Lemo4Moodle

The plug-in <Lemo4Moodle> has been implemented as a block module and is saved into the directory moodle\blocks after installation.

This plug-in is course-specific. It is run from the course page and is displayed in a new tab of the browser (Fig. 1).

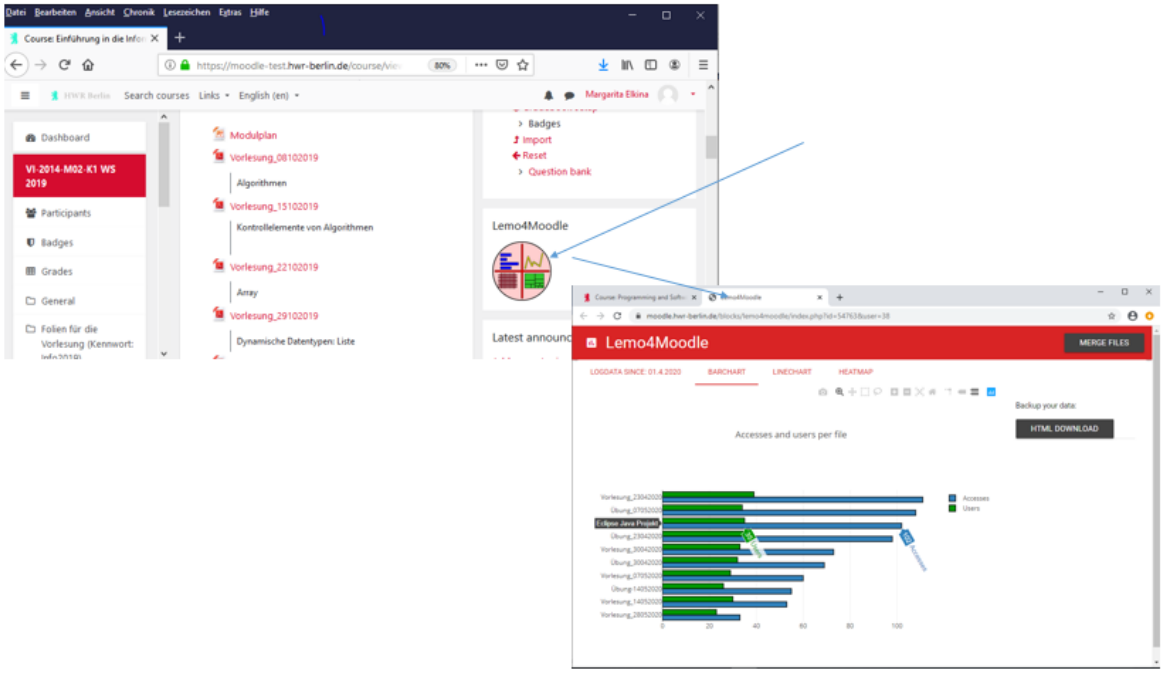

Figure 1: Plug-in <Lemo4Moodle>

A total of three displays have been implemented in the current version: Barchart, Linechart and Heatmap. The work on further characterizations and visualizations is still in progress.

Furthermore, the plug-in <Lemo4Moodle> offers users the option to save all visualized data locally as an html file as well as to merge such files saved at different times.

Visualizations and functionalities

Barchart

Barchart indicates how often a document has been clicked in a Moodle course. Information on the viewing rate of documents within a course is analyzed, and the results are visualized as a chart. This enables ranking of documents according to their popularity and importance, prompting users to read certain documents or pay closer attention to them. When the cursor is moved over a certain bar, the exact amount of clicks /users (blue/green line) is indicated (Fig. 2). The functionality of the button "HTML Download" is described below.

