
Clinician Scheduler Documentation

Release 1.0

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The clinician scheduler allows you to automatically generate and publish schedules that satisfy common constraints in an on-call system, while taking into account the preferences of clinicians.

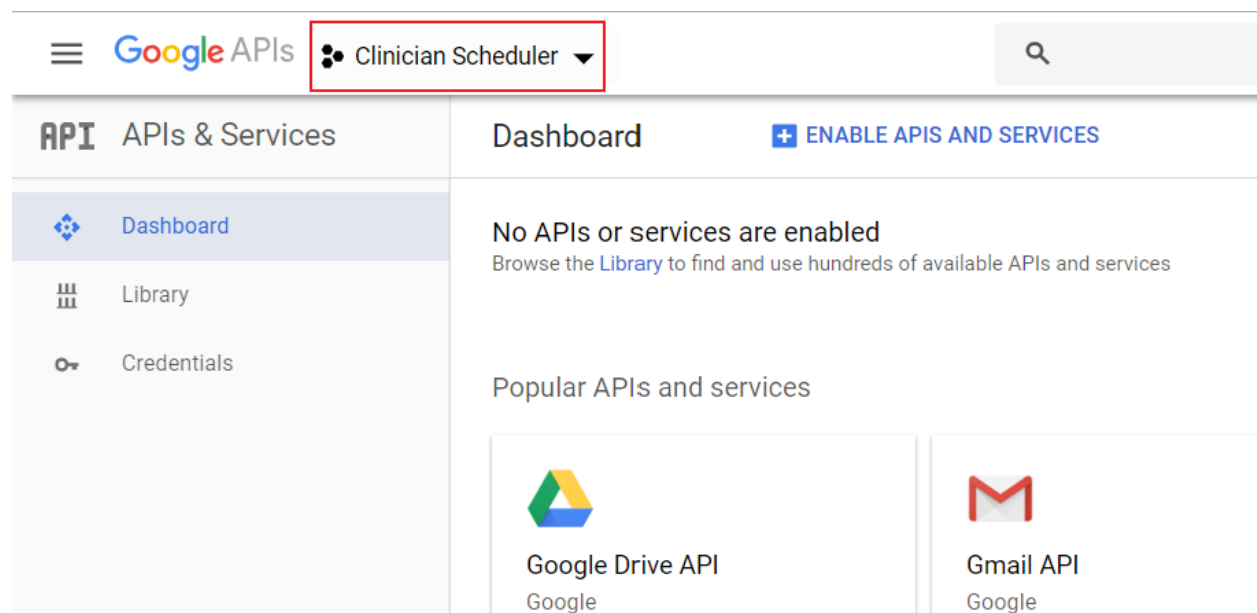
Download and unzip the compressed file to an appropriate folder.

1.1 Generating Google API credentials

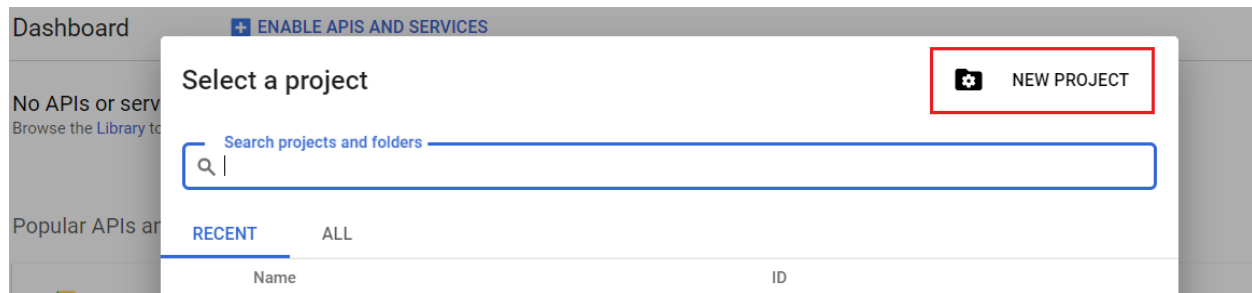
Note: This process should only be done the very first time you are running the program. If you have previously generated a credential file using this process you should be able to re-use it. Just make sure that the credential file is placed in the same folder as the executable (`scheduler.exe`).

