The AlekSIS® Handbook

Release 2021.12 "Bruner"

Project Information · Installation and Administration
End-User Handbook · Developer Manual
# Contents

1 Preamble

1.1 Introduction to AlekSIS
  1.1.1 Welcome
  1.1.2 On School Information Systems
  1.1.3 AlekSIS, the Free School Information System
  1.1.4 The wider digital educational ecosystem

1.2 The official AlekSIS standard distribution
  1.2.1 Releases and support
  1.2.2 Apps and versions
  1.2.3 Installation of the standard distribution

2 End-user handbook

2.1 Using basic features of the AlekSIS Core
  2.1.1 Register a new account
  2.1.2 Managing your personal account
  2.1.3 Dashboard
  2.1.4 PWA (progressive web application)

2.2 Timetables and substitution plans with Chronos
  2.2.1 Finding information about the timetable
  2.2.2 Substitution plan
  2.2.3 Managing substitutions
  2.2.4 Configuring the timetable display

2.3 Digital class register
  2.3.1 Concept of Alsijil and overview about functionality
  2.3.2 Basic data concepts
  2.3.3 Overviews about lessons and students
  2.3.4 Viewing and managing lessons
  2.3.5 Assigning group roles
  2.3.6 (Archive) printout

2.4 Time-based documents with Resint
  2.4.1 Publishing posters

2.5 Get support via Hjelp
  2.5.1 Reading Frequently Asked Questions
  2.5.2 Reporting issues
  2.5.3 Giving feedback for AlekSIS

3 Administration handbook

3.1 Setup of the AlekSIS instance and the AlekSIS core
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1 Concepts of the AlekSIS core</td>
<td>31</td>
</tr>
<tr>
<td>3.1.2 Install AlekSIS</td>
<td>33</td>
</tr>
<tr>
<td>3.1.3 Configuration files and format</td>
<td>37</td>
</tr>
<tr>
<td>3.1.4 Configuration options</td>
<td>38</td>
</tr>
<tr>
<td>3.1.5 Storage</td>
<td>39</td>
</tr>
<tr>
<td>3.1.6 Mail</td>
<td>40</td>
</tr>
<tr>
<td>3.1.7 Authenticating against LDAP</td>
<td>41</td>
</tr>
<tr>
<td>3.1.8 Registration and user invitations</td>
<td>42</td>
</tr>
<tr>
<td>3.1.9 Social accounts</td>
<td>43</td>
</tr>
<tr>
<td>3.1.10 Monitoring and health checks</td>
<td>45</td>
</tr>
<tr>
<td>3.1.11 Background tasks</td>
<td>46</td>
</tr>
<tr>
<td>3.1.12 Data checks</td>
<td>47</td>
</tr>
<tr>
<td>3.1.13 Providing important information to users using the dashboard</td>
<td>48</td>
</tr>
<tr>
<td>3.2 Managing timetable data and substitution plans in Chronos</td>
<td>51</td>
</tr>
<tr>
<td>3.2.1 Managing timetable and substitution data</td>
<td>51</td>
</tr>
<tr>
<td>3.2.2 System-wide settings for timetable and substitution display</td>
<td>51</td>
</tr>
<tr>
<td>3.3 Setting up a digital class register with AlekSIS-App-Alsijil</td>
<td>52</td>
</tr>
<tr>
<td>3.3.1 Defining base data</td>
<td>52</td>
</tr>
<tr>
<td>3.3.2 System-wide settings for the digital class register</td>
<td>55</td>
</tr>
<tr>
<td>3.4 Providing time-based documents with Resint</td>
<td>56</td>
</tr>
<tr>
<td>3.4.1 Uploadable posters for time-based documents</td>
<td>56</td>
</tr>
<tr>
<td>3.4.2 Configuring live documents</td>
<td>57</td>
</tr>
<tr>
<td>3.5 Importing timetables and substitutions from Untis</td>
<td>58</td>
</tr>
<tr>
<td>3.5.1 Untis data and their relation to AlekSIS</td>
<td>58</td>
</tr>
<tr>
<td>3.5.2 Setting up the Untis integration</td>
<td>59</td>
</tr>
<tr>
<td>3.6 Importing data from CSV-like sources</td>
<td>61</td>
</tr>
<tr>
<td>3.6.1 Base concept of the generic importer</td>
<td>61</td>
</tr>
<tr>
<td>3.6.2 Configuring the import</td>
<td>62</td>
</tr>
<tr>
<td>3.6.3 Exporting data from various systems</td>
<td>62</td>
</tr>
<tr>
<td>3.6.4 Importing data</td>
<td>63</td>
</tr>
<tr>
<td>3.7 Show data from external sources on dashboard</td>
<td>63</td>
</tr>
<tr>
<td>3.7.1 Introduction</td>
<td>63</td>
</tr>
<tr>
<td>3.7.2 RSS feed widget</td>
<td>64</td>
</tr>
<tr>
<td>3.7.3 iCalendar feed widget</td>
<td>65</td>
</tr>
<tr>
<td>3.8 Advanced LDAP integration</td>
<td>66</td>
</tr>
<tr>
<td>3.8.1 Interfacing with an LDAP directory beyond authentication</td>
<td>66</td>
</tr>
<tr>
<td>3.8.2 Configuring LDAP synchronisation</td>
<td>67</td>
</tr>
<tr>
<td>3.8.3 Managing user accounts in LDAP</td>
<td>68</td>
</tr>
<tr>
<td>3.9 Support end users and get feedback with Hjelp</td>
<td>68</td>
</tr>
<tr>
<td>3.9.1 Managing FAQs</td>
<td>68</td>
</tr>
<tr>
<td>3.9.2 Managing issue report form</td>
<td>70</td>
</tr>
<tr>
<td>3.9.3 Settings and preferences</td>
<td>71</td>
</tr>
<tr>
<td>4 Developer handbook</td>
<td>73</td>
</tr>
<tr>
<td>4.1 Development of AlekSIS apps using the AlekSIS core</td>
<td>73</td>
</tr>
<tr>
<td>4.1.1 Setting up the development environment</td>
<td>73</td>
</tr>
<tr>
<td>4.1.2 Installing apps into development environment</td>
<td>75</td>
</tr>
<tr>
<td>4.1.3 Running tests and reports</td>
<td>76</td>
</tr>
<tr>
<td>4.1.4 Materialize templates</td>
<td>77</td>
</tr>
<tr>
<td>4.1.5 Extensible models</td>
<td>80</td>
</tr>
<tr>
<td>4.1.6 Merging of app settings</td>
<td>80</td>
</tr>
</tbody>
</table>
4.1.7 Registering dashboard widgets ........................................ 80

4.2 Providing auto-generated documents from apps .......................... 81
4.2.1 Providing live document types from other apps ....................... 81

5 Appendix ........................................................................ 83

5.1 About Free Software and Open Source ...................................... 83
5.1.1 The four freedoms .......................................................... 83
5.1.2 Advantages for schools .................................................... 84

5.2 Legal Information about the AlekSIS® Software .......................... 84
5.2.1 Copyright Note and Licenses .............................................. 84

5.3 AlekSIS® trademark ............................................................ 85

5.4 EUROPEAN UNION PUBLIC LICENCE v. 1.2 ......................... 86
5.4.1 1. Definitions ............................................................... 86
5.4.2 2. Scope of the rights granted by the Licence ......................... 87
5.4.3 3. Communication of the Source Code ............................... 87
5.4.4 4. Limitations on copyright .............................................. 87
5.4.5 5. Obligations of the Licensee .......................................... 88
5.4.6 6. Chain of Authorship ................................................ 88
5.4.7 7. Disclaimer of Warranty .............................................. 89
5.4.8 8. Disclaimer of Liability ................................................. 89
5.4.9 9. Additional agreements ................................................. 89
5.4.10 10. Acceptance of the Licence ........................................ 89
5.4.11 11. Information to the public ............................................ 90
5.4.12 12. Termination of the Licence ........................................ 90
5.4.13 13. Miscellaneous ....................................................... 90
5.4.14 14. Jurisdiction ........................................................... 90
5.4.15 15. Applicable Law ..................................................... 91
5.4.16 Appendix ..................................................................... 91

Bibliography ...................................................................... 93
1.1 Introduction to AlekSIS

1.1.1 Welcome

Welcome to AlekSIS, the Free School Information System! This handbook is a comprehensive guide on how to install, administer, and use AlekSIS and all included official apps. Its target audience are system administrators seeking to install and maintain an AlekSIS installation, people supporting the use of AlekSIS in daily processes in educational organisations, and end users who work with the software on a daily basis.

1.1.2 On School Information Systems

School Information Systems, or for short, SIS, are software suites that help educational organisations with managing personal information about all members (e.g. students, teachers, parents and guardians) as well as organisational data like plans, pedagogic track records, and much more.

Generally, the goal of using School Information Systems is to help members of the school or other educational organisation to organise their work in learning and teaching, and to simplify digital processes, especially those that involve analytical evaluation, statistics, or information that is updated very frequently and should be made available to its recipients in a timely manner.

Ideally, School Information Systems also promote transparency between teachers and students and improve sustainability by minimising the need for paperwork.
1.1.3 AlekSIS, the Free School Information System

School Information Systems have been on the rise ever since schools began digitising their management processes. Traditionally, the vendors of school management tools (like for timetabling, personal data management of teachers and students, etc.) also deliver web applications that are tailored towards making the respective data available to those who need it.

As most of these solutions are proprietary products, they tend to be limited to be used together with other software of their vendors, and do not integrate nicely with other software and with processes and data sets not in the focus of the developers.

AlekSIS, in contrast, is a generic School Information System that aims at being universally usable for all processes and data sets in any educational organisation, and at interacting closely with other software components employed in management and lessons.

The development and product team has set the following goals for AlekSIS, in their dedication to support learning and teaching in the digital world:

• Create a high-quality software product, adhering to high standards regarding data protection, data safety, security, and stability
• Comply with as many national and regional data protection and school laws as possible (cf. Legal Information about the AlekSIS® Software (page 84))
• Provide an extensible framework, allowing schools or their supporting IT companies to create their own apps (cf. Developer handbook (page 73))
• Help coding clubs and classes to understand the development as deeply as necessary to use AlekSIS for learning and creating their own apps
• Keep AlekSIS free, open, and transparent (cf. About Free Software and Open Source (page 83))

1.1.4 The wider digital educational ecosystem

AlekSIS is a School Information System, and as such, is intended to be a superior tool for data management, and for digitising management processes in education.

As laid out in the Basics of the Unix Philosophy, good software should “do one thing and do it well” [UnixPhil]. Therefore, AlekSIS will not provide features that are covered by other good and free software. The following examples list features that are out of scope for AlekSIS:

• **Messenger features**: There are good free software communication platforms, e.g. [Element](https://element.io/)
• **Learning Management**: Managing online courses, tests, etc. is covered by systems like [Moodle](https://moodle.org/)
• **File sharing and groupware**: The [Nextcloud](https://nextcloud.com/) private cloud is a good solution for calendars, file sharing, and other groupware needs

AlekSIS strives to provide integrations with popular other platforms, and to ease the process of developing such integrations.

