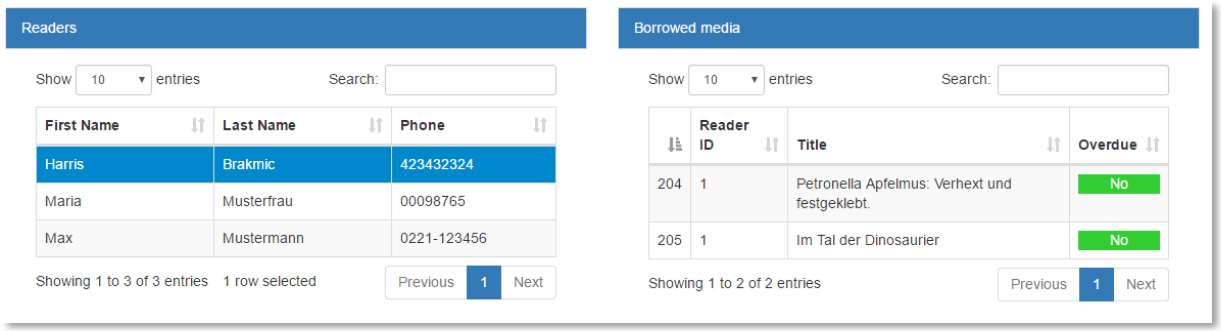
At the same time, all currently leased media and "media overdue" are displayed in the statistics display on the right.

The meaning of the icons is as follows (from top to bottom):

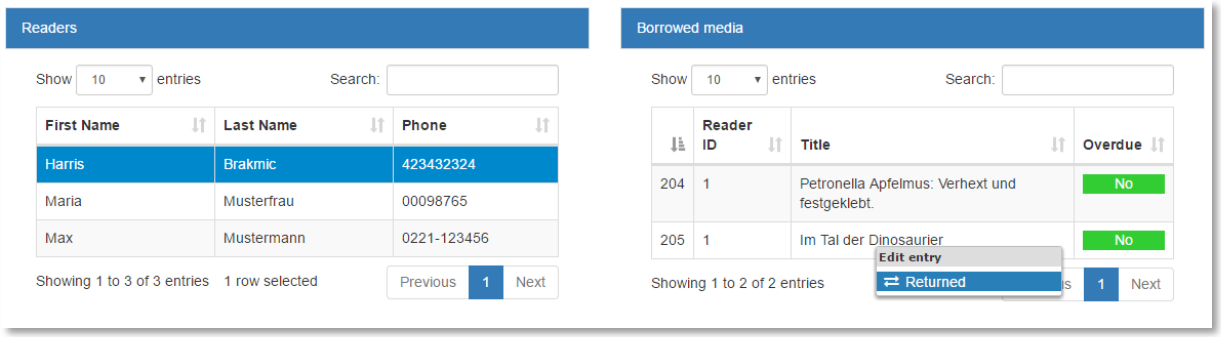
- Number of media
- Number of reading accounts
- Number of loans
- Number "media overdue“

The display changes its values automatically and without reloading the web page. When operations are performed that are relevant to one of the entries, their digits get adjusted accordingly.