The application uses Google calendar for retrieving clinician time-off requests and long weekend information, as well as uploading the generated schedule to the calendar. These operations require the use of Google API credentials, which can be generated as follows.

1. Sign into <https://console.developers.google.com>.
2. Click on the project selector at the top left of the page.



3. Click on *New Project*.



4. Enter “Clinician Scheduler” as the *Project Name* and click *Create*.

5. Now you should see the dashboard for the Clinician Scheduler project. You will need to enable the Google calendar API. Click on *Enable APIs and Services*.

6. Search for “Google calendar API” using the search bar, and select it.


7. Click *Enable*.

8. Now you should see the overview page for the Google calendar API. To generate the credentials, click *Create credentials*.

9. On the credentials form, choose “Google Calendar API” for *Which API are you using?*, then “Other UI (e.g. Windows, CLI tool)” for *Where will you be calling the API from?* and “User data” for *What data will you be accessing?*. Then click on *What credentials do I need?*.

Google APIs

New Project



You have 11 projects remaining in your quota. Request an increase or delete projects.
[Learn more](#)
[MANAGE QUOTAS](#)

Project Name *

Clinician Scheduler

Project ID: clinician-scheduler-228219. It cannot be changed later. [EDIT](#)

Location *

No organization

BROWSE

Parent organization or folder

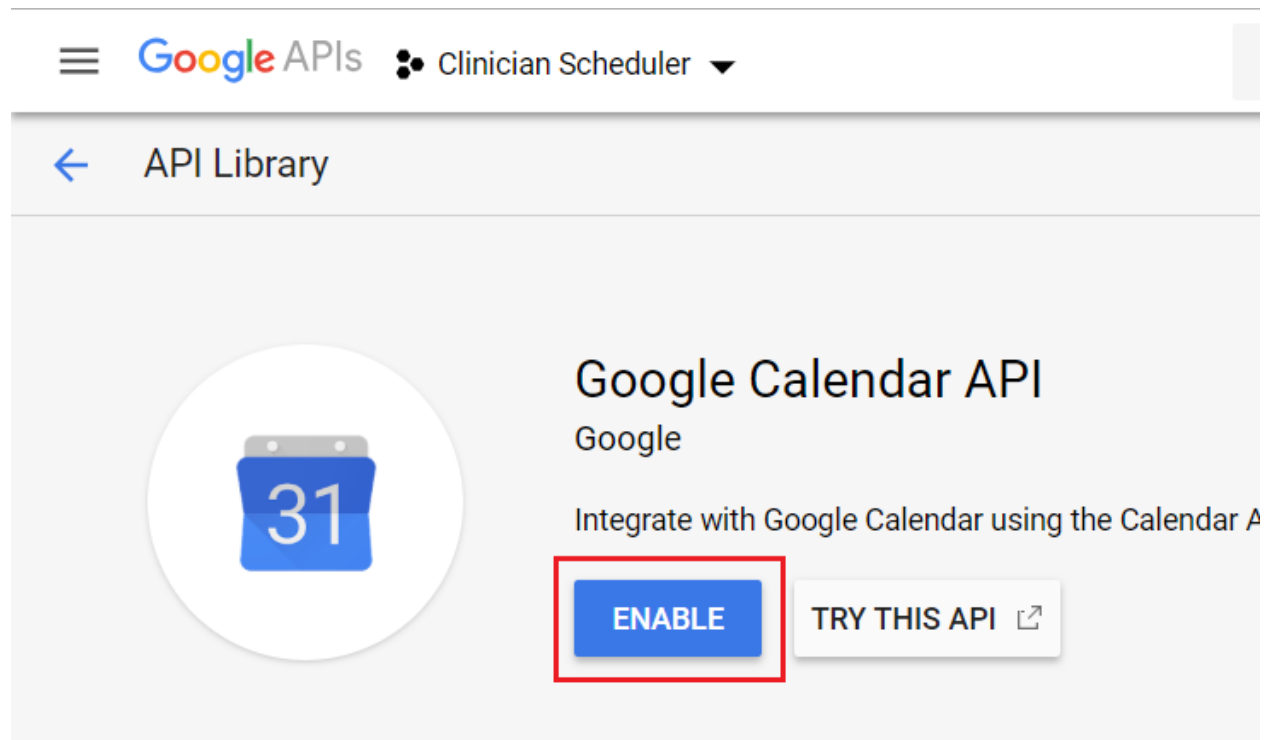
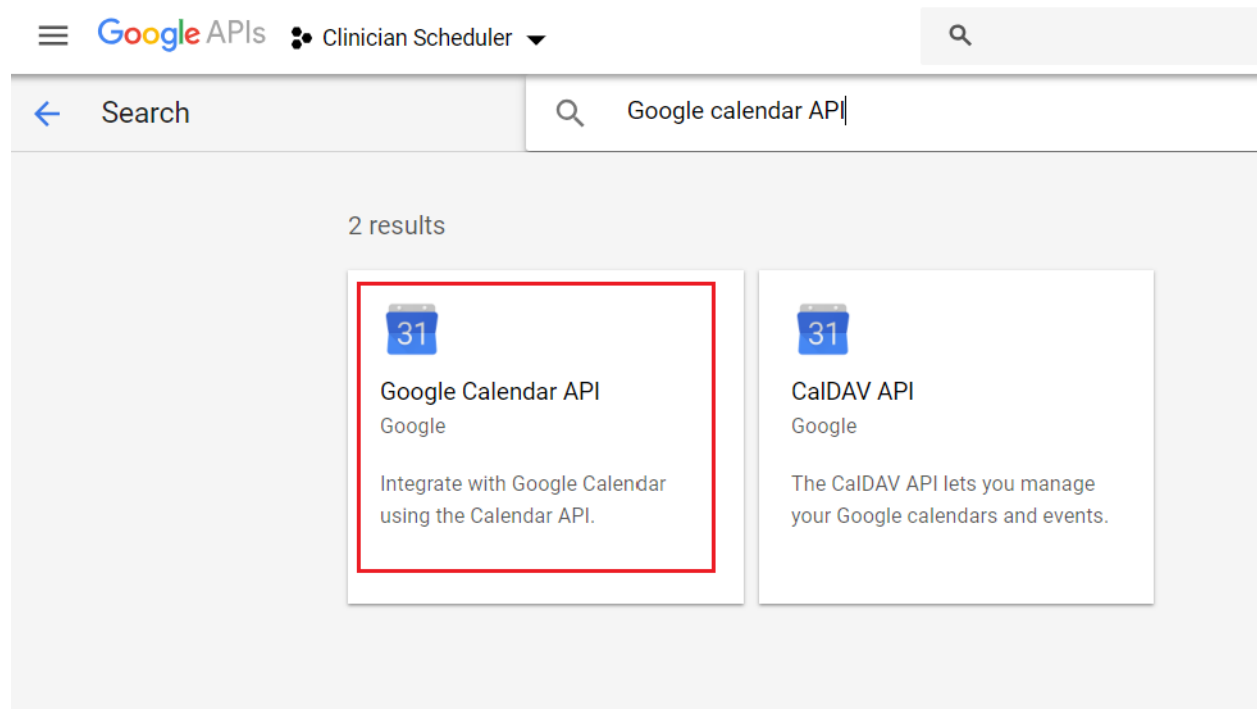
CREATE