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1. https://element.io/
2. https://moodle.org/
3. https://nextcloud.com/
1.2 The official AlekSIS standard distribution

AlekSIS consists of a core, which provides all general functionality and management of basic data, and additional apps that can be installed in a modular fashion.

1.2.1 Releases and support

The default distribution is a meta-package that defines which apps are officially supported, and what the development team canonically calls AlekSIS®. It is released every 6 months, aligned with the beginning school half-year in summer and winter.

In the official distribution, the core and apps are semantically versioned and limited to their minor version. That means that, if the standard distribution is installed through the meta-package, all apps are kept up to date with bug fixes, but do not receive feature updates or even breaking changes.

The official distribution is supported for one year (in other words, the most recent two distribution versions are supported). The supported versions receive security updates and important bug fixes.

1.2.2 Apps and versions

<table>
<thead>
<tr>
<th>App name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>Core functionality and framework</td>
<td>2.7</td>
</tr>
<tr>
<td>Chronos</td>
<td>Timetables and substitutions</td>
<td>2.2</td>
</tr>
<tr>
<td>Alsijil</td>
<td>Class register</td>
<td>2.0</td>
</tr>
<tr>
<td>Untis</td>
<td>Import from Untis</td>
<td>2.1</td>
</tr>
<tr>
<td>Hjelp</td>
<td>Support, feedback and FAQ</td>
<td>2.0</td>
</tr>
<tr>
<td>DashboardFeeds</td>
<td>Dynamic external feeds as dashboard widgets</td>
<td>2.0</td>
</tr>
<tr>
<td>CSVImport</td>
<td>Import generic CSV files</td>
<td>2.2</td>
</tr>
<tr>
<td>LDAP</td>
<td>LDAP synchronisation</td>
<td>2.1</td>
</tr>
<tr>
<td>Resint</td>
<td>Time-based/live documents</td>
<td>2.1</td>
</tr>
</tbody>
</table>

1.2.3 Installation of the standard distribution

The standard distribution is primarily available as the aleksis package on PyPI. All installation documentation applies, and to install the standard distribution, the package aleksis can be used in all places where aleksis-core is installed for custom installations.
2.1 Using basic features of the AlekSIS Core

2.1.1 Register a new account

Public registration

If public registration is enabled on the AlekSIS instance, you can click the Signup button located in the navigation sidebar and register for an AlekSIS account.

If enabled, you have to verify your email address after signup. To do so, click on the link you received on the email address you entered in the signup form.

Note: Normally, AlekSIS does not allow public registration, and all accounts are centrally managed by administrators. Public registration is an optional feature that has to be enabled by administrators after careful consideration.
Using an invitation code

If you have an invitation code, click Accept invitation in the sidebar and enter it. You will be redirected to the signup form.

If you’ve received an invitation link (e.g. via email), clicking the link will redirect you to the signup form automatically.

2.1.2 Managing your personal account

Each logged in user has several options to provided through the AlekSIS core. Which of these items are displayed depends on whether the user has a person and what your system administrator has configured.

Notifications

The AlekSIS core has a built-in notification system which can be used by apps to send urgent information to specific persons (e.g. timetable changes). Notifications are shown on the dashboard and the notifications page reachable over the menu entry Notifications. In addition to that, notifications can be sent to users through several communication channels. These channels can be switched on or off in your personal preferences (cf. Personal preferences (page 8)).
Setup two-factor authentication

AlekSIS provides two factor authentication using hardware tokens such as yubikeys which can generate OTPs or OTP application.

To configure the second factor, visit Account → 2FA and follow the instructions.

Please keep the backup codes somewhere safe so you do not lose access to your account. If you are unable to login with two factor authentication, please contact your site administrator.

If you forget to safe your backup codes, but you are still logged in, visit Account → 2FA, and press Show codes.

To disable two factor authentication, login to your account and navigate to Account → 2FA, then press the big red button to disable 2fa.

Change password

If your system administrator has activated this function, you can change your password via Account → Change password. If you forgot your password, there is a link Password forgotten? on this page which helps with resetting your password. The system then will send you a password reset link via email.

Me page

Reachable under Account → Me, this page shows the personal information saved about you in the system. If activated, you can upload a picture of yourself or edit some information.
Personal preferences

You can configure some behavior using the preferences under Account → Preferences. By default, the Core only provides some preferences, but apps can extend this list. You can find further information about such preferences in the chapter of the respective apps.

- **Notifications**
  - **Name format for addressing**: Here you can select how AlekSIS should address you.
  - **Channels to use for notifications**: This channel is used to send notifications to you (cf. Notifications (page 6)).

Third-party accounts

If you logged in using a third-party account (e.g. a Google or Microsoft account), you can manage the connections to these accounts on the page Account → Third-party accounts.

The feature to use third-party accounts needs to be enabled by an administrator, as described in ../admin/04_socialaccounts.

Authorized applications

On the page Account → Authorized applications you can see all external applications you authorized to retrieve data about you from AlekSIS. That can be services provided by your local institution like a chat platform, for example.

2.1.3 Dashboard

The first thing you will see after the login is the dashboard. Depending on what your system administrator configured, you will be able to see information from different apps at one glance.
Dashboard widgets

The dashboard consists of different parts, the so-called dashboard widgets. They are configured by the system administrator and can be freely arranged on the dashboard (cf. Customising the dashboard (page 9)).

Customising the dashboard

There are several options for customising your personal dashboard. By default, you will see a layout provided by your system administrator. Using the button Edit dashboard on the top right corner of the dashboard, you can change the selection and position of the widgets.

On the edit page, you will see a list of all available widgets and your current dashboard. If the section Your dashboard is empty, the default dashboard will be shown. To make an own layout, you can drag widgets from the Available widgets to Your dashboard. Within Your dashboard you also can arrange the widgets by dragging them. To remove widgets from the dashboard, you just have to drag them back to Available widgets.

In addition to editing the dashboard, you can also change same preferences referring to the dashboard. This is done under the menu item Account → Preferences → General:

- **Automatically update the dashboard and its widgets**: If enabled by you and the system administrator, the dashboard will be updated automatically every 15 seconds.
2.1.4 PWA (progressive web application)

What is a progressive web application?

A PWA is an application developed with common web technologies and delivered in form of a website, but which offers some features a traditional website does not and, overall, creates an impression that resembles that of a native application.

AlekSIS PWA features

The AlekSIS PWA offers the following features (not all available on all platforms):

- Installable and displayable in a separate window
- Caching and serving, if given page cannot be accessed, of non-interactive pages and needed assets
- Provision of an offline fallback page if wanted page cannot be accessed and there is no cached one
- Indicator whether the served page is served from the PWA cache

Installation of the PWA

The procedure to get a native feeling using the AlekSIS PWA varies from platform to platform. On some, you are prompted to add AlekSIS to your home screen of desktop using a popup; on others, you have to take action yourself and find the corresponding menu entry. As of the time of writing, “installable” PWAs are supported by all major platforms except Firefox Desktop which nevertheless supports the other features.

- Chromium-based browsers (e.g. Chromium, Google Chrome, Microsoft Edge) will usually prompt you to install the PWA by a popup on both mobile and desktop devices; for the former using a banner and for the latter using an appearing button in the address bar. In both cases, a click on the notification is enough to start the installation process.
- Firefox Mobile will also probably prompt you using a dot near the menu button; then “install” has to be clicked.
- On Safari you need to open the share popup and click on the “Add to Home Screen” button.

Independent of the used platform, AlekSIS can be accessed as an independent application entry, just like any other installed native application, after installation.

2.2 Timetables and substitution plans with Chronos

2.2.1 Finding information about the timetable

Timetables are provided in several ways in AlekSIS. Using the different views, it is possible to both find information about the regular lessons taking place, as well as up-to-date information generated from most recent information, e.g. substitutions, cancellations, or extra lessons.
Viewing the personal timetable

One of the most useful features is the ability to see your daily or weekly timetable at a glance – with all recent information included. This view, called "My timetable", can be accessed in two ways: Just add the timetable widget to the dashboard or use the menu entry Timetables → My timetable. On this page, you can switch between different days (on mobile devices) or different weeks (on desktop devices) to see future information.

Smart plan

By default, the personal timetable is displayed in smart plan mode. This means that all available information, like substitutions or cancellations, is merged into the regular plan to create an up-to-date version of the timetable. At one glance, the actual timetable for a specific day can thus be viewed.

Using the button Show regular timetable above the plan, the view can be switched into regular mode, showing only what was planned ahead, without up-to-date information.

The colours of the lessons are defined by the subject of the lesson, and was probably imported from a time-tabling software. In addition, the following highlighting is done for changes:

- Substituted lessons are decorated with a red border, and changes in the lesson data are struck through and replaced with the new information
- Cancelled lessons have their background removed, and a Cancelled label added
- Remarks from the substitution plan are added in italics underneath the lesson information

2.2. Timetables and substitution plans with Chronos
Dashboard widget

A dashboard widget is provided that shows the *smart plan* for the current day. Right when logging into AlekSIS, or opening the PWA, the timetable can thus be immediately viewed.

The widget needs to be enabled by an administrator.

Week timetables

Using the menu entry *Timetables → All timetables* will give you access to all timetables of your institution (or whatever your administrator allowed you to see). It’s divided into three main sections:

- Teachers
- Groups
- Rooms

If you open one of these timetables, by default you see the *smart plan* of the current week. By clicking on *Show regular plan* or using the *print* button, you can access the corresponding regular plan. To easily jump between timetables, every teacher, subject, or group short name is linked to the respective timetable.
The print button will generate the currently displayed plan as a PDF file, which can either be printed, or used for display on digital signage.

2.2. Timetables and substitution plans with Chronos
2.2.2 Substitution plan

In addition to the *smart plan*, substitutions can be displayed as a traditional substitution plan. The substitution plan lists all changes made to the regular plan, on a daily basis, as a table.

**View in AlekSIS**

In AlekSIS, the substitution plan is available from the menu under *Timetable → Substitutions*. This function provides a browsable list, where substitution plans can be navigated by week.

**Print view**

Like for the regular timetable, the substitution plan can be printed (as a PDF file), to make hard-copies, or to display it on digital signage.
2.2.3 Managing substitutions

AlekSIS has basic support for managing substitutions and cancellations.

In the menu under Timetable → Daily lessons, a list of all lessons taking place on a day can be found.

The list allows editing a substitution for each lesson.
When editing a substitution, the week, date, and lesson is pre-filled. The fields for teacher, room, and subject allow replacing the respective information for the selected lesson.

It should be noted that support for editing substitutions is currently very basic, and the feature should not be used when substitution data is imported from an external source.

### 2.2.4 Configuring the timetable display

Some display options can be changed by the user, under Account → Settings → Timetables:

- **Shorten groups in timetable views:** With this setting activated, lists with more groups than set in the system-wide limit will be collapsed into a shorter string (e.g. 5a,b,c,d,e,f might be abbreviated as 5a-f)

### 2.3 Digital class register

#### 2.3.1 Concept of Alsijil and overview about functionality

AleKsis provides a privacy-compliant online class register solution. It is not simply the digital equivalent of a paper class book, although elements are adopted for easier orientation and smoother transition for teachers. For example, there is a weekly view of all lessons and a list of all the students in the class. Lesson content, notes about the student and also remarks about the learning group can be entered.

