
gsread Documentation

Release 5.4.0

Anton Burnashev

May 31, 2022

Contents

1	Installation	3
2	Quick Example	5
3	Getting Started	7
3.1	Authentication	7
4	Usage	13
4.1	Examples of gspread Usage	13
5	Advanced	19
5.1	Advanced Usage	19
6	API Documentation	21
6.1	API Reference	21
7	How to Contribute	61
7.1	Ask Questions	61
7.2	Report Issues	61
7.3	Contribute code	61
8	Indices and tables	63
	Python Module Index	65
	Index	67

`gspread` is a Python API for Google Sheets.

Features:

- Google Sheets API v4.
- Open a spreadsheet by title, key or url.
- Read, write, and format cell ranges.
- Sharing and access control.
- Batching updates.

CHAPTER 1

Installation

```
pip install gspread
```

Requirements: Python 3+.

CHAPTER 2

Quick Example

```
import gspread

gc = gspread.service_account()

# Open a sheet from a spreadsheet in one go
wks = gc.open("Where is the money Lebowski?").sheet1

# Update a range of cells using the top left corner address
wks.update('A1', [[1, 2], [3, 4]])

# Or update a single cell
wks.update('B42', "it's down there somewhere, let me take another look.")

# Format the header
wks.format('A1:B1', {'textFormat': {'bold': True}})
```


3.1 Authentication

To access spreadsheets via Google Sheets API you need to authenticate and authorize your application.

- If you plan to access spreadsheets on behalf of a bot account use *Service Account*.
- If you'd like to access spreadsheets on behalf of end users (including yourself) use *OAuth Client ID*.

3.1.1 Enable API Access for a Project

1. Head to [Google Developers Console](#) and create a new project (or select the one you already have).
2. In the box labeled “Search for APIs and Services”, search for “Google Drive API” and enable it.
3. In the box labeled “Search for APIs and Services”, search for “Google Sheets API” and enable it.

3.1.2 For Bots: Using Service Account

A service account is a special type of Google account intended to represent a non-human user that needs to authenticate and be authorized to access data in Google APIs [sic].

Since it's a separate account, by default it does not have access to any spreadsheet until you share it with this account. Just like any other Google account.

Here's how to get one:

1. *Enable API Access for a Project* if you haven't done it yet.
2. Go to “APIs & Services > Credentials” and choose “Create credentials > Service account key”.
3. Fill out the form
4. Click “Create” and “Done”.
5. Press “Manage service accounts” above Service Accounts.

6. Press on `near` recently created service account and select “Manage keys” and then click on “ADD KEY > Create new key”.
7. Select JSON key type and press “Create”.

You will automatically download a JSON file with credentials. It may look like this:

```
{
  "type": "service_account",
  "project_id": "api-project-XXX",
  "private_key_id": "2cd ... ba4",
  "private_key": "-----BEGIN PRIVATE KEY-----\nNrDyLw ... jINQh/9\n-----END PRIVATE_\nKEY-----\n",
  "client_email": "473000000000-yoursisdifferent@developer.gserviceaccount.com",
  "client_id": "473 ... hd.apps.googleusercontent.com",
  ...
}
```

Remember the path to the downloaded credentials file. Also, in the next step you’ll need the value of *client_email* from this file.

6. Very important! Go to your spreadsheet and share it with a *client_email* from the step above. Just like you do with any other Google account. If you don’t do this, you’ll get a `gsread.exceptions.SpreadsheetNotFound` exception when trying to access this spreadsheet from your application or a script.
7. Move the downloaded file to `~/ .config/gspread/service_account.json`. Windows users should put this file to `%APPDATA%\gspread\service_account.json`.
8. Create a new Python file with this code:

```
import gspread

gc = gspread.service_account()

sh = gc.open("Example spreadsheet")

print(sh.sheet1.get('A1'))
```

Ta-da!