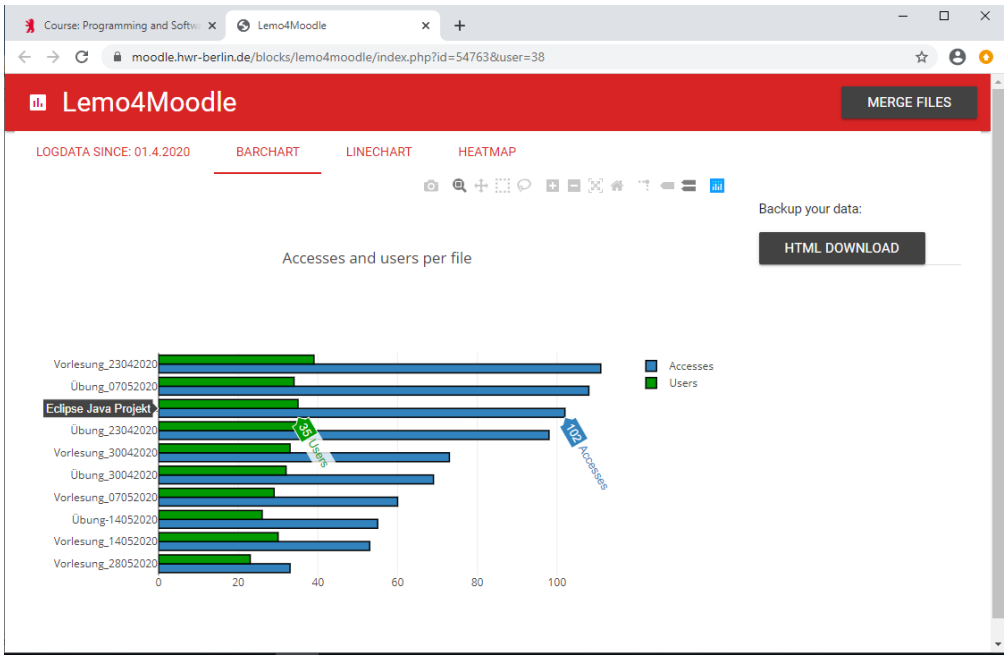

Figure 2: Barchart

Linechart

This chart shows the overall actions of the user, performed inside the Moodle course (blue line), as well as the number of people that accessed the course on the daily basis (green line). Additionally, the individual activities of the current participant him/herself are visualized (orange line) (Fig. 3). Participants include both lecturers and students.

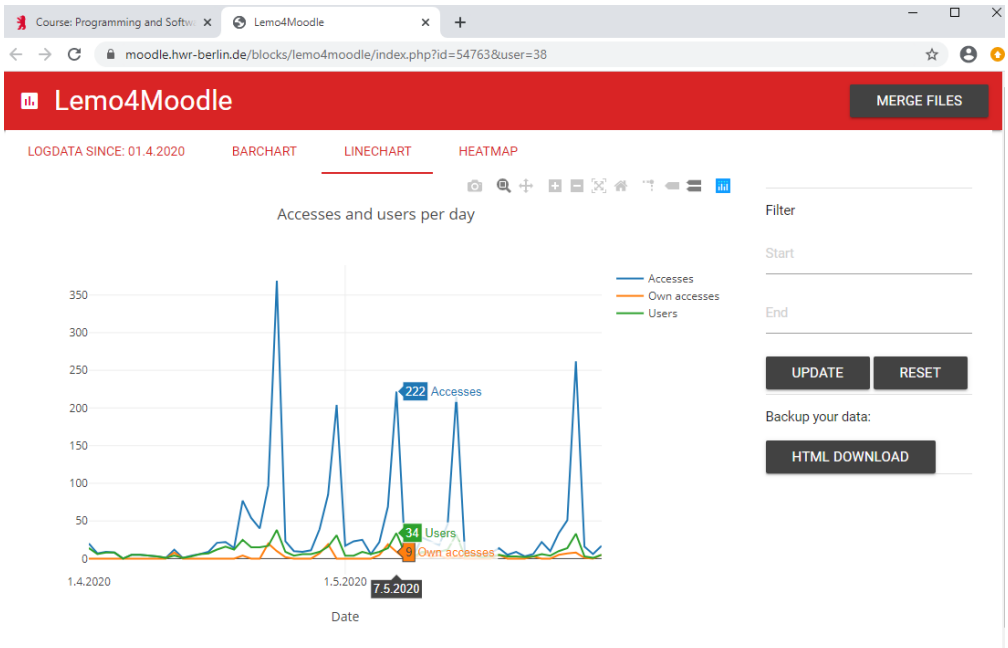

Figure 3: Linechart

At the start of the plug-in all data, stored in Moodle database, are shown. For this chart, a filter is implemented, with which a user can limit the timespan of the shown data.

The buttons “update” und “reset” control the visualization of the data with or without the filter. The functionality of the button "HTML Download" is described below.

Heatmap

The Heatmap diagram (Fig. 4) shows the numbers of clicks per time unit, sorted vertically with respect to weekdays and horizontally with respect to the time slots (0:00-6:00, 6:00-12:00, 12:00-18:00 and 18:00-24:00). Every second column (Own) displays own activities of the user in the current course. The data are further partitioned into total amount, total own, average and average own. The color saturation serves for identification of weekdays and time slots that correspond to the bulk activities in the course. The term “own” refers to the activities of the participant, currently registered within Moodle. Participants include both lecturers and students.