However, the application uses the possibilities and therefore the advantages of a digital application. The student lists do not have to be filled in by the class teacher, but are provided automatically by the system. The timetable is also already stored.

In addition, statistical evaluation, like counting absences, is done automatically.

In an overview, Alsijil currently provides the following functionality:

- Direct link to the lesson currently taking place
• **Overview with all lessons of one week**
  - Navigation between lessons
  - Filtering according to learning groups/courses and teachers

• **List of learning groups**
  - List of students with current statistics (absences, lateness, etc.)
  - Printing of the group-specific class register

• “My overview” for pupils with an overview of “personal notes” such as omissions, lateness, remarks

• “My overview” for teachers with a list of their own lessons over the last four weeks and the following filters:
  - Specifying the period
  - Restriction to lessons with or without entry for lesson content
  - Restriction to certain groups
  - Restriction to certain lesson contents

• Only for teachers: Listing of students from their own lessons with totalled absences and lateness as well as other remarks

• Only for teachers with special privileges: Listing of all lessons of a specific class in preparation for printing the class register

• For administrators only: Definition of types of excuses, e.g. for absences due to school-related reasons

• For administrators only: Determination of types of remark, e.g. HA for homework forgotten

• Only for administrators: Assignment of special group roles, e.g. for the evaluation of class book entries or access to the print function

• Only for administrators: Creating group roles

### 2.3.2 Basic data concepts

**Timetable data**

The class register uses the data from the timetable app. This means that timetables with all current changes such as substitutions, events and exams can be found directly in the class book. Even basic settings such as lesson times, holidays and public holidays do not have to be entered separately in the class book, as they are managed centrally.
Lesson documentations

Three input fields are provided for the lesson content:

1. **Lesson topic:** The content of the lesson is to be noted here, if necessary with information on the material used.
2. **Homework:** In this field, the teacher can enter the homework for the next lesson.
3. **Group note:** Here, there is space for notes that concern the whole learning group, e.g. instructions, dates, or similar.

Personal notes

Under the tab 'Personal Notes', you will find a student list of the group. The following entries can be made there:

1. **Absent:**
2. **Tardiness in minutes**
3. **Excused**
4. **Excuse type:** Several types can be set up for an excuse for absence, e.g. in case a student was absent due to a school event.
5. **Extra marks:** This item is also configurable. A selection field for missing homework or similar would be possible here.
6. **Remarks:**

With the appropriate configuration, students can view all personal notes concerning themselves.

2.3.3 Overviews about lessons and students

Week overview

In the weekly overview, all lessons of the week for the respective user are displayed in a weekly schedule. Clicking on a lesson takes you to the data for that lesson. Above the schedule, you can navigate to the previous or following week. It is also possible to filter the schedule according to certain groups or teachers.
My overview

Personal overview for students

This menu item provides the student with an overview of the personal notes such as tardiness, absences and remarks that teachers have entered in the class register. This enables them to quickly check whether excuses still need to be submitted, and to verify what notes have been made about them.

2.3. Digital class register
Personal overview for teachers

For teachers, this view shows their own lessons for the last four weeks. A filter can be used to adjust the list with regard to period, missing entries, certain groups or certain lesson contents. A corresponding symbol in each line immediately shows whether entries are still missing for the lesson in question. Individual lessons can be called up from the list to add or change entries.
My groups

This menu item is only available for teachers.

With this quick access to your own learning groups, you can on the one hand access the relevant student lists and the weekly view of the lessons of this group, and on the other hand you can print the course-specific class book.

My students

With this menu item, teachers receive a list of all students from their lessons. From each entry, you can switch to a detailed view to add specific data.
For the head teacher or the coordinators of certain grades, this menu item gives the possibility to see all lessons of a learning group in a list. By means of a filter, the list can be specified to certain entries. This makes it possible to call up all lessons with missing entries and to send a request for completion of the data to the teachers concerned via a button.

### 2.3.4 Viewing and managing lessons

The lesson documentation can be called up in different ways:

1. **Via 'Current lesson'**: During the current lesson, this is the quickest way to access the lesson documentation.

2. **Via 'Weekly overview'**: This menu item shows all lessons of the current week. Individual lessons can be clicked on to access the lesson documentation.

3. **'My Overview'**: This menu item shows teachers a list of all hours worked in the last weeks. Individual lessons can be called up directly.

The lesson documentation consists of four main parts accessible via tabs. The data can be entered, changed and saved via the relevant forms. In addition, navigation to the previous or next lesson is possible.
Tab 'Lesson Documentation'

The lesson documentation is a strictly non-personal information about the contents of the lesson. It contains the topic, describing what contents were taught, and an optional homework, describing what tasks students got for the next lesson.

Everything entered here should be considered public knowledge.

**Warning:** Never add any personal information to the lesson documentation.

If enabled in the preferences, lesson documentation is carried over to adjacent lessons. So if one subject is held in a double or triple lesson, only one needs to be filled in.

Tab 'Personal Notes'

Personal notes are specific to single students, and contain information about absences, tardiness, any extra marks defined in the system, and a free text comment.

This information can never be viewed by other students. It is visible to any teacher in the class by default, and might also be visible to the concerned student.
Behaviour of absences and tardiness

When a student is marked as absent, this information is carried over to all future lessons on the same day, meaning that for any teacher holding lessons in the class after the one that marked them as absent will automatically see them as absent.

Likewise, if a student returns and is marked as not absent, this is carried over to all future lessons.

Tab 'Previous lesson'

This tab shows information about the previous lesson in the same group and subject for reference.

Tab 'More'

This tab contains several special items not mentioned before:

- **Changes**: Alsijil tracks all changes made to class register entries. This list shows a log of all these changes.
2.3.5 Assigning group roles

This menu item enables the assignment of a previously defined group role to a specific person, e.g. for ventilation services or class representatives.
2.3.6 (Archive) printout

Via the menu item *My Groups*, extensive documentation can be generated for each group. This class register will be generated as a printable PDF file.

It contains a list of the lessons taught staggered according to timetable periods, a collection of all the students’ personal notes as well as all lesson contents.

An alternative path to printing a class register is via the weekly view. There, the relevant group can be selected via the filter to print the class book.

**Note:** This mechanism can be used for archival purposes required by law.

2.4 Time-based documents with Resint

2.4.1 Publishing posters

Posters are documents that can be manually supplied in a time-based manner.

Poster files can be uploaded for a defined time period, and AlekSIS will then deliver the currently valid version under a stable menu item and URL.

Posters are organised in psoter groups, which can be created by administrators. Users can then upload PDF files which shall be published for each time period.

Users who have the permission to upload posters for at least one poster group can manager their posters from the main menu under the *Documents* → *Manage posters* menu item.

Using the *Upload poster* button or the *Edit* action for an already uploaded poster will open the dialog for manaing a document for one time period.
After uploading, AlekSIS will deliver the uploaded file during the week selected in the form.

2.5 Get support via Hjelp

2.5.1 Reading Frequently Asked Questions

In the Support menu, administrators can add Frequently Asked Questions concerning the AlekSIS instance, the local network, or something completely different. These questions and their answers are accessible to all users under the Support → FAQ. If the system administrator enabled it, that might be also possible without login.
2.5.2 Reporting issues

Using Support → Report an issue, users can report issues e. g. with AlekSIS or the school network. To allow operators to fastly narrow down the issue, there is a three-level category system filled individually for each AlekSIS instance. In addition to the category, the form asks for a one-line description and then a detailed description with additional information. When reporting issues, please try to be as specific as possible – it will help your administrators. On top of the entered information, the system will send your username together with the data.
2.5.3 Giving feedback for AlekSIS

On the page Support → Feedback, we provided a feedback form helping us to improve AlekSIS. If you fill out the form, it will be sent to your system administrator which can review it and forward it to us, if necessary.

We ask you for the following information:

• **Ratings**: The following categories can be rated with one to five stars
  - Design of the user interface
  - Speed
  - User friendliness
  - AlekSIS in general

• **Free text fields**: In the following fields, you can enter additional information
  - What do you like? What would you change?
  - What else do you want to tell us?
  - What do you think should be added to AlekSIS?
3.1 Setup of the AlekSIS instance and the AlekSIS core

3.1.1 Concepts of the AlekSIS core

The AlekSIS core provides functionality and data models as a base for all apps.

The concept of school terms

In AlekSIS, mostly everything is based on school terms. A school term is a defined time range which can be used to link data to it. Typically, such data are learning groups, timetables or class register records. Although their name suggests it, school terms don’t have to be a half or a full year. They should depend on the way how you organise data in your institution.

For example, if you issue reports at the end of every half year, a half year would be a good time range for your school terms because the class register statistics are evaluated for school terms.

Anyway, you should create a school term before you start to import or create other data entries like persons or groups.

Manage school terms

You can manage the school terms if you login with your admin account and open the menu entry Admin → School terms. There you can find a list of all school terms and buttons to create, edit or delete school terms. Please be aware that there can be only one school term at time and each school term needs a unique name.

The concept of persons

The person model is designed to save all the data of students, teachers, guardians and any other persons of the school society. It tracks information like the following:

- Full name
- Short name
- Sex
- Date of birth
- Contact details (phone numbers, email)
• Address details
• Photo
• Relation to guardians
• Primary group (e.g. a class or a tutor group, cf. The concept of groups (page 32))

Except for the name, all data points are optional, so you can decide on your own (and based on your local data protection laws) which data should be included in AlekSIS.

There are two important things you should know about persons:

• **Persons are not automatically users**: That means that persons can be linked to a user account including things like a password and the ability to login, but they don’t have to be. For example, your AlekSIS instance could save the data about parents, but you don’t want them to login: In this scenario, the guardians are available as persons **without** user accounts.

• **Persons are not linked to school terms**: As persons like students are not only at the school for one school term, persons are not linked to school terms.

**Manage persons**

The main method to manage persons is the view under People → Persons. To add person to groups, you have to open the respective group and set the person as a member or an owner.

**The concept of groups**

The AlekSIS groups are a universal way to organise persons in collections like classes, courses, tutor groups, clubs, or any other division you could imagine. They track the following data:

• Group name and short name
• Owners (e.g. class or course teacher(s))
• Members (e.g. students)
• Parent groups (e.g. a class could be a parent group for a course)
• Group type (e.g. class, course, club, etc.)

In contrast to persons, groups are supposed to be **linked to school terms** (but they don’t have to be). For example, the composition of a class or a course varies from school term to school term. In order to archive historical data according to local laws, these groups have to be separated which is solved by linking them to a school term.

**Manage groups**

Groups are managed on the page People → Groups. There you can search, view, create, change and delete groups.
Manage group types

You can manage your local group types by opening the menu entry People → Group types as an admin user.

Import school terms, persons and groups from other data sources

When AlekSIS is not your single date source, all these data can be imported from other sources. You can find further information in the respective integration apps.

3.1.2 Install AlekSIS

From PyPI

In this section we will install AlekSIS with uWSGI and nGINX on Debian bullseye.

Filesystem locations

AlekSIS will need and use the following paths:

- /etc/aleksis for configuration files
- /var/lib/aleksis/media for file storage (Django media)
- /var/backups/aleksis for backups of database and media files
- /usr/local/share/aleksis/static for static files
- /usr/local/share/aleksis/node_modules for frontend dependencies

You can change any of the paths as you like.