Note: If you want to store the credentials file somewhere else, specify the path to *service_account.json* in *service_account()*:

```
gc = gspread.service_account(filename='path/to/the/downloaded/file.json')
```

Make sure you store the credentials file in a safe place.

For the curious, under the hood *service_account()* loads your credentials and authorizes gspread. Similarly to the code that has been used for authentication prior to the gspread version 3.6:

```
from google.oauth2.service_account import Credentials

scopes = [
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive'
]

credentials = Credentials.from_service_account_file(
```

(continues on next page)

(continued from previous page)

```
'path/to/the/downloaded/file.json',
scopes=scopes
)

gc = gsread.authorize(credentials)
```

There is also the option to pass credentials as a dictionary:

```
import gsread

credentials = {
    "type": "service_account",
    "project_id": "api-project-XXX",
    "private_key_id": "2cd ... ba4",
    "private_key": "-----BEGIN PRIVATE KEY-----\nNrDyLw ... jINQh/9\n-----END PRIVATE_\nKEY-----\n",
    "client_email": "473000000000-yoursisdifferent@developer.gserviceaccount.com",
    "client_id": "473 ... hd.apps.googleusercontent.com",
    ...
}

gc = gsread.service_account_from_dict(credentials)

sh = gc.open("Example spreadsheet")

print(sh.sheet1.get('A1'))
```

Note: Older versions of gsread have used `oauth2client`. Google has deprecated it in favor of `google-auth`. If you're still using `oauth2client` credentials, the library will convert these to `google-auth` for you, but you can change your code to use the new credentials to make sure nothing breaks in the future.

3.1.3 For End Users: Using OAuth Client ID

This is the case where your application or a script is accessing spreadsheets on behalf of an end user. When you use this scenario, your application or a script will ask the end user (or yourself if you're running it) to grant access to the user's data.

1. *Enable API Access for a Project* if you haven't done it yet.
2. Go to "APIs & Services > OAuth Consent Screen." Click the button for "Configure Consent Screen".
 - a. In the "1 OAuth consent screen" tab, give your app a name and fill the "User support email" and "Developer contact information". Click "SAVE AND CONTINUE".
 - b. There is no need to fill in anything in the tab "2 Scopes", just click "SAVE AND CONTINUE".
 - c. In the tab "3 Test users", add the Google account email of the end user, typically your own Google email. Click "SAVE AND CONTINUE".
 - d. Double check the "4 Summary" presented and click "BACK TO DASHBOARD".
3. Go to "APIs & Services > Credentials"
4. Click "+ Create credentials" at the top, then select "OAuth client ID".
5. Select "Desktop app", name the credentials and click "Create". Click "Ok" in the "OAuth client created" popup.

6. Download the credentials by clicking the Download JSON button in “OAuth 2.0 Client IDs” section.
7. Move the downloaded file to `~/ .config/gspread/credentials.json`. Windows users should put this file to `%APPDATA%\gspread\credentials.json`.

Create a new Python file with this code:

```
import gspread

gc = gspread.oauth()

sh = gc.open("Example spreadsheet")

print(sh.sheet1.get('A1'))
```

When you run this code, it launches a browser asking you for authentication. Follow the instruction on the web page. Once finished, gspread stores authorized credentials in the config directory next to *credentials.json*. You only need to do authorization in the browser once, following runs will reuse stored credentials.

Note: If you want to store the credentials file somewhere else, specify the path to *credentials.json* and *authorized_user.json* in *oauth()*:

```
gc = gspread.oauth(
    credentials_filename='path/to/the/credentials.json',
    authorized_user_filename='path/to/the/authorized_user.json'
)
```

Make sure you store the credentials file in a safe place.