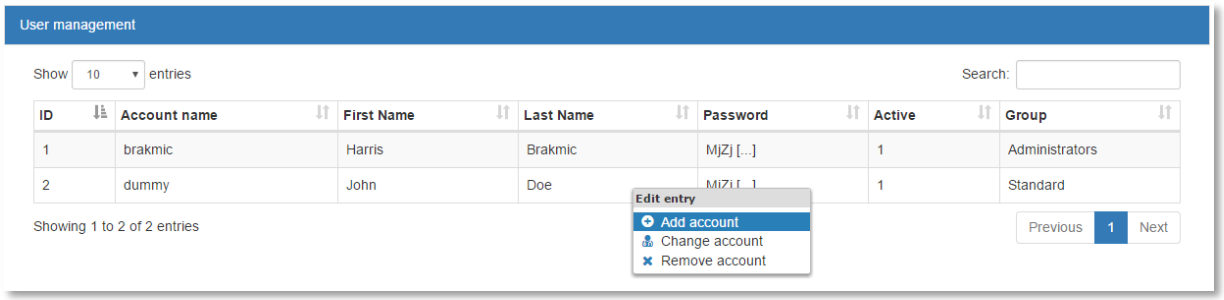
Reader Status



You can display and view status information for each active read account. The table on the left shows all known reading accounts, while the right shows which loans have been posted under the respective reading account. Media can also be loaded back into the system via the left-hand table so that switching between the reader status and rental screen is not necessary:

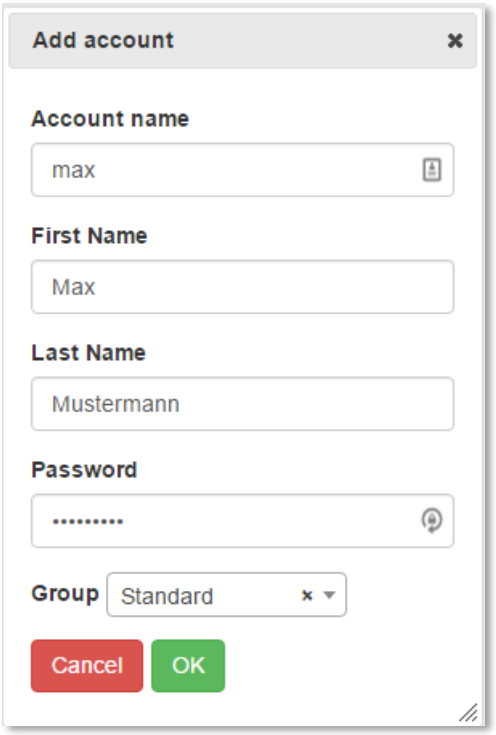


User Account Management

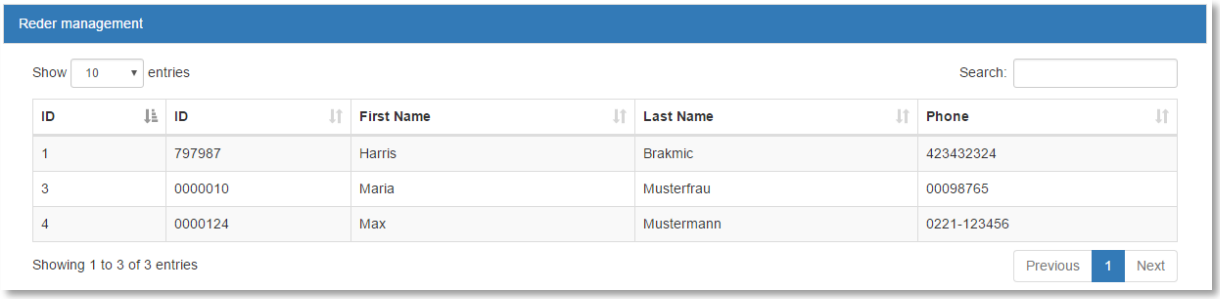


BiB is a multi-user system and allows simple account management via context menu and input windows. This is how to register a new account. Again, the same rules apply as in the rest of

