

How to use the REDCap Application Programming Interface (API)

The REDCap API is an interface that allows external applications (e.g., statistical software) to connect to REDCap remotely, and is used for programmatically retrieving or modifying project data or settings within REDCap, such as importing or exporting data.

How to get an API Token

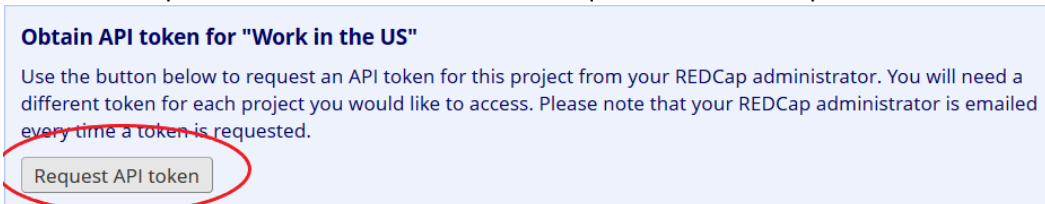
REDCap provides API tokens at the user-project level. This means that if three users on the same project need to use the API, each user will need to individually request an API token. Similarly, if one user wants an API token for three different projects, they will need to request an API token for each project.

For a user to get an API token for a project, they can take the following steps:

1. Go to the project you need an API token for.
2. In the left-hand menu under “Applications,” push the “API” link.



- a. If you do not see this link, check (or have someone else check) the [User Rights](#) table and grant you API privileges.
3. Push the “Request API token” to send a token request to the REDCap administrative team.



- a. If it is your first time requesting an API token, the REDCap administrative team will send you an API agreement to complete. This agreement collects information about you and your department, but also provides information about API best practices. These best practices are also outlined later in this document.
4. After you have been granted an API token, you are ready to start exploring the REDCap API!

Using the REDCap API

It is recommended that users planning to use REDCap’s API have prior coding experience. The REDCap API supports many coding languages, but the two most popular are R and Python. The Illinois REDCap team is able to provide limited support troubleshooting API code.

The best way to familiarize yourself with the REDCap API is to explore the API Playground.

1. Click on the “API Playground” link from the left-hand menu under “Applications.”
2. Once in the API Playground, there is a blue box with a dropdown menu labeled “API Method.” This dropdown includes all the API actions REDCap can take.
 - a. If a project is in production, the methods listed in this dropdown ***will be limited*** so as not to affect real data in the project. This is noted in the green text under the “API Method” dropdown.
3. Select the method you need from the dropdown menu and complete the additional information. The additional information (e.g. “Format”, “Instrument”, etc.) will vary depending on which API method you choose and the project structure. In the below example, the researcher is asking to export a list of survey participants from the “contact_info” survey on the “baseline_survey” event of a longitudinal project as a CSV.
 - a. To see all the API functions REDCap is capable of, and export a .zip file of sample code, click on the “REDCap API documentation” link that is available on both the “API” page and in the “API Playground.”

Select an API method from the drop-down list below, after which it will load any other options that are specific to that method.

API Method:

Production - Some APIs have been disabled for the playground because they affect data

Format:

Instrument:

Event:

Errors:

4. When you scroll further down the page, there is an open text box with a series of tabs on the top, with each tab corresponding to a coding language. Each tab will provide the API code in the indicated language.

PHPPerlPythonRubyJavaRcURL

Displayed in the box below is the code you would use to execute this API request in the selected programming language.

```
#!/usr/bin/env python
import requests
data = {
    'token': '██████████████████████████████████',
    'content': 'participantList',
    'format': 'csv',
    'instrument': 'contact_info',
    'event': 'baseline_survey_arm_1',
    'returnFormat': 'json'
}
r = requests.post('https://redcap.healthinstitute.illinois.edu/api/', data=data)
print('HTTP Status: ' + str(r.status_code))
print(r.text)
```

5. You can copy and paste this code into the necessary program to run it. Additional data cleaning and manipulation is often necessary.

Warning: On the API Playground, there is a button that will let you “Execute Request.” This ***will perform the API action you are programming*** and thus ***affect the data in your project***. Use this button with a great amount of caution.



Click the Execute Request button to execute a real API request, and it will display the API response in a text box below.



API Best Practices

- ***Never*** share your API token with anyone. Giving someone else access to your token is a HIPAA violation, and any action taken with your token is logged in REDCap as an action taken by ***you***.
- Do not test API tokens in browsers. Using an API token in plain text within a script is insecure. An API token should be encrypted within a script, be called via secure environment variables, or otherwise be accessible from the script via other secure mechanisms.
- Before you share code anywhere, remove your API token. This includes sharing code via email, GitHub, etc.
- Regenerate your API token every 90 days, or at any point that you think your token has been compromised. To regenerate your token, go to the API page and select “Regenerate token.” If you are no longer using the API functionality on your project, delete your token.

Your API token for project "Work in the US"

The API token below is **ONLY for you** and will work **ONLY with this project**. This token allows special access to REDCap data and **should NOT be shared with others**. If you think your token has been compromised, then please contact your REDCap administrator immediately **AND** either delete or regenerate your token by using the buttons below.

🔑 API Token:

[Redacted API Token]

Finished using the API for this project? If so, please delete your token for security reasons.

Think someone else knows your token? If so, please regenerate your token for security reasons.

- Report any security incidents involving your HIPAA token to the REDCap administrators (redcap-admin@illinois.edu), and the IRB and/or your HIPAA liaison, as necessary.