CANCEL

Google APIs

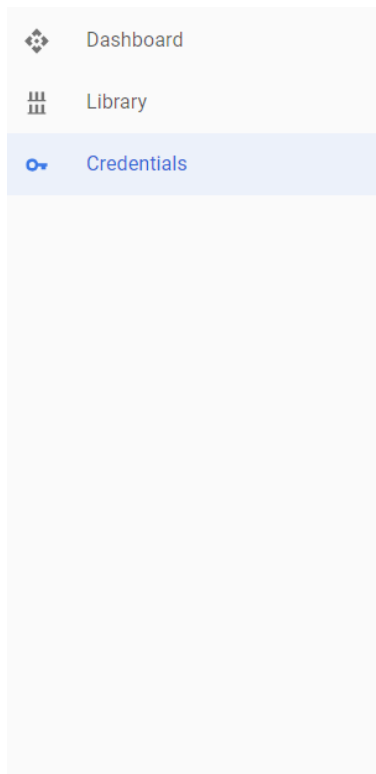
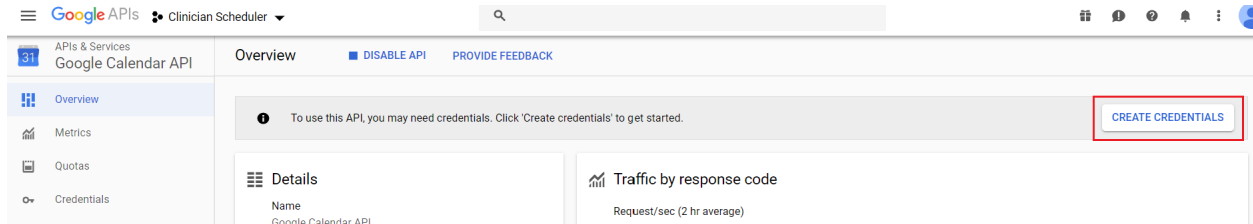
Clinician Scheduler

<div>API</div> <div>APIs & Services</div>	<div>Dashboard</div> <div> <div>+</div> <div>ENABLE APIS AND SERVICES</div> </div>
<div> <div></div> <div>Dashboard</div> </div> <div> <div></div> <div>Library</div> </div>	<p>No APIs or services are enabled</p> <p>Browse the Library to find and use hundreds of available APIs and services</p>



Type

Overview



Add credentials to your project

1 Find out what kind of credentials you need

We'll help you set up the correct credentials

If you wish you can skip this step and create an [API key](#), [client ID](#), or [service account](#)

Which API are you using?

Different APIs use different auth platforms and some credentials can be restricted to only call certain APIs.

Google Calendar API

Where will you be calling the API from?

Credentials can be restricted using details of the context from which they're called. Some credentials are unsafe to use in certain contexts.

Other UI (e.g. Windows, CLI tool)

What data will you be accessing?

Different credentials are required to authorize access depending on the type of data that you request.

☒ User data

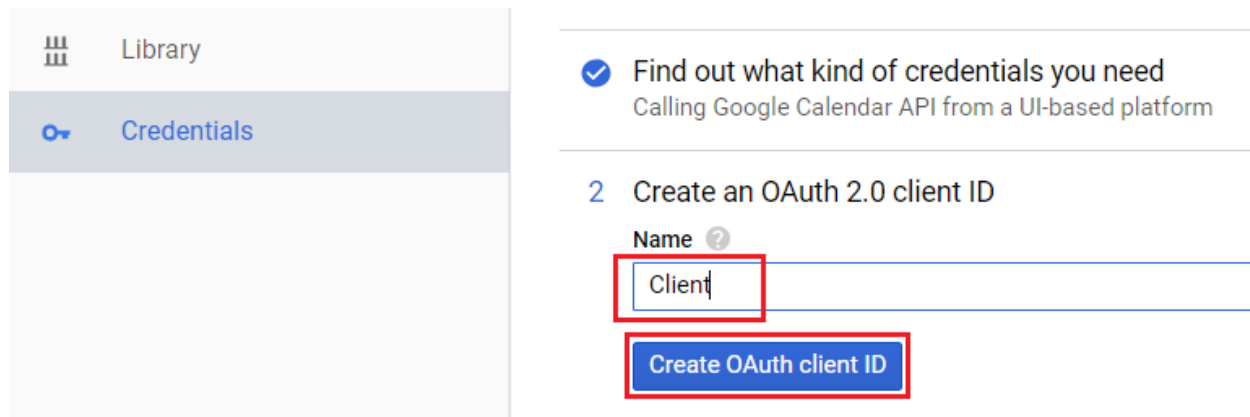
Access data belonging to a Google user, with their permission