Prerequisites

For an installation on a dedicated server, the following prerequisites are needed:

- Debian 11
- PostgreSQL
- Redis
- uWSGI
- nGINX
- Python 3.9
- Some system dependencies to build Python modules and manage frontend files
- The aforementioned paths
Install system packages

Install some packages from the Debian package system.

```
apt install uwsgi \
  uwsgi-plugin-python3 \
  nginx-full \
  python3 \
  python3-dev \
  libpq-dev \
  yarnpkg \
  python3-virtualenv \
  chromium \
  redis-server \
  postgresql
```

Create PostgreSQL user and database

Generate a secure password for the database, then create the user and database.

```
sudo -u postgres createuser -D -P -R -S aleksis
sudo -u postgres createdb -E UTF-8 -O aleksis -T template0 -l C.UTF-8 aleksis
```

When asked, use the password generated above.

Create the directories for storage

```
mkdir -p /etc/aleksis \
  /usr/share/aleksis/{static,node_modules} \
  /var/lib/aleksis/media \
  /var/backups/aleksis
chown -R www-data:www-data /var/lib/aleksis
```

Create AlekSIS configuration file

AlekSIS is configured in files in `/etc/aleksis`. Create a basic configuration file for the environment defined above by opening `/etc/aleksis/aleksis.toml` with your favourite text editor and adding the following configuration.

```
static = {
  root = "/usr/local/share/aleksis/static", url = "/static/"
}
media = {
  root = "/var/lib/aleksis/media", url = "/media/"
}
node_modules = {
  root = "/usr/local/share/aleksis/node_modules"
}
secret_key = "SomeRandomValue"

[http]
allowed_hosts = ["aleksis.example.com"]

[database]
host = "localhost"
name = "aleksis"
```

(continues on next page)
Install AlekSIS itself

To install AlekSIS now, and run all post-install tasks, run the following commands. They will pull the AlekSIS standard distribution from PyPI\textsuperscript{4} and install it to the system-wide dist-packages of Python. Afterwards, it will download frontend dependencies from yarnpkg, collect static files, and migrate the database to the final schema.

```
pip3 install aleksis
aleksis-admin yarn install
aleksis-admin collectstatic
aleksis-admin migrate
aleksis-admin createinitialrevisions
```

Configure uWSGI

uWSGI is an application server that will manage the server processes and requests. It will also run the Celery broker and scheduler for you.

Configure a uWSGI app by opening `/etc/uwsgi/apps-available/aleksis.ini` in an editor and inserting:

```
[uwsgi]
    vhost = true
    plugins = python3
    master = true
    enable-threads = true
    processes = 20
    wsgi-file = /usr/local/lib/python3.9/dist-packages/aleksis/core/wsgi.py
    chdir = /var/lib/aleksis
    lazy = true
    lazy-apps = true
    attach-daemon = celery -A aleksis.core worker --concurrency=4
    attach-daemon = celery -A aleksis.core beat
```

Afterwards, enable the app using:

```
ln -s /etc/uwsgi/apps-available/aleksis.ini /etc/uwsgi/apps-enabled/aleksis.ini
service uwsgi restart
```

\textsuperscript{4} https://pypi.org

3.1. Setup of the AlekSIS instance and the AlekSIS core
Configure the nginx webserver

First, you should get a TLS certificate, e.g. by using Let's Encrypt\(^5\).

Then, create a virtual host in nginx, by editing `/etc/nginx/sites-available/aleksis.example.com`.

```
upstream aleksis {
    server unix:///run/uwsgi/app/aleksis/socket;
}

server {
    listen 80;
    listen [::]:80;

    server_name aleksis.example.com;

    return 301 https://$server_name$request_uri;
}

server {
    listen 443 ssl http2;
    listen [::]:443 ssl http2;

    ssl_certificate /etc/letsencrypt/certs/aleksis.example.com/fullchain.pem;
    ssl_certificate_key /etc/letsencrypt/certs/aleksis.example.com/privkey.pem;
    ssl_trusted_certificate /etc/letsencrypt/certs/aleksis.example.com/chain.pem;

    server_name aleksis.example.com;

    access_log /var/log/nginx/access.log;

    location /static {
        alias /usr/local/share/aleksis/static;
    }

    location / {
        uwsgi_pass aleksis;
        include uwsgi_params;
        proxy_redirect off;
        proxy_pass_header Authorization;
    }
}
```

Enable the virtual host:

```
ln -s /etc/nginx/sites-available/aleksis.example.com /etc/nginx/sites-enabled/
aleksis.example.com
service nginx restart
```

\(^5\) [https://certbot.eff.org/instructions](https://certbot.eff.org/instructions)
Finalisation

Your AlekSIS installation should now be reachable and you can login with the administration account configured above.

With Docker

AlekSIS can also be installed using Docker, either only AlekSIS itself, or the full stack, including Redis, using docker-compose

Full stack using docker-compose

First, install Docker and docker-compose on your system. Also install git to get the docker-compose file and image definition.

```
apt install docker.io docker-compose git
```

Now, clone the distribution repository, which contains the docker-compose file.

```
git clone https://edugit.org/AlekSIS/official/AlekSIS
```

You should review the file `docker-compose.yaml` for any environment variables you want to change.

Finally, bring the stack up using:

```
docker-compose up -d
```

AlekSIS will be reachable on port 80 if you forgot to configure the environment. You are responsible for adding a reverse proxy like nginx providing TLS, etc.

3.1.3 Configuration files and format

File locations and order

AlekSIS is configured through text files in the directory `/etc/aleksis/`. You can place any file types there that are supported by the Dynaconf configuration system (INI, YAML and TOML).

Files are evaluated in alphabetical order, with later definitions overwriting earlier ones. Normally, there will be only one configuration file, but you can make up any structure you like. If you use multiple files, it might be a good idea to number them, e.g. `00_main.toml`, `01_myschool.toml`, `99_temporary.toml`.

The TOML format is recommended and is the only format described in detail in AlekSIS' documentation. For all other formats, refer to the Dynaconf documentation.

---

6 https://dynaconf.readthedocs.io/en/latest/
7 https://dynaconf.readthedocs.io/en/latest/
Configuration file format (TOML)

TOML file are simple text files that define variables, much like in Python (i.e. there are scalars, lists and dictionaries). AlekSIS structures its configuration by topic.

A configuration file might look like this:

```
secret_key = "VerySecretKeyForSessionSecurity"

[http]
allowed_hosts = [ "aleksis.myschool.example.com", "localhost" ]

[database]
name = "aleksis"
user = "aleksis"
password = "SuperSecretPassword"

[caching]
redis = { enabled = true, address = "127.0.0.1" }
```

The `secret_key` setting above defines a single value. The following `http` section defines a table (cf. a dictionary) in one way, and you can see the second form of such a table in the `redis` setting (we could as well have defined another section and placed `enabled` and `address` below it as scalars).

This can be a bit confusing, so this documentation will explain how to configure AlekSIS on a per-feature basis.

### 3.1.4 Configuration options

AlekSIS provides lots of options to configure your instance.

#### Configuration file

All settings which are required for running an AlekSIS instance are stored in your configuration file `/etc/aleksis/aleksis.toml`.

Example configuration file:

```
# General config for static, media and secret key, required
static = { root = "/srv/www/aleksis/data/static", url = "/static/" }
media = { root = "/srv/www/aleksis/data/media", url = "/media/" }
secret_key = "Xoc8eiwah3neehid2Xi3oomoh4laem"

# Admin contact, optional
[contact]
admins = ["AleksIS - Admins", "root@example.com"]
from = 'aleksis@example.com'

# Allowed hosts, required
[http]
allowed_hosts = ["localhost"]

# Database for whole AlekSIS data, required
[database]
```

(continues on next page)
host = "localhost"
name = "aleksis"
username = "aleksis"
password = "aleksis"

# Maintenance mode and debug, optional
[maintenance]
debug = true

# Two factor authentication with yubikey enabled, optional
[2fa]
enabled = true
yubikey = { enabled = true }

# Authentication via LDAP, optional
[ldap]
uri = "ldaps://ldap.myschool.edu"
bind = { dn = "cn=reader,dc=myschool,dc=edu", password = "secret" }
map = { first_name = "givenName", last_name = "sn", email = "mail" }

[ldap.users]
search = { base = "ou=people,dc=myschool,dc=edu", filter = "((uid=%(user)s)" }

[ldap.groups]
search = { base = "ou=groups,dc=myschool,dc=edu" }
type = "groupOfNames"
# Users in group "admins" are superusers
flags = { is_superuser = "cn=admins,ou=groups,dc=myschool,dc=edu" }

# Search index, optional
[search]
backend = "whoosh"
index = "/srv/www/aleksis/data/whoosh_index"

Configuration in frontend

Everything that does not have to be configured before the AlekSIS instance fully starts can be configured in frontend, such as site title and logo.
You can find the configuration options in your AlekSIS instance under Admin → Configuration.

3.1.5 Storage

AlekSIS needs a writable storage, both for media files (pictures, generated PDF files, and the like), and to store generated frontend assets like the themed CSS stylesheet.

Note: Everything except this media storage can be mounted and used entirely read-only, i.e. to keep the AlekSIS installation immutable.
Local filesystem storage

By default, the media storage resides in the local filesystem, in the location defined in the `static.root` configuration key.

**Warning:** Do not expose the media storage directly through a webserver. AlekSIS uses a specially protected storage framework that employs cryptographic tokens to protect user data from URL guessing.

Amazon S3 (or other S3-compatible storage)

AlekSIS allows you to configure an Amazon S3 endpoint for media files. This is useful e.g. for loadbalancing with multiple AlekSIS instances.

**Note:** For some background jobs, AlekSIS stores HTML snippets in the media storage for later use. You must ensure your S3 endpoint is part of your `Access-Control-Allow-Origin` CORS header, so HTML loaded from there can load resources from the AlekSIS instance.

Configure an S3 endpoint

If you want to use an S3 endpoint to store files you have to configure the endpoint in your configuration file (`/etc/aleksis/aleksis.toml`):

```toml
# Default values
[storage.s3]
enabled = true
endpoint_url = "https://minio.example.com"
bucket_name = "aleksis-test"
access_key_id = "XXXXXXXXXXXXXX"
secret_key = "XXXXXXXXXXXXXXXXXXXXXX"
```

### 3.1.6 Mail

AlekSIS needs to send mails e.g. for account confirmations, feedback or error reports.

Configure mailing

The mailserver can be configured via the configuration file

```toml
[mail.server]
host = "mail.example.com"
tls = False
ssl = True
port = 25
user = "mailuser"
password = "password"
```
Name and address for mails sent by AlekSIS can be configured in the webinterface. To configure, visit Admin → Configuration and click on the Mail tab.

**Configure mail recipients**

You can configure admin contacts in your configuration file, located at /etc/aleksis/.

```
[contact]
admins = [["AlekSIS - Admins", "root@example.com"],["AlekSIS - Admins2", "root2@example.com"]]
from = 'aleksis@example.com'
```

### 3.1.7 Authenticating against LDAP

AlekSIS can authenticate users against an LDAP directory (like OpenLDAP or Active Directory). The AlekSIS core can only authenticate and synchronise authenticated users to AlekSIS' database. There are apps that help with tasks like mass-importing accounts and linking accounts to persons in the AlekSIS system (see below).