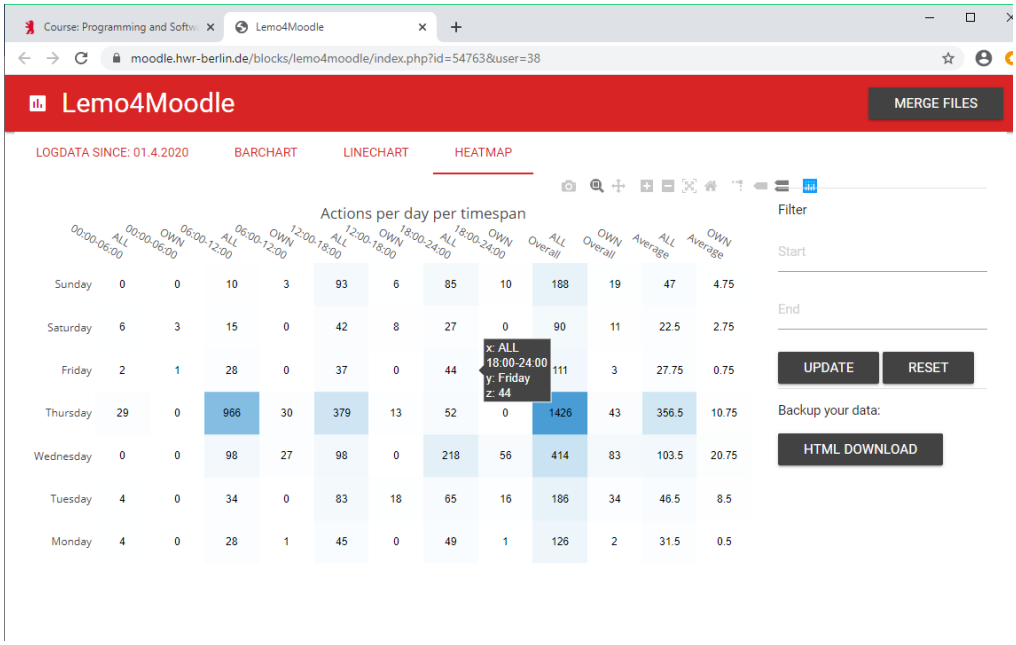

Figure 4: Heatmap

HTML Download

When clicking the Button “HTML Download”, the user is first prompted to choose whether to download only the currently displayed chart or all chart data (Fig. 5).

Upon clicking one of the options, the standard download dialog of the used browser is opened.

The downloaded file looks exactly like the web version of the plug-in, with the slight difference, that the buttons “HTML Download” and “Merge files” are removed (Fig. 6). The reason: these functionalities are unavailable for the downloaded version, because the file is saved locally on the user device. Even the filters for Linechart and Heatmap are working exactly the same way.