☐ Application data

Access data belonging to your own application

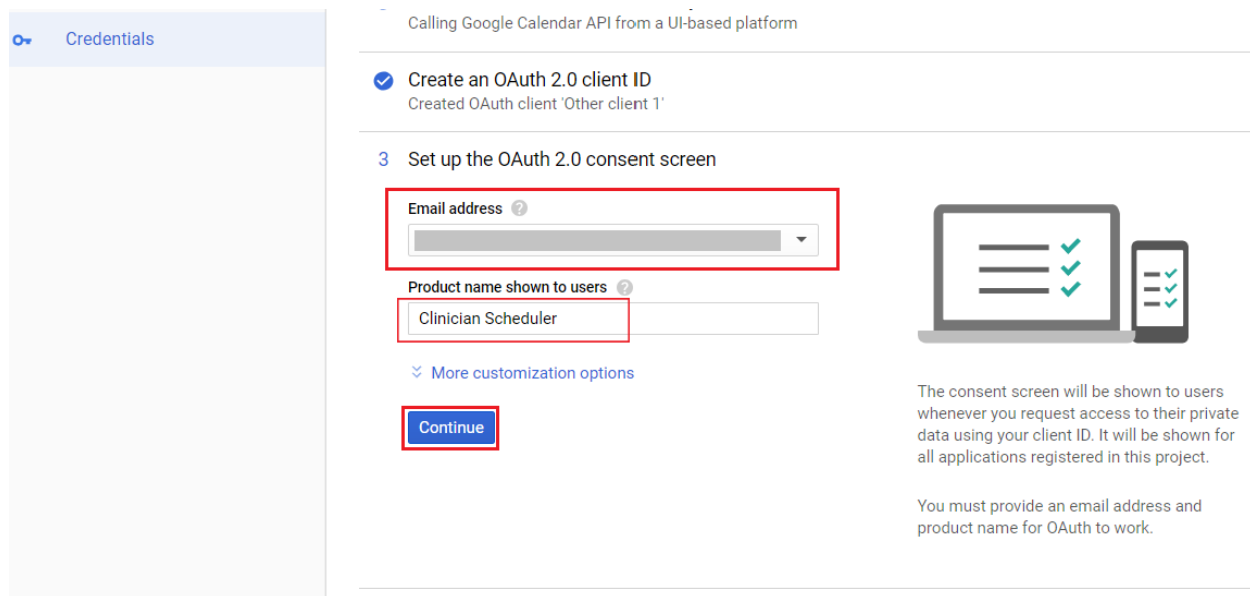
What credentials do I need?

10. Enter “Client” for *Name* and click on *Create OAuth client ID*.



The screenshot shows the Google Cloud console interface. On the left, there is a sidebar with 'Library' and 'Credentials' options. The main content area shows a progress bar with two steps: 'Find out what kind of credentials you need' (completed) and '2 Create an OAuth 2.0 client ID' (current step). Under the second step, there is a 'Name' field with a question mark icon, containing the text 'Client'. Below this field is a blue button labeled 'Create OAuth client ID'. Both the 'Name' field and the button are highlighted with red rectangles.

11. Choose the email address associated to your account for *Email address* and enter “Clinician Scheduler” for *Product name shown to users*, then click *Continue*.