**Installing packages for LDAP support**

Installing the necessary libraries for LDAP support unfortunately is not very straightforward under all circumstances. On Debian, install these packages:

```
sudo apt install python3-ldap libldap2-dev libssl-dev libssas2-dev python3-dev
```

**Configuration of LDAP support**

Configuration is done under the ldap section in AlekSIS' configuration file. For example, add something like the following to your configuration (normally in /etc/aleksis; you can either append to an existing file or add a new one):

```
[ldap]
uri = "ldaps://ldap.myschool.edu"
bind = { dn = "cn=reader,dc=myschool,dc=edu", password = "secret" }

[ldap.users]
search = { base = "ou=people,dc=myschool,dc=edu", filter = "(uid=%%(user)s)" }
map = { first_name = "givenName", last_name = "sn", email = "mail" }

[ldap.groups]
search = { base = "ou=groups,dc=myschool,dc=edu" }
type = "groupOfNames"
# Users in group "admins" are superusers
flags = { is_superuser = "cn=admins,ou=groups,dc=myschool,dc=edu" }
```
3.1.8 Registration and user invitations

In addition to central management of user accounts, AlekSIS allows self-registration by users. Registration can be either fully open, or based on personal invitations.

In a system handling critical data, access control should be as tight as possible. However, there are scenarios where central account creation is not feasible, e.g., for optional guardian accounts. In such a scenario, the invitation system allows for processes like handing out invitation codes as a letter or through e-mail campaigns.

Configuration

Registration

Registration can be enabled via the configuration interface in frontend.

In the Authentication tab, click the checkbox Enable signup to enable signup for everyone. A menu item will be added for public registration.

**Warning:** Do not enable this feature unless you intend to run a public AlekSIS instance.

User invitations

In the same location as public registration, the invitation system can be enabled.

- Authentication
  - Enable invitations: Click to enable invitations.
  - Length of invite code: Length of invitation code packets, defaults to 5.
  - Size of packets: Configure how many packets are generated, defaults to 3.

By default, an invitation code looks like the following: abcde-abcde-abcde.

A menu item will become available for users to enter their invitation code.

Usage

Invite by email or code

To invite a new user, visit the invitation page located at People → Invite person

Here you are able to invite the user by email address or generate an invitation code.
This mechanism allows for registration of entirely new persons that do not exist in the system, e.g. if personal details are not known in advance.

**Invite existing person**

To invite an existing person, open the person in AlekSIS and click **Invite user**.

The invitation will be sent to the person's email address, and can only be used by this person. Upon registration, the new account will automatically be linked to the existing person.

**Note:** Before using this feature, make sure to read and understand *The concept of persons* (page 31).

### 3.1.9 Social accounts

AlekSIS can authenticate users against third party applications using OAuth2 or OpenID.

This can be used to grant access to persons whose credentials shall not be managed in AlekSIS itself, for example because another authentication provider is already used throughout the school, or for guardians that can or should for some reason not get an LDAP account, or similar situations.
**Warning:** Social accounts are **not** working with two factor authentication! If a user authenticates with a social account, the two factor authentication is ignored on login (but enforced for views that require two factor authentication later).

### Configuring social account provider

For available providers, see documentation of [django-allauth](https://django-allauth.readthedocs.io/en/latest/providers.html). A new social account provider can be configured in your configuration file (located in `/etc/aleksis`).

Configuration example:

```ini
[auth.providers.gitlab]
GITLAB_URL = "https://gitlab.example.com"
```

After configuring a new auth provider, you have to restart AlekSIS and configure client id and secret in the Backend Admin interface. Click “Social applications” and add a new application. Choose your provider and enter client id and secret from your application and choose your site.
3.1.10 Monitoring and health checks

Configuration

Thresholds

Thresholds for health checks can be configured via config file (/etc/aleksis).

```ini
[health]
disk_usage_max_percent = 90
memory_min_mb = 500

[backup.database]
check_seconds = 7200

[backup.media]
check_seconds = 7200
```

Status page

AlekSIS' status page shows information about the health of your AlekSIS instance. You can visit it via the left navigation bar (Admin → Status).

The page shows information about debug and maintenance mode, a summary of your health checks and the last exit status of your celery tasks. This page can not be used as a health check, it will always return HTTP 200 if the site is reachable.

Health check

The health check can be used to verify the health of your AlekSIS instance. You can access it via the browser (https://aleksis.example.com/health/) and it will show you a summary of your health checks. If something is wrong it will return HTTP 500.

It is also possible to get a JSON response from the health check, for example via curl. You only have to pass a valid Accept: application/json header to your request.

The health check can also be executed via aleksis-admin:

```
$ aleksis-admin health_check
```

Monitoring with Icinga2

As already mentioned, there is a JSON endpoint at https://aleksis.example.com/health/. You can use an json check plugin to check seperate health checks or just use a HTTP check to check if the site returns HTTP 200.
Performance monitoring with Prometheus

AlekSIS provides a Prometheus exporter. The exporter provides metrics about responses and requests, e.g. about response codes, request latency and requests per view. It also provides data about database operations.

The metrics endpoint can be found at https://aleksis.example.com/metrics. In the default configuration it can be scraped from everywhere. You might want to add some webserver configuration to restrict access to this url.

To get metrics of your AlekSIS instance, just add the following to prometheus.yml

```
- job_name: aleksis
  static_configs:
  - targets: ['aleksis.example.com']
  metrics_path: /metrics
```

Rules for prometheus alertmanager

If you are using the prometheus alertmanager, it is possible to create some alerting rules so that an alert is fired when your AlekSIS instance is slow or something.

```
groups:
- name: aleksis
  rules:
  - alert: HighRequestLatency
    expr: histogram_quantile(0.999, sum(rate(django_http_requests_latency_seconds_
      → by_view_method_bucket{instance="YOUR-INSTANCE",view!~"prometheus-django-
      → metrics|healthcheck"}[15m])) by (job, le)) < 30
    for: 15m
    labels:
      severity: page
    annotations:
      summary: High request latency for 15 minutes
```

Grafana dashboard

There is a Grafana dashboard available to visualise the metrics.

The dashboard is available at https://grafana.com/grafana/dashboards/9528.

3.1.11 Background tasks

Operations that are expected to take a long time are run as background tasks. For this, at least one `Celery`_ worker has to be running, e.g. by coupling it with uWSGI as laid out in Configure uWSGI (page 35).

If a task is triggered from the AlekSIS frontend, for example by starting an import job, a progress page is displayed, and the result of the job is waited for.
Periodic tasks

Some tasks are also run on a schedule. For example, the backup job is run on a regular basis.

All tasks in AlekSIS that are expected to run have a default schedule, which is registered when migrating the database. Changing this default schedule is currently only possible through the Django Admin backend, under Admin → Backend Admin.

Under the Periodic Tasks app, you can define schedules and tasks. The names of tasks you can add manually are documented in the respective sections of the manual.

3.1.12 Data checks

Data checks are AlekSIS’ mechanism for highlighting issues with the contents of the database. These checks are not of a technical nature, but strictly concern the contextual integrity of the data stored.

Verify data checks

In the menu under Admin → Data checks, the status of all known checks can be verified.

The first card shows the current global check state. If any data checks reported issues, they will be listed here. In that case, administrators can choose between options provided by the data checks to resolve the issues.

Note: Details about the checks and solve options are described in the respective chapters of the manual.
Configure notifications

In the General tab of the configuration interface, you can configure email notifications for problems detected by the data checks.

- General
  - Send emails if data checks detect problems: Enable email notifications
  - Email recipients for data checks problem emails: Choose recipient persons
  - Email recipient groups for data checks problem emails: Choose recipient groups

Data checks normally run once per hour, and if notifications are enabled, results will be mailed to the selected recipients if problems are detected.

3.1.13 Providing important information to users using the dashboard

The dashboard is a central place for providing important information to users. This is done by so-called dashboard widgets provided by the Core and apps.

Built-in dashboard widgets

External link widget

The external link widget will show a link to an external site on the dashboard, optionally with an icon or picture next to it. It therefore provides the following additional attributes:

- **URL**: The URL of the external site.
- **Icon URL**: The URL of the icon or picture shown next to the link.

As link title, the widget title will be used.

More dashboard widgets from apps

In addition to the built-in widgets, apps can provide their own dashboard widgets. Best examples for such apps are currently AlekSIS-App-DashboardFeeds and AlekSIS-App-Chronos.

Add and configure dashboard widgets

If you want to add a new dashboard widget, you can do so by adding the dashboard widget at Admin → Dashboard widgets. There you will see all currently configured dashboard widgets and can add new ones using the Create dashboard widget button which will ask your for the widget type.
Each dashboard widget has at least the following attributes:

- **Widget Title**: The title of the widget (will be shown in some widgets).
- **Activate Widget**: If this isn't checked, the widget will not be shown.
- **Widget is broken**: If this is checked, the widget will be shown but the user will get a message that this widget is currently out of order because of an error. This shouldn't be checked by yourself, but might be activated automatically by a widget if it encounters an error. If this case enters, you should check for the cause of the error and fix it. After that, you can unmark the widget as broken.
- **Size on different screens**: The size of the widget on different screens. We work with a grid system containing a maximum of 12 columns. So, one column is 1/12 of the screen width. The width in the following fields has to be entered as number of columns (1 to 12).
  - **Size on mobile devices**: The size of the widget on mobile devices (600px and less).
  - **Size on tablet devices**: The size of the widget on desktop devices (600px - 992px).
  - **Size on desktop devices**: The size of the widget on desktop devices (992px - 1200px).
  - **Size on large desktop devices**: The size of the widget on large desktop devices (1200px and above).

All other attributes are specific to the widget type and are explained in the documentation of the widget.
Setup a default dashboard

To make the configured dashboard widgets accessible to all users, we recommend to configure the default dashboard. If you don’t do so, the dashboard widgets will only be available to users if they customise their dashboard.

The default dashboard can be configured via Admin → Dashboard widgets → Edit default dashboard. The edit page works exactly as the page described in Customising the dashboard (page 9).
Preferences

The behavior of the dashboard can be configured via Admin → Configuration → General. The following settings are available:

- **Show dashboard to users without login**: If this is checked, the dashboard will be also shown to users who are not logged in.

**Warning**: That won’t work with all dashboard widgets. Some widgets, like the timetable widgets, require a logged in user.

- **Allow users to edit their dashboard**: With this preference, system administrators can decide whether users can edit their own dashboard as described in Customising the dashboard (page 9).
- **Automatically update the dashboard and its widgets sitewide**: If enabled, the dashboard will be updated automatically every 15 seconds.

3.2 Managing timetable data and substitution plans in Chronos

3.2.1 Managing timetable and substitution data

Currently, CHronos does not provide an interface for interactively managing timetable data. Instead, data is imported from an external source. The official distribution handbook contains documentation about the existing integration apps.

While there is basic support for editing substitutions, the interface should not be used when substitution data is imported from an external source.