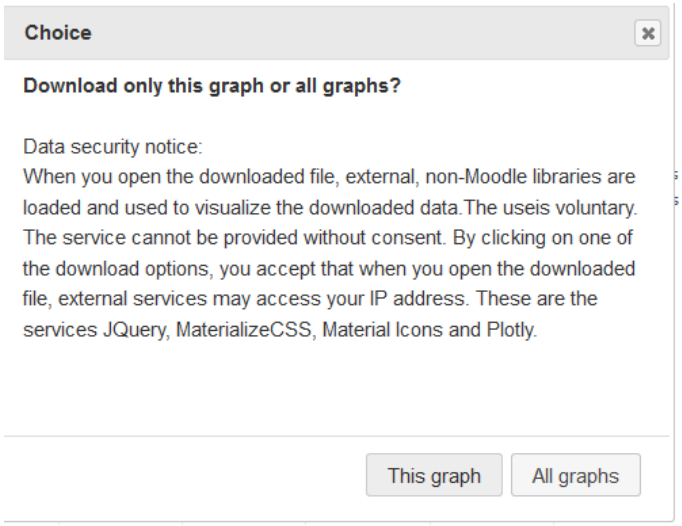

Figure 5: HTML download, selection

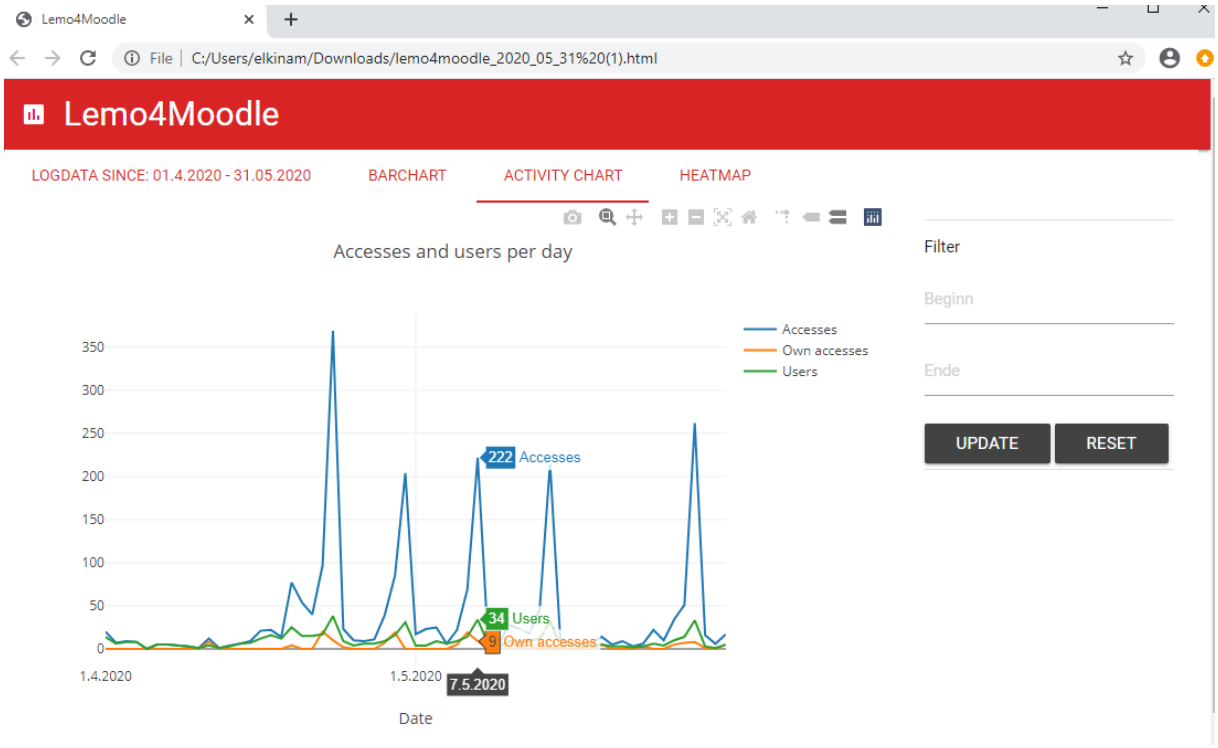

Figure 6: HTML file

Merge files

Another feature is the possibility to merge files. If your Moodle database only stores data for a limited amount of time (e.g. 30 Days), and the user wishes to analyse the data during the semester, it makes sense for users to keep all their data in one file. For merging, the files have to be selected from previously downloaded html-files (Fig. 7). <Lemo4Moodle> first reads the data included in the selected files, merges them and then prompts to download a new file that includes all the merged data.

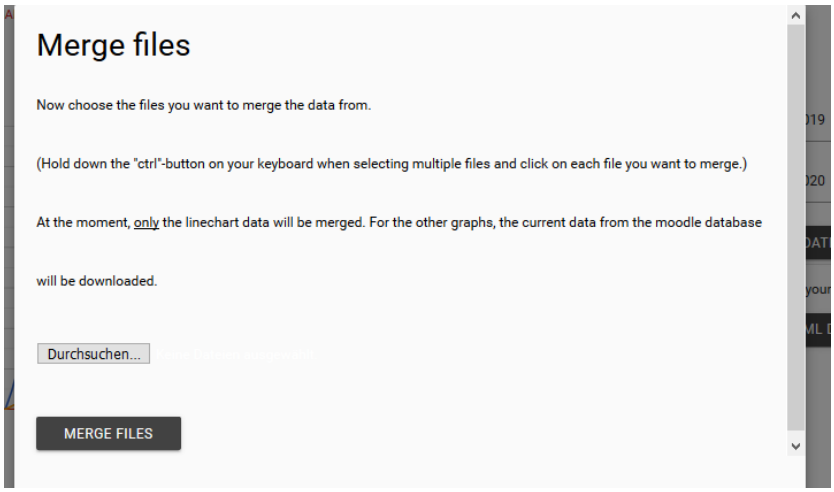

Figure 7: Merge files

Information on data privacy

The <Lemo4Moodle> plug-in can be started only by the course participant currently logged in to Moodle. No one outside the course has access to the internal course data (e.g. overall clicks, accesses etc.). Data displayed by the Barchart and Treemap are the same for every course participant, no personal data is shown. The data shown to each participant by the Linechart and Heatmap consists only of his/her own actions and the overall actions of all course participants together. However, his/her name is not displayed on the plug-in page. Therefore, no student or teacher can access data on personal actions and clicks of other students or teachers.

Queries to the database use personal data in form of the ID of currently logged in users to find the corresponding number of actions. Since for visualization only the amount of clicks is counted, the User-ID is not included in the output.

In general, it should also be mentioned, that the plugin <Lemo4Moodle> does not need any new database tables and does not save any data in the Moodle database or anywhere else.