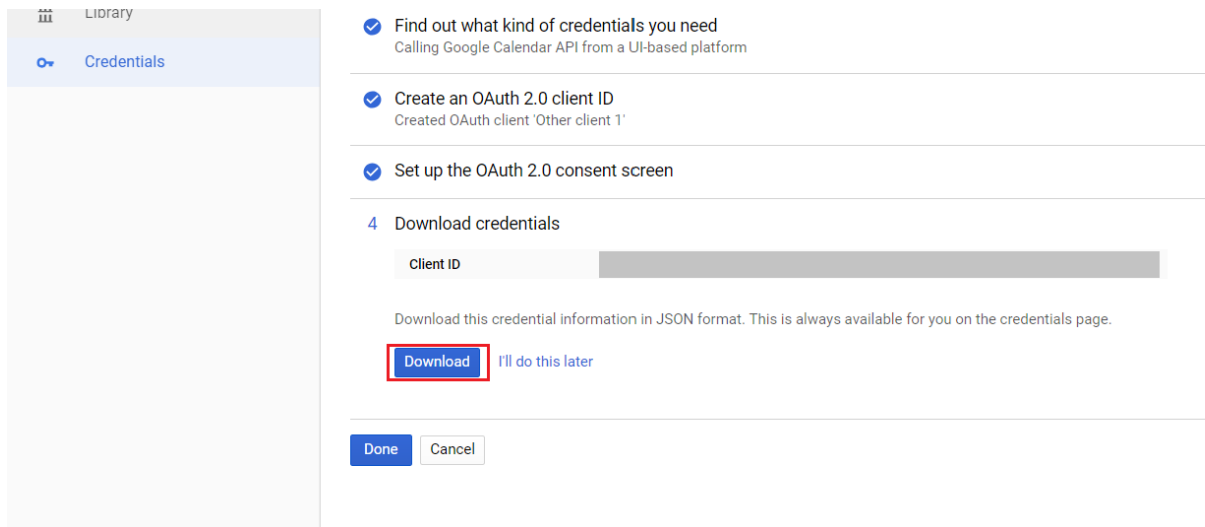


The screenshot shows the Google Cloud console interface. On the left, there is a sidebar with 'Credentials' option. The main content area shows a progress bar with three steps: 'Find out what kind of credentials you need' (completed), '2 Create an OAuth 2.0 client ID' (completed), and '3 Set up the OAuth 2.0 consent screen' (current step). Under the third step, there is an 'Email address' field with a question mark icon, containing a dropdown menu. Below this field is a 'Product name shown to users' field with a question mark icon, containing the text 'Clinician Scheduler'. Below these fields is a blue button labeled 'Continue'. Both the 'Email address' field and the 'Continue' button are highlighted with red rectangles. To the right of the form, there is an illustration of a laptop and a smartphone, and a text block explaining the consent screen.

The consent screen will be shown to users whenever you request access to their private data using your client ID. It will be shown for all applications registered in this project.

You must provide an email address and product name for OAuth to work.

12. Your credentials are now generated! Make sure to download and save them in the same location that you unzipped the application, so that the credential file and the executable file (`scheduler.exe`) are in the same folder.



Attention: Make sure the credential file is saved as `credentials.json` (rename it, if necessary), or otherwise the application will not be able to recognize it!

2.1 Authentication

When the scheduler first makes a connection to Google calendar, it needs to create an authentication token, which will be used to simplify future connections.

This requires you to allow the scheduler application to access a calendar that you specified. You may encounter this when using any functionality that interacts with Google calendar, for example in *Generating a schedule* or in *Publishing a schedule to Google Calendar*.

1. The scheduler should have automatically opened the access request page in a browser window, in which case you can skip to step 2. **Otherwise**, locate the command prompt for the scheduler. You should see instructions to open the access request printed on the command prompt. Follow these instructions in order to open the access request page manually.
2. Follow the instructions on the access request page in order to allow the scheduler application to read/write from/to the calendar you specified. **(Optional)** If you opened the access request manually in step 1, you will receive an authentication code which needs to be pasted into the command prompt
3. Once you have completed the authentication process, the scheduler will automatically resume its functionality.