There is also the option to pass your credentials directly as a python dict. This way you don’t have to store them as files or you can store them in your favorite password manager.

```
import gspread

credentials = {
    {
        "installed": {
            "client_id": "12345678901234567890abcdefghijklmnopqrstuvwxyz.com",
            "project_id": "my-project1234",
            "auth_uri": "https://accounts.google.com/o/oauth2/auth",
            "token_uri": "https://oauth2.googleapis.com/token",
            ...
        }
    }
}

gc, authorized_user = gspread.oauth_from_dict(credentials)

sh = gc.open("Example spreadsheet")

print(sh.sheet1.get('A1'))
```

Once authenticated you must store the returned json string containing your authenticated user information. Provide that details as a python dict as second argument in your next *oauth* request to be directly authenticated and skip the flow.

Note: The second time if your authorized user has not expired, you can omit the credentials. Be aware, if the

authorized user has expired your credentials are required to authenticate again.

```
import gsread

credentials = {
    "installed": {
        "client_id": "12345678901234567890abcdefghijklmnopqrstuvwxyz.com",
        "project_id": "my-project1234",
        "auth_uri": "https://accounts.google.com/o/oauth2/auth",
        "token_uri": "https://oauth2.googleapis.com/token",
        ...
    }
}

authorized_user = {
    "refresh_token": "8//ThisALONGTOkEn....",
    "token_uri": "https://oauth2.googleapis.com/token",
    "client_id": "12345678901234567890abcdefghijklmnopqrstuvwxyz.com",
    "client_secret": "MySecRet....",
    "scopes": [
        "https://www.googleapis.com/auth/spreadsheets",
        "https://www.googleapis.com/auth/drive"
    ],
    "expiry": "1070-01-01T00:00:00.000001Z"
}

gc, authorized_user = gsread.oauth_from_dict(credentials, authorized_user)

sh = gc.open("Example spreadsheet")

print(sh.sheet1.get('A1'))
```

Warning: Security credentials file and authorized credentials contain sensitive data. **Do not share these files with others** and treat them like private keys.

If you are concerned about giving the application access to your spreadsheets and Drive, use Service Accounts.

Note: The user interface of Google Developers Console may be different when you're reading this. If you find that this document is out of sync with the actual UI, please update it. Improvements to the documentation are always welcome. Click **Edit on GitHub** in the top right corner of the page, make it better and submit a PR.

4.1 Examples of gspread Usage

If you haven't yet authorized your app, read *Authentication* first.

4.1.1 Opening a Spreadsheet

You can open a spreadsheet by its title as it appears in Google Docs:

```
sh = gc.open('My poor gym results')
```

If you want to be specific, use a key (which can be extracted from the spreadsheet's url):

```
sht1 = gc.open_by_key('0BmgG6nO_6dprdS1MN3d3MkdPa142WFRrdnRRUWl1UFE')
```

Or, if you feel really lazy to extract that key, paste the entire spreadsheet's url

```
sht2 = gc.open_by_url('https://docs.google.com/spreadsheet/ccc?key=0Bm...FE&hl')
```

4.1.2 Creating a Spreadsheet

Use `create()` to create a new blank spreadsheet:

```
sh = gc.create('A new spreadsheet')
```

Note: If you're using a *service account*, this new spreadsheet will be visible only to this account. To be able to access newly created spreadsheet from Google Sheets with your own Google account you *must* share it with your email. See how to share a spreadsheet in the section below.

4.1.3 Sharing a Spreadsheet

If your email is `otto@example.com` you can share the newly created spreadsheet with yourself:

```
sh.share('otto@example.com', perm_type='user', role='writer')
```

See `share()` documentation for a full list of accepted parameters.