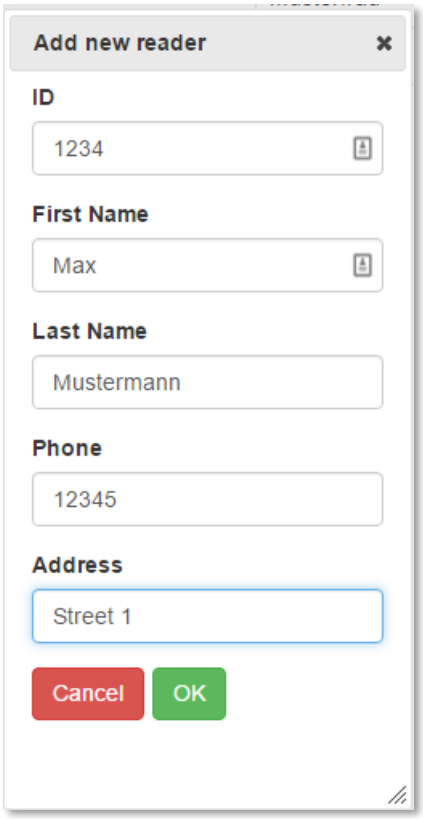
the system. Only if certain permissions are available, accounts can be changed and / or re-registered.



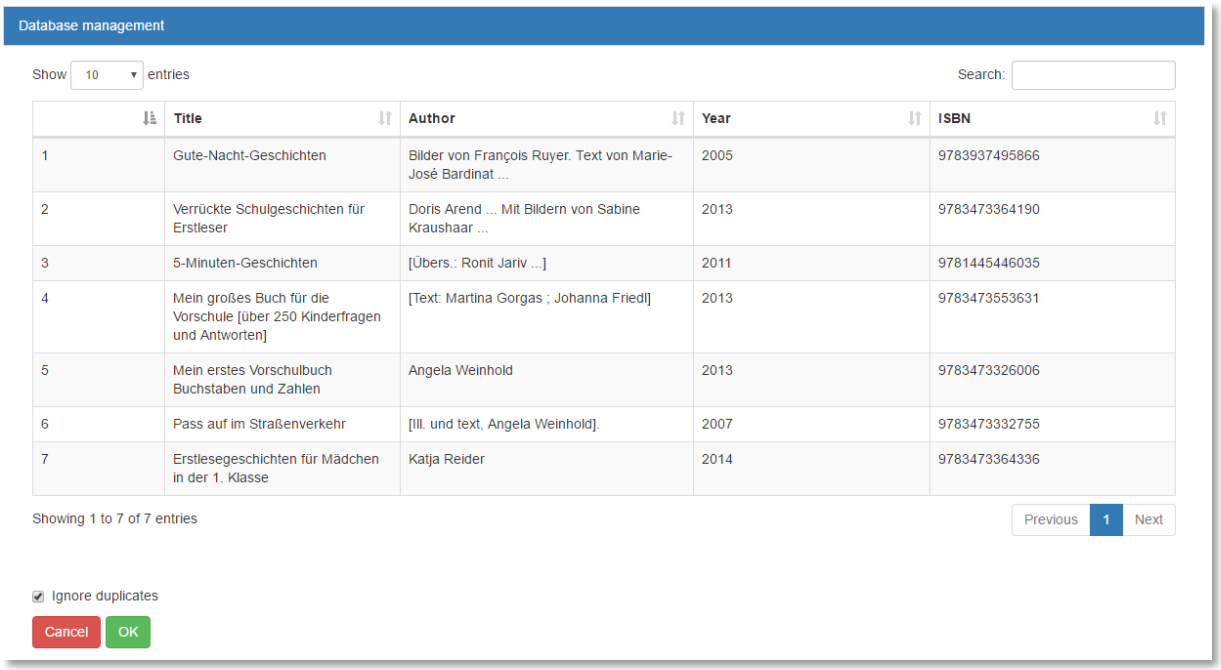
Reader Account Management



Similar to user account management, reader account management also provides appropriate options for changing and entering reader accounts. And here, too, the rule applies that only logged on users with appropriate rights can make such changes.



Database Management



This option can be used to automatically enrich the database by uploading a text file with ISBN numbers to the BiB system. After the upload BiB contacts a publicly available web service from

WorldCa[t] to retrieve data for the matching ISBNs. After completing this process, a table with content similar to the above figure is generated. At this point, it is possible to transfer the obtained data to the BiB database, or to renounce it. It is also possible to sort out duplicates, for example if certain titles or ISBNs already exist in the local database.