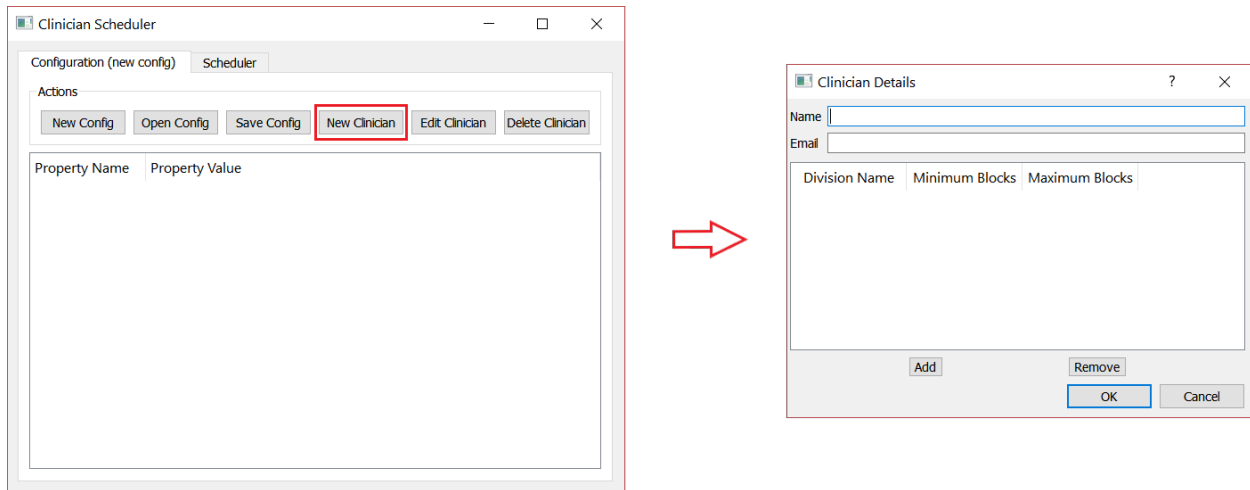
2.2 Clinician Configuration

Before we can generate a schedule, we need to create a configuration file that specifies which clinicians are available, and how many weeks each clinician should fulfill.

2.2.1 Adding a new clinician

1. From the configuration tab, click *New Clinician*. You should see a form for supplying details.
2. Fill out the name, email (optional), and divisions that the clinician will be covering. To add a division you can click on *Add* and a new row will be added to the table which you can fill out. You can set the minimum and maximum number of blocks that a clinician can work in a given division.

Note: A single block corresponds to two weeks.



Clinician Details

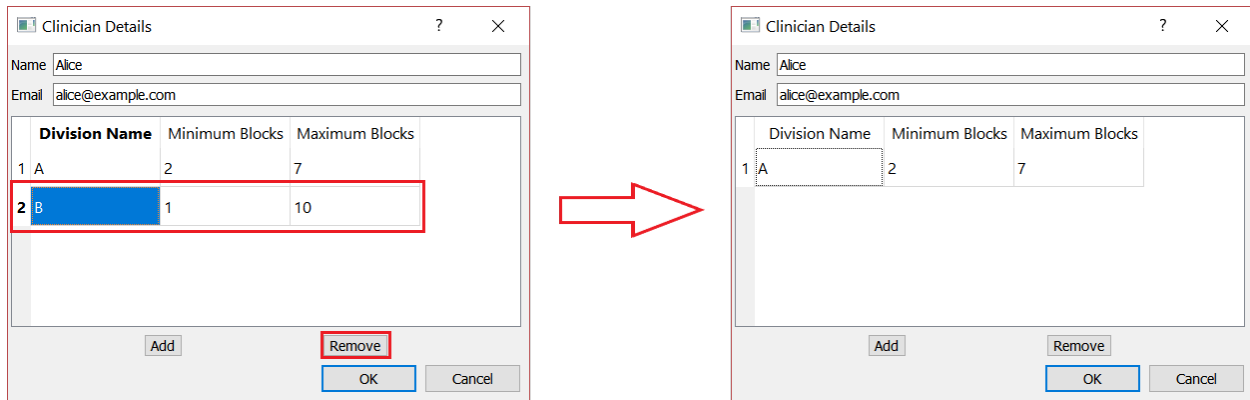
Name:

Email:

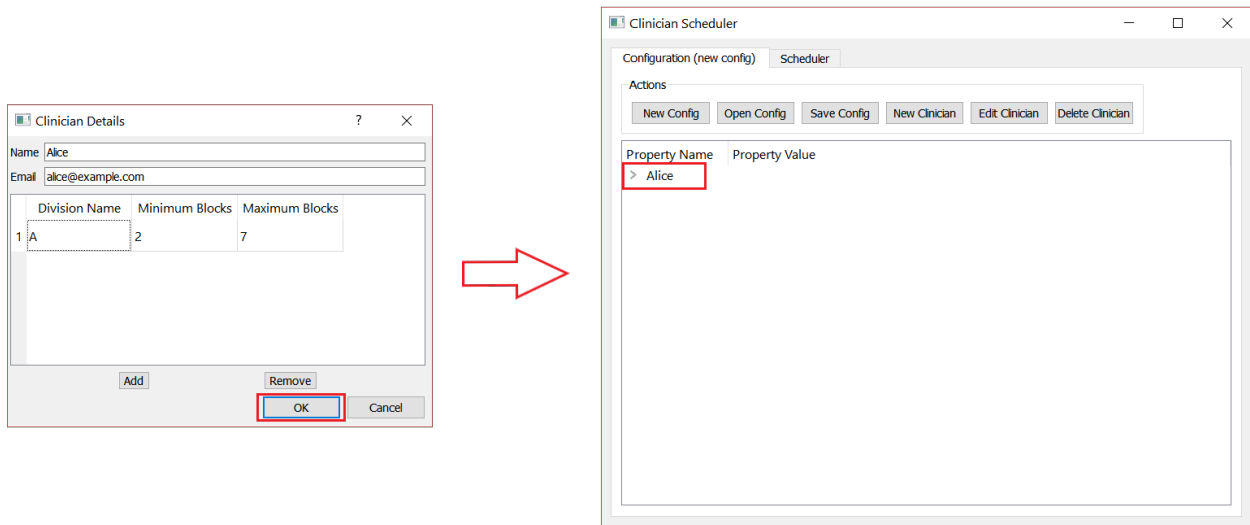
	Division Name	Minimum Blocks	Maximum Blocks
1	A	2	7