3.2.2 System-wide settings for timetable and substitution display

The display of timetables and substitution plans can be customised under Admin → Configuration → Timetables. The section contains the following preferences:

- **Use parent groups in timetable views**: If a lesson or substitution has only one group and this group has parent groups, these groups will be shown.

- **Limit of groups for shortening of groups**: If a user has activated the preference for shortening too long group lists, this limit will be used to determine at what number of groups shortening will happen.

- **Number of days shown on substitutions print view**: Here you can set the number of days that will be shown on the substitutions print view (PDF file).

- **Show header box in substitution views**: The header box shows all affected/absent teachers/groups for the current day.

- **Show parent groups in header box in substitution views instead of original groups**: This setting determines the same setting as Use parent groups in timetable views, but for the printout.
3.3 Setting up a digital class register with AlekSIS-App-Alsijil

3.3.1 Defining base data

With sufficient authorisation, two additional menu items appear in the class register menu.

Excuse types

Additional types of excuse for an absence can be created here. This can be useful if you only want to count certain absences. For example, if a student is busy at a school event and misses lessons, this may not be counted as a normal absence.
Some remarks are repeated over and over again, such as ‘Forgot homework’. In order not to have to write this again and again in the remark field, additional marks can be set, which then only have to be clicked on in the class register.
Group roles

To track special roles in groups in the class register, group roles like class representatives or ventilation services can be defined here.
3.3.2 System-wide settings for the digital class register

The behaviour of the digital class register can be customised under Admin → Configuration → Class Register. The section contains the following preferences:

- **Block adding personal notes for cancelled lessons:** If this option is activated, teachers will not be able to add personal notes for cancelled lessons.

- **Allow users to view their own personal notes:** With this option, the school management can control whether students should be able to view their own personal notes.

- **Allow primary group owners to register future absences for students in their groups:** This allows owners of the student's primary group (e.g. the class) to register future absences like doctor's appointments or family celebrations.

- **Allow original teachers to edit their lessons although they are substituted:** In the case of substitute teaching, absent teachers can be given write-in privileges for the lesson.

- **Carry over data from first lesson period to the following lesson periods in lessons over multiple periods:** For double (or even more adjacent) lessons, the lesson data from the first lesson period can be automatically carried over to the following lessons.

- **Carry over personal notes to all following lesson periods on the same day:** For double (or more adjacent) lessons, the personal notes from the first lesson period can be automatically carried over to the following lessons.

- **Allow teachers to open lesson periods on the same day and not just at the beginning of the period:** Teachers can open lessons earlier on the same day and not just at the beginning of the lesson.

- **Allow teachers to add data for lessons in holidays:** It is possible to allow entering content for lessons during the holidays.

- **Allow group owners to assign group roles to the parents of the group's members:** With this being activated, group roles like parent representatives can be managed by the class.
teacher.

3.4 Providing time-based documents with Resint

3.4.1 Uploadable posters for time-based documents

Posters are documents that can be manually supplied in a time-based manner. Example use cases are cantine menus, that are provided weekly by an external supplier, who will only get privileges to upload this poster as a PDF file.

Poster files can be uploaded for a defined time period, and AlekSIS will then deliver the currently valid version under a stable menu item and URL.

Defining poster groups

Uploadable posters are categorised into poster groups, with each poster group representing one time-based document that AlekSIS will provide. Each poster group has:

- A name
- A URL slug making up the final, stable URL
- A schedule defining the cycle for providing the document
- A default PDF file for periods for which no document is uploaded

Permissions to upload documents are managed per poster group as well.

Creating poster groups

Poster groups are created from the menu under the Documents → Poster groups menu item. After clicking the Create new poster group button or the Edit action for any poster group, the following form allows editing the details of the poster group.
In addition to the properties explained above, the form provides two options to configure if and how the document will be presented to users. It is possible to include or exclude the document from the main menu, and to allow access by anonymous users. Documents that are hidden from the menu can be used if they should only be accessible through links from external sites, or loaded by a digital signage system.

The stable URL for the poster group can be copied from the link in the *Filename* column of the *Poster groups* list.

### 3.4.2 Configuring live documents

Live documents are another type of time-based documents. In contrast to posters, they are not uploaded manually, but automatically updated by some trigger.

Types of live documents are provided by other AlekSIS apps. All live document types provided by apps can then be configured from the *Documents* menu.

An example for a live document is an automatically generated substitution plan, which can be linked to from a website, or displayed on digital signage.
3.5 Importing timetables and substitutions from Untis

3.5.1 Untis data and their relation to AlekSIS

Untis is a proprietary timetable management software which is popular in the German-speaking area, but used internationally. AlekSIS provides functionality to automatically import data from Untis into data models of the core and Chronos, the timetable and substitution app of AlekSIS.

Currently, we only support importing data from the MySQL database of Untis MultiUser⁹. This is done through configurable background tasks which are executed in a specific interval or at specific points in time.

Supported Untis features

Not all features of Untis are supported in AlekSIS. The following information from Untis can be imported into AlekSIS:

- Terms
- Holidays
- Classes, teachers, subjects
- Rooms, supervision areas (corridors in Untis)
- Lesson and break times

⁹ https://www.untis.at/produkte/untis-das-grundpaket/multiuser
The AlekSIS® Handbook, Release 2021.12 "Bruner"

- Timetable data (lessons, supervisions)
- Absences, absence reasons
- Substitutions, extra lessons, cancellations
- Events

The Untis integration supports the versioning features of Untis. By default, the most recent version of each object is imported.

Currently, the following features are known not to be supported:
- Students, student groups, student choices
- Exams
- Calendars
- Prebookings
- Statistical data
- Special rooms (subject and group rooms)

### 3.5.2 Setting up the Untis integration

**Requirements**

To use the importer, you must have a current Untis MultiUser license (version 2019 and above) and a MySQL database which is reachable by the AlekSIS server. How to configure Untis to use this database is described in the Untis MultiUser Manual[^1].

In addition to the technical Prerequisites (page 33) of the AlekSIS core itself, a few extra system packages are required:

```
apt install libmariadb-dev
```

The MySQL (or MariaDB[^2]) server must be reachable from the AlekSIS server, and a user account in the database is needed. It is sufficient to create this user with SELECT permissions. On the MySQL shell, you can create such a user with something like:

```
CREATE USER `alekis`@`aleksisserver` IDENTIFIED BY 'securepassword';
GRANT SELECT ON `untis`.* TO `alekis`@`aleksisserver`;
FLUSH PRIVILEGES;
```

[^2]: https://mariadb.org
Configure database connection

In the AlekSIS configuration file (cf. Configuration files and format (page 37)), you have to set the following settings:

```
[untis.database]
enabled = true
name = "untis"
user = "aleksis"
password = "securepassword"
host = "mysqlserver"
port = 3306
```

Customise how data are imported

The way data are imported can be configured from the menu under Admin → Configuration → Untis. The following preferences are available:

- **Update values of existing subjects**: This will update the values of already existing subjects if Untis has different data.
- **Update short name of existing persons**: This will update the short name of already existing persons if Untis has different data.
- **Update name of existing persons**: This will update the name of already existing persons if Untis has different data.
- **Update short name of existing groups**: This will update the short name of already existing groups if Untis has different data.
- **Update name of existing groups**: This will update the name of already existing groups if Untis has different data.
- **Overwrite group owners**: This will update the group owners of already existing groups if Untis has different data.
- **Update name of existing rooms**: This will update the name of already existing rooms if Untis has different data.
- **Update existing supervision areas**: This will update the values of already existing supervision areas if Untis has different data.
- **Use course groups**: This will search course groups (groups for each subject in a class) instead of setting the classes as groups.
- **Create non-existing course groups**: In combination with _Use course groups_ being enabled, this will create new course groups if no matching group was found.
- **Register a data problem if a course group has been not found**: When this is activated, the import will register a data problem if no matching course group was found, independent of whether a new course group was created or not.
- **Ignore incomplete substitutions**: If this is activated, Untis won’t import any substitutions which are not cancelled or without a new room, new teacher or new subject.
Scheduling import tasks

The integration provides different *Periodic tasks* (page 47) to import the data from Untis:

- `untis_import_mysql_current_term`: This will import all data from the current Untis term.
- `untis_import_mysql_future_terms`: This will import all data from all future Untis terms, but not from the current.
- `untis_import_mysql_all_terms`: This will import all data from all Untis terms which are in the database.
- `untis_import_mysql_current_next_term`: This will import all data from the current and the directly following Untis term.
- `untis_import_mysql_current_future_terms`: This will import all data from the current and all future Untis terms.

We suggest using `untis_import_mysql_current_next_term` as a task because this will ensure that all current data are up-to-date, but also that the next timetable version is also already imported when it becomes relevant.

In general, all tasks will do nothing if there is no matching Untis term.

To use these tasks, you have to add them as periodic tasks. By default, they will import the most recent plan version from Untis. To select a specific version (i.e. to import an older snapshot), you can pass the *version* argument in the tasks.

How existing data is matched

If there are already existing data in AlekSIS’ database, the Untis import will always try to combine these data. The main data field used for this is the short name field (cf. *The concept of groups* (page 32)). If the data were imported one time, each object in Chronos will save the respective ID from Untis to make sure that the data are properly updated at the next import.

The import is thus idempotent.

### 3.6 Importing data from CSV-like sources

#### 3.6.1 Base concept of the generic importer

For importing comma-separated or, more generally, any sort of column-based data in text files, AlekSIS provides a generic importer.

The importer works with so-called *import templates*. These templates set a field type for each column in a file. With this information, the importer will know how to interpret each cell.
Default templates

For import sources that have already been tested, AlekSIS provides import templates that are readily available.

Right now, the following import sources are supported:

- Pedasos\(^{12}\), a school management solution popular in Northern Germany
- Schild-NRW\(^{13}\), the obligatory school management solution in North-Rhine Westphalia, Germany

These software products either provide hard-coded export mechanisms, or allow the creation of report/export templates to generate CSV-like output.

Custom templates

In addition to the integrated default templates, custom templates can be created by administrators. Creating custom import templates currently requires hand-crafting YAML files that can then be uploaded through the user interface.

However, this feature is currently deliberately undocumented.

### 3.6.2 Configuring the import

Setting preferences

There are some preferences that should be set before starting the first import to ensure that everything works correctly. Under Admin → Configuration → CSV import, all import templates can be configured.

- **Group type for department groups:** This group type will be set for department (i.e. subject) groups.
- **Prefix for long names of department groups:** This prefix will be added to the long name of all department group names.
- **Languages for date parsing:** Here you can set languages you want to use for parsing dates from the CSV file. Takes comma-separated data without spaces (e.g. *de,en_US*).

In addition, you should set the **country code for phone number parsing** under the Internationalisation tab correctly.

### 3.6.3 Exporting data from various systems

**Pedasos**

Pedasos is a school management software mainly used in the North of Germany (Schleswig-Holstein, Hamburg).

Please pay attention to the order of the imports: You should start with the classes and end with the guardians.