Add Remove OK Cancel

3. To delete a row from the table, select the row and then click *Remove*.



4. When you are finished entering the data for the clinician, click *Ok*. You should now see a new entry in the main table for that clinician.



2.2.2 Deleting an existing clinician

2.2.3 Editing an existing clinician

2.2.4 Saving the configuration to a file

2.2.5 Loading a configuration file

2.3 Google Calendar Configuration

2.3.1 Creating a calendar

2.3.2 Adding holiday events

2.3.3 Adding clinician requests

2.4 Scheduling

2.4.1 Loading a configuration file

From the scheduling tab, click on *Load* and select the configuration file that you generated in *Clinician Configuration*

The screenshot shows the Clinician Scheduler application window. The title bar reads "Clinician Scheduler". There are two tabs: "Configuration" and "Scheduler (new config)". The "Scheduler (new config)" tab is selected and highlighted with a red box. Inside this tab, there is a "Settings" section with the following fields: "Configuration" (with a "Load" button highlighted by a red box), "Calendar Year" (set to 2000), "Google Calendar ID" (empty), "Retrieve Time-off Requests" (checked), "Retrieve Long Weekends" (checked), and "Number of Blocks" (set to 26). Below the settings is a "Schedule" section with buttons for "Generate", "Export Yearly", and "Export Monthly". To the right of the "Schedule" section is a "Calendar" section with buttons for "Publish" and "Clear". At the bottom of the window is a large text area labeled "Week Number".

2.4.2 Generating a schedule

1. Enter the calendar year for the schedule that you want to generate.
 2. **(Optional)** In order to retrieve the time-off requests that were populated in Google calendar in [Adding clinician requests](#), we need to specify the calendar ID. Open the calendar in your browser, and navigate to the *Settings and sharing* page. On the setting page, navigate to the *Integrate calendar* section, and copy the value under *Calendar ID* to your clipboard. Paste this value into the *Google Calendar ID* textbox on the *Scheduler* tab.
 3. **(Optional)** If you supplied a calendar ID in step 2, you can configure the options *Retrieve Time-off Requests* and *Retrieve Long Weekends* as necessary. Enabling *Retrieve Time-off Requests* will read the time-off calendar events from the calendar specified in *Calendar ID*, while enabling *Retrieve Long Weekends* will read the holiday events from that calendar.
 4. **(Optional)** In the case that you only need to generate a schedule for a subset of the calendar year, you can select the amount of blocks you need to generate by specifying a value in *Number of Blocks*. By default, the scheduler will generate a full schedule, corresponding to 26 blocks.
 5. Click on *Generate*, and after a few moments you should see a preview of the generated schedule in the table.
- (Optional)** See [Authentication](#) in case you encounter problems with Google calendar at this stage.

Note: It is possible that the scheduler will not be able to come up with a schedule that satisfies your constraints. You can try adjusting some constraints by changing the minimum and maximum number of blocks of clinicians in the configuration file. See [Clinician Configuration](#) for more information on changing the configuration file.

2.4.3 Exporting a schedule

2.4.4 Publishing a schedule to Google Calendar