---

\(^{12}\) [https://ostertun.de/produkt.html](https://ostertun.de/produkt.html)

\(^{13}\) [https://www.svws.nrw.de/download/schild-nrw](https://www.svws.nrw.de/download/schild-nrw)
1. Pedasos: Classes
2. Pedasos: Courses
3. Pedasos: Teachers
4. Pedasos: Students
5. Pedasos: Guardians 1
6. Pedasos: Guardians 2

To use these templates, you have to configure so-called *lists* in Pedasos instance. AlekSIS provides example list definitions to export CSV data matching the import templates.

### 3.6.4 Importing data

You can find the import form under *Admin → Data management → CSV import*. Please be sure to select a matching school term (especially when importing groups). Then select the file you want to import and a matching import template.

**Warning:** Please double-check if the combination of file, template, and school term is correct; otherwise, existing data may be corrupted!

To start the actual import, press the button *Import data*. Now you should see a progress bar with the current import status and all errors that may occur.

**Importing multiple CSV files**

Multiple CSV files can be uploaded in one batch by putting them in a ZIP archive.

**Note:** For this to work, the CSV files need to exactly follow the same pattern and be exactly homogeneous.

**Accompanying files (photos)**

The import of photos is supported. To do this, a CSV with at least the unique import reference and a filename needs to be placed in a ZIP archive, together with the files to be imported.

### 3.7 Show data from external sources on dashboard

#### 3.7.1 Introduction

AlekSIS provides dashboard widgets for displaying feeds from external resources. The following widgets are normal dashboard widgets and can be added and configured like described in *Add and configure dashboard widgets* (page 48).
3.7.2 RSS feed widget

This widget, unlike the name suggests, allows RSS, Atom and JSONFeed feeds to be parsed and displayed on the dashboard. Only the most recent article is displayed, with a short caption and optionally an image. For this, the feed must contain a JPG image as an enclosure (this is not the case by default in every CMS, but most have plugins for this). In addition, the news source is linked on the dashboard.

- **RSS feed source URL**: The URL of the source feed
- **Base URL**: The home or base URL of the news provider
- **Text only**: With this being enabled, no images will be shown.

**Note**: The RSS widget provides a task to pull data. The task `get_feeds` updates all active RSS feeds inside AlekSIS. We recommend to run the task every 5 to 10 minutes. The task is automatically scheduled every 10 minutes; this can be changed as described in *Periodic tasks* (page 47).
3.7.3 iCalendar feed widget

This widget displays the upcoming events of an online calendar on the dashboard. The events are shown with their title and the exact date range. Calendar widgets that can't load or parse the calendar data will be marked as broken. How to handle broken widgets is explained in Add and configure dashboard widgets (page 48).

- **iCalendar feed source URL**: The URL of the iCalendar feed
- **Base URL**: The widget will have a link to visit a related website to see more events.
- **Number of displayed counts**: With this option, you can configure how many events should be shown in the widget.
3.8 Advanced LDAP integration

3.8.1 Interfacing with an LDAP directory beyond authentication

In addition to authenticating against an LDAP directory (as laid out in Authenticating against LDAP (page 41)), AlekSIS can import personal information from LDAP. This functionality is currently limited to the information about persons and groups (cf. The concept of persons (page 31) and The concept of groups (page 32)), and related information.

Data can only be synchronised one-way. That means that, if you wish to continue maintaining personal information in LDAP, you should ensure that all changes are made in LDAP first, and then imported to AlekSIS.
3.8.2 Configuring LDAP synchronisation

Setting up the LDAP synchronisation consists of three parts, which together make up the process of updating persons and groups from LDAP information.

All preferences are set under Admin → Configuration → LDAP.

The synchronisation always starts from a user account. Therefore, LDAP authentication needs to set up first.

Matching fields

The first step is to configure matching fields. This configuration defines how persons are found in AlekSIS, based on fields in LDAP. The relevant settings are:

- **LDAP sync matching mode**: Setting this preference to OR means that at least one of the fields must match, whereas AND means all fields must match
- **LDAP sync fields**: This list defines which fields of the person in AlekSIS are considered for matching persons to LDAP entries

Field matching and rewriting

For all fields (both matching fields and other imported fields), the behaviour of the fields needs to be considered.

For every available field of a Person, the following preferences are available:

- **LDAP field for...**: This defines which LDAP attribute the data for this field is pulled from
- **Regular expression to match LDAP value for...**: If set, defines a regular expression that is applied to the attribute data from LDAP. The regular expression can contain named groups (see the Python Documentation on Named Groups)
- **Replacement template to apply to...**: This template is applied to the LDAP data, and it can reference the groups matched in the regular expression defined for this field using \g<name>

Only fields that are configured here are honoured by the import, all other fields are ignored.

For synchronising groups, the same preferences are provided for the names and short names of the group.

Setting up what and when to synchronise

Finally, the LDAP import can be enabled by setting up the last preferences, which define when the LDAP import is run.

- **Create missing persons for LDAP users**: Defines whether persons which are not found by the matching fields are created
- **Sync LDAP user with person on login**: If this preference is enabled, persons are updated from LDAP on every login
- **Enable LDAP group sync**: If enabled, all groups the synchronised users are members of are also imported

14 https://docs.python.org/3/howto/regex.html#non-capturing-and-named-groups
Warning: You should take special care to thoroughly test your LDAP configuration. If operating on production data with a faulty sync configuration, important data might be overriden and destroyed.

3.8.3 Managing user accounts in LDAP

While not allowing to synchronise full personal information back into LDAP, AlekSIS has limited support for managing user accounts (i.e. limited to pure authentication information) in LDAP.

Changing passwords in LDAP

When users change their password in AlekSIS, it can also be changed in LDAP. This requires one of two prerequisites:

- Users must be allowed to change their own passwords in LDAP, by setting appropriate ACLs
- In the AlekSIS preferences, the credentials of an account with sufficient ACLs to change all users’ passwords must be configured in the respective preferences

Warning: Providing admin credentials to AlekSIS imposes obvious security risks. Thus, make sure to limit this account to changing passwords. Also, make sure that other, security-critical systems which authenticate against LDAP, and AlekSIS itself, require a second factor for administration, so attackers who manage to hijack an administrator account by changing its password cannot use it for anything else.

If you want to enable automatic password resets, an administrator account has to be provided in all cases, because the user triggering the password reset is not the user themselves. For more information on password resets, see core-password-resets.

Creating LDAP users upon registration

If user invitations or registration are enabled, AlekSIS can create the respective account in LDAP. In addition to providing admin credentials, the RDN fields that shall make up the user DN need to be configured in preferences.

For details, see Registration (page 42).

3.9 Support end users and get feedback with Hjelp

3.9.1 Managing FAQs

Each operator can and must write their FAQs on their own. This is done on the page Support → Manage FAQ. First of all, FAQ sections need to be created. The form for this is accessible at the top of the page. For the section to be displayed, the Show checkbox must be selected.
Afterwards, questions (including answers) can be created. The corresponding section must be selected. Here, too, the Show checkbox is important. The text in the answer field can be formatted using HTML. All icons that can be selected are located on Material Icons\textsuperscript{15}.

On the overview page, the order of the questions and answers can be changed. In addition, the sections can be edited here. Hidden sections and questions are displayed darker.

\textsuperscript{15} https://material.io/resources/icons/
3.9.2 Managing issue report form

The Hjelp issue reporting system lets the operator categorize issues in a three-level model, whereby the used categories become more concrete from the first to the third level. Every category except the first-level ones that is created therefore has to refer to a so-called parent, of which it is a subcategory.

Creating and managing categories is done in the backend admin interface under AlekSIS → Hjelp (Support) → Issue categories.

Upon using the Add issue category button, a form is displayed which contains all alterable attributes of the to-be category.

The Name textbox contains the text displayed when the given category is shown; and by means of the Parent category dropdown select list, a parent category can be selected. In case no parent
category is specified, the created category is on first level.

If the **Free text input allowed** checkbox is selected, all possible children of the newly created category are ignored and instead, a free text input is displayed upon selection on the next level. One possible use case may be that the location of the selected issue has to be specified.

Special attention has to be paid to the **Icon** and **Placeholder** options as they refer to the category select dropdown/free text input of the next level. All icons that can be selected are again located on [Material Icons](https://material.io/resources/icons/).

### 3.9.3 Settings and preferences

Hjelp requires mail delivery to be properly configured, as all three forms send their results via mail. To set the individual mail addresses the results are then sent to, one preference for each form exists:

- **Recipient e-mail address for FAQ questions**
- **Recipient e-mail address for issue reports**
- **Recipient e-mail address for feedback**

Additionally, using another preference, it can be configured whether it is possible for anonymous users to view the FAQ overview page:

- **Public visibility of FAQ**
4.1 Development of AlekSIS apps using the AlekSIS core

4.1.1 Setting up the development environment

AlekSIS and all official apps use Poetry\(^\text{17}\) to manage virtualenvs and dependencies. You should make yourself a bit comfortable with poetry by reading its documentation.

Poetry makes a lot of stuff very easy, especially managing a virtual environment that contains AlekSIS and everything you need to run the framework and selected apps.

Also, Yarn\(^\text{18}\) is needed to resolve JavaScript dependencies.

For repository management, myrepos is required.

Setup database and message broker

AlekSIS requires PostgreSQL\(^\text{19}\) (version 13 or newer) as database backend. To provide a database names aleksis with a user named aleksis on Debian:

```
sudo apt install postgresql
sudo -u postgres createuser -P aleksis
sudo -u postgres createdb -O aleksis aleksis
```

Additionally, Redis\(^\text{20}\) is used as message broker and for caching. The default configuration of the server in Debian is sufficient:

```
sudo apt install redis-server
```

---

\(^\text{17}\) [https://poetry.eustace.io/](https://poetry.eustace.io/)
\(^\text{18}\) [https://yarnpkg.com](https://yarnpkg.com)
\(^\text{19}\) [https://www.postgresql.org/](https://www.postgresql.org/)
\(^\text{20}\) [https://redis.io/](https://redis.io/)
Get the source tree

To download AlekSIS and all officially bundled apps in their development version, use Git like so:

```
git clone https://edugit.org/AlekSIS/official/AlekSIS
```

This first downloads a meta repository that contains a config file for mr. To clone the AlekSIS-Core and all official (and onboarding) apps, run:

```
mr update
```

Install native dependencies

Some system libraries are required to install AlekSIS. On Debian, for example, this would be done with:

```
sudo apt install build-essential libpq-dev libpq5 libssl-dev python3-dev python3-pip python3-venv yarnpkg gettext chromium
```

Get Poetry

Make sure to have Poetry installed like described in its documentation. Right now, we encourage using pip to install Poetry once system-wide (this will change once distributions pick up Poetry).

```
sudo pip3 install poetry
```

You can use any other of the Poetry installation methods\(^\text{21}\).

Install AlekSIS in its own virtual environment

Poetry will automatically manage virtual environments per project, so installing AlekSIS is a matter of switching into the Core's directory and running the initial AlekSIS installation:

```
cd apps/official/AlekSIS-Core
poetry install
```

Now it's recommended to run a shell that uses the newly created venv:

```
poetry shell
```

Regular tasks

After making changes to the environment, e.g. installing apps or updates, some maintenance tasks need to be done:

1. Download and install JavaScript dependencies
2. Collect static files
3. Run database migrations

\(^{21}\) [https://poetry.eustace.io/docs/#installation](https://poetry.eustace.io/docs/#installation)
All three steps can be done with the poetry shell command and aleksis-admin:

```bash
ALEKSIS_maintenance__debug=true ALEKSIS_database__password=aleksis poetry shell
    poetry run aleksis-admin yarn install
    poetry run aleksis-admin collectstatic
    poetry run aleksis-admin compilemessages
    poetry run aleksis-admin migrate
    poetry run aleksis-admin createinitialrevisions
```

Running the development server

The development server can be started using Django’s runserver command. If you want to automatically start other necessary tools in development, like the Celery worker and scheduler, use runuwsgi instead. You can either configure AlekSIS like in a production environment, or pass basic settings in as environment variable. Here is an example that runs the development server against a local PostgreSQL database with password aleksis (all else remains default) and with the debug setting enabled:

```bash
ALEKSIS_maintenance__debug=true ALEKSIS_database__password=aleksis poetry run
    aleksis-admin runuwsgi
```

4.1.2 Installing apps into development environment

Officially bundled apps

Officially bundled apps are available in the apps/official/ sub-folder of the meta repository. If you followed the documentation, they will already be checked out in the version required for the bundle you are running.

Installing a development environment for own apps

If you are developing your own app, you probably do not want to run a development environment from the AlekSIS-Core repository.

Instead, simply install the environment using poetry install from your app repository – it will pull in AlekSIS-Core as a dependency automatically, and everything will work as described beforehand.

Note: Take care not to mix up environments, especially if using poetry shell.

---

22 https://celeryproject.org/
Using one virtual environment for everything

**Note:** This method is not encouraged for most use cases.

Installing apps into the existing virtual environment of AlekSIS-Core can be easily done after starting *poetry shell*:

```
poetry install
```

Do not forget to run the maintenance tasks described earlier after installing any app.

**Note:** This is not suitable for working on the core, because it will install the *AlekSIS-Core* version used by the app using *pip* again.

### 4.1.3 Running tests and reports

#### Running default test suite

The test suite can be run using the *tox* tool:

```
tox
```

#### Enabling Selenium browser tests

The test suite contains tests that use Selenium to do browser based tests. They need to be enabled when running the test suite, which can be done by setting certain environment variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>TEST_SELENIUM_BROWSERS</code></td>
<td>List of webdrivers to test against, comma-separated.</td>
<td>chrome,firefox</td>
</tr>
<tr>
<td><code>TEST_SELENIUM_HUB</code></td>
<td>Address of Selenium hub if using remote grid</td>
<td><a href="http://127.0.0.1:4444/wd/hub">http://127.0.0.1:4444/wd/hub</a></td>
</tr>
<tr>
<td><code>TEST_HOST</code></td>
<td>Hostname reachable from Selenium for live server</td>
<td>172.17.0.1</td>
</tr>
<tr>
<td><code>TEST_SCREENSHOT_PATH</code></td>
<td>Path to directory to create screenshots in</td>
<td>/screenshots</td>
</tr>
</tbody>
</table>

Selenium tests are enabled if `TEST_SELENIUM_BROWSERS` is non-empty.

To set variables, use env to wrap the *tox* command:

```
TEST_SELENIUM_BROWSERS=chrome,firefox tox
```
Using a Selenium hub on local Docker host

One way to setup Selenium is to use the official images on the local machine.

First, get Selenium Hub and one or more browser nodes up and running:

```
docker run -d -p 4444:4444 --name selenium-hub selenium/hub
docker run -d --link selenium-hub:hub selenium/node-chrome
docker run -d --link selenium-hub:hub selenium/node-firefox
```

After that, you can run the test suite, setting the needed variables to use Docker Hub:

```
TEST_SELENIUM_BROWSERS=chrome,firefox 
TEST_SELENIUM_HUB=http://127.0.0.1:4444/wd/hub 
TEST_HOST=172.17.0.1 

tox
```

The TEST_HOST variable is set to the Docker host's IP address, where the Selenium nodes can access Django's live server. Django automatically configures the live server to be reachable if a Selenium hub is used.

Taking screenshots

The browser test suites automatically take screenshots at certain steps if enabled in the test run. This can be used to visually verify that views look like they should or for documentation purposes.

To enable screenshots, add the TEST_SCREENSHOT_PATH environment variable when running the tests.

If running multiple browsers, screenshots are placed in separate directories per browser.

4.1.4 Materialize templates

The AlekSIS frontend uses the MaterializeCSS framework and the django-material library.

Internationalisation

Load the i18n template tag and start translating strings in templates with the following template tags:

```
{% blocktrans %}String{% endblocktrans %}
{% trans "String" %}
```

{% blocktrans %} is mostly used for multiple words or multiline, while {% trans %} is used for single words.

---

23 https://materializecss.com/
24 https://pypi.org/project/django-material/
Title and headlines

To add a main headline or browser title to your template, you can add the following blocks to your template:

```latex
{% block browser_title %}Title{% endblock %}
{% block page_title %}Headline{% endblock %}
```

To fully remove page or browser title, use these template tags:

```latex
{% block no_browser_title %}{% endblock %}
{% block no_page_title %}{% endblock %}
```

Extended navbar

The top navbar with the site title and the login status can be extended by an additional tab bar, for example.

To add normal Materialize tabs without icons, you can use a snippet like described in Extended Navbar with Tabs:

```latex
{% block nav_content %}
<ul class="tabs tabs-transparent">
  <li class="tab">
    <a href="#test1">Test 1</a>
  </li>
  <li class="tab active" href="#test2">Test 2</li>
  <li class="tab disabled" href="#test3">Disabled Tab</li>
  <li class="tab" href="#test4">Test 4</li>
</ul>
{% endblock %}
```

Furthermore, you can use tabs with integrated icons that are higher, but more compact in width:

```latex
{% block nav_content %}
<ul class="tabs tabs-transparent tabs-icons tabs-fixed-width">
  <li class="tab">
    <a href="#test1">
      <i class="material-icons">speaker_notes</i>
      Test 1
    </a>
  </li>
  <li class="tab">
    <a href="#test2">
      <i class="material-icons">people</i>
      Test 2
    </a>
  </li>
</ul>
{% endblock %}
```

**Warning:** Don't define the `nav_content` block within the `content` block — that won't work.

---

25 [https://materializecss.com/navbar.html#navbar-tabs](https://materializecss.com/navbar.html#navbar-tabs)
Forms in templates

The django MaterializeCSS integrations provides support for forms in template.

You just have to load the `material_form` templatetag in the `{% load %}` block.

The following snippet generates the form:

```html
<form method="post" enctype="multipart/form-data">
    {% csrf_token %}
    {% form form=edit_person_form %}{% endform %}
    {% include "core/partials/save_button.html" %}
</form>
```

`edit_person_form` is the variable name of the form in your context.

`{% include "core/partials/save_button.html" %}` includes a template snippet from AlekSIS core. You can modify the buttons icon and translatable caption like this:

```html
{% trans "Edit" as caption %}
{% include "core/partials/save_button.html" with caption=caption, icon="person" %}
```

In your `forms.py` you can configure the layout of the fields like in the EditPersonForm:

```python
class EditPersonForm(ExtensibleForm):
    """Form to edit an existing person object in the frontend."""

    layout = Layout(
        Fieldset(
            _("Base data"),
            "short_name",
            Row("user", "primary_group"),
            Row("first_name", "additional_name", "last_name"),
        ),
        Fieldset(_("Address"), Row("street", "housenumber"), Row("postal_code", "place")),
        Fieldset(_("Contact data"), "email", Row("phone_number", "mobile_number")),
        Fieldset(  
            _("Advanced personal data"), Row("sex", "date_of_birth"), Row("photo"),  
            "guardians",  
        ),
    )
```

Tables in templates

To display tables generated by `django-tables2` in your template, you have to load the `render_table` template tag from `django_tables2`:

```html
{% load render_table from django_tables2 %}
```

After you've loaded the template tag, you can simply generate the table like this:

```html
{% render_table persons_table %}
```

`persons_table` is the variable name of the table in your context.
4.1.5 Extensible models

In AlekSIS you can use ExtensibleModels to add model fields to other apps models.

If you want to make your apps models extensible, use the ExtensibleModel class as parent class of your models.

4.1.6 Merging of app settings

AlekSIS provides features to merge app settings into main settings.py.

Currently mergable settings

- INSTALLED_APPS
- DATABASES
- YARN_INSTALLED_APPS
- ANY_JS

If you want to add another database for your AlekSIS app, you have to add the following into your settings.py:

```python
DATABASES = {
    "database": {
        "ENGINE": "django.db.backends.postgresql",
        "NAME": "database",
        "USER": "database",
        "PASSWORD": "Y0urV3ryR4nd0mP4ssw0rd",
        "HOST": "127.0.0.1",
        "PORT": 5432,
    }
}
```

4.1.7 Registering dashboard widgets

Apps can register their own dashboard widgets which are automatically registered in the corresponding frontend for configuring them.

To implement a widget, add a model that subclasses DashboardWidget, set the template and implement the get_context method to return a dictionary to be passed as context to the template. The template system works as in every Django view and allows you to use the normal Django template language.

If your widget does not add any custom database fields, you should mark it as a proxy model.

You can provide a Media meta class with custom JS and CSS files which will be added to the HTML head on the dashboard if the dashboard widget is shown. For further information on media definition, see Django Media.

Example:

Example:

26 https://docs.djangoproject.com/en/3.0/topics/forms/media/
from django.forms.widgets import Media
from aleksis.core.models import DashboardWidget

class MyWidget(DashboardWidget):
    template = "myapp/widget.html"

    def get_context(self, request):
        context = {"some_content": "foo"}
        return context

    class Meta:
        proxy = True

    media = Media(css={
        'all': ('pretty.css',),
        'js': ('animations.js', 'actions.js')
    })

4.2 Providing auto-generated documents from apps

4.2.1 Providing live document types from other apps

AlekSIS apps can provide live document types that are then managed by Resint. Live document types are Django models sub-classing the LiveDocument model, and providing fields and some methods that define how the live document is generated.

The following stripped-down example shows how to provide a live document type.

from aleksis.apps.resint.models import LiveDocument

class AutomaticPlan(LiveDocument):
    # Template name to render
    template = "my_app/pdf_template.html"

    # A field to be rendered in the edit form
    number_of_days = models.PositiveIntegerField(
        default=1,
    )

    def get_context_data(self) -> Dict[str, Any]:
        """Get context data to pass to the PDF template."""
        context = {
            # Do something here to construct the context data
        }
        return context

This basic example generates a PDF by defining an HTML template and overriding the get_context_data method. This method has to return a context dictionary, which will then be passed to the template.

If you need more control over how the PDF is generated, you can instead override the update method:
```python
class AutomaticPlan(LiveDocument):  
    def update(self, triggered_manually: bool = True):  
        '''Re-generate PDF for this live document.'''

        # Do whatever is necessary to get file contents

        self.current_file.save(self.filename, content)
```

You need to ensure that `update()` is called whenever you need to provide a new version of your document. One possibility is to listen to some relevant DJango signal, then call `update()` if necessary.
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27 https://teckids.org/
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5.4.16 Appendix

‘Compatible Licences’ according to Article 5 EUPL are:

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- Open Software License (OSL) v. 2.1, v. 3.0
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