4.1.4 Selecting a Worksheet

Select worksheet by index. Worksheet indexes start from zero:

```
worksheet = sh.get_worksheet(0)
```

Or by title:

```
worksheet = sh.worksheet("January")
```

Or the most common case: *Sheet1*:

```
worksheet = sh.sheet1
```

To get a list of all worksheets:

```
worksheet_list = sh.worksheets()
```

4.1.5 Creating a Worksheet

```
worksheet = sh.add_worksheet(title="A worksheet", rows=100, cols=20)
```

4.1.6 Deleting a Worksheet

```
sh.del_worksheet(worksheet)
```

4.1.7 Getting a Cell Value

Using `A1` notation:

```
val = worksheet.acell('B1').value
```

Or row and column coordinates:

```
val = worksheet.cell(1, 2).value
```

If you want to get a cell formula:

```
cell = worksheet.acell('B1', value_render_option='FORMULA').value  
  
# or  
  
cell = worksheet.cell(1, 2, value_render_option='FORMULA').value
```

4.1.8 Getting All Values From a Row or a Column

Get all values from the first row:

```
values_list = worksheet.row_values(1)
```

Get all values from the first column:

```
values_list = worksheet.col_values(1)
```

Note: So far we've been fetching a limited amount of data from a sheet. This works great until you need to get values from hundreds of cells or iterating over many rows or columns.

Under the hood, gsread uses [Google Sheets API v4](#). Most of the time when you call a gsread method to fetch or update a sheet gsread produces one HTTP API call.

HTTP calls have performance costs. So if you find your app fetching values one by one in a loop or iterating over rows or columns you can improve the performance of the app by fetching data in one go.

What's more, Sheets API v4 introduced [Usage Limits](#) (as of this writing, 300 requests per 60 seconds per project, and 60 requests per 60 seconds per user). When your application hits that limit, you get an *APIError 429 RESOURCE_EXHAUSTED*.

Here are the methods that may help you to reduce API calls:

- `get_all_values()` fetches values from all of the cells of the sheet.
- `get()` fetches all values from a range of cells.
- `batch_get()` can fetch values from multiple ranges of cells with one API call.
- `update()` lets you update a range of cells with a list of lists.
- `batch_update()` lets you update multiple ranges of cells with one API call.

4.1.9 Getting All Values From a Worksheet as a List of Lists

```
list_of_lists = worksheet.get_all_values()
```

4.1.10 Getting All Values From a Worksheet as a List of Dictionaries

```
list_of_dicts = worksheet.get_all_records()
```

4.1.11 Finding a Cell

Find a cell matching a string:

```
cell = worksheet.find("Dough")
print("Found something at R%sC%s" % (cell.row, cell.col))
```

Find a cell matching a regular expression

```
amount_re = re.compile(r'(Big|Enormous) dough')
cell = worksheet.find(amount_re)
```

find returns *None* if value is not Found

4.1.12 Finding All Matched Cells

Find all cells matching a string:

```
cell_list = worksheet.findall("Rug store")
```

Find all cells matching a regexp:

```
criteria_re = re.compile(r'(Small|Room-tiering) rug')
cell_list = worksheet.findall(criteria_re)
```

4.1.13 Clear A Worksheet

Clear one or multiple cells ranges at once:

```
worksheet.batch_clear(["A1:B1", "C2:E2", "my_named_range"])
```

Clear the entire worksheet:

```
worksheet.clear()
```

4.1.14 Cell Object

Each cell has a value and coordinates properties:

```
value = cell.value
row_number = cell.row
column_number = cell.col
```

4.1.15 Updating Cells

Using *A1* notation:

```
worksheet.update('B1', 'Bingo!')
```

Or row and column coordinates:

```
worksheet.update_cell(1, 2, 'Bingo!')
```

Update a range

```
worksheet.update('A1:B2', [[1, 2], [3, 4]])
```

4.1.16 Formatting

Here's an example of basic formatting.

Set **A1:B1** text format to bold:

```
worksheet.format('A1:B1', {'textFormat': {'bold': True}})
```

Color the background of **A2:B2** cell range in black, change horizontal alignment, text color and font size:

```
worksheet.format("A2:B2", {
    "backgroundColor": {
        "red": 0.0,
        "green": 0.0,
        "blue": 0.0
    },
    "horizontalAlignment": "CENTER",
    "textFormat": {
        "foregroundColor": {
            "red": 1.0,
            "green": 1.0,
            "blue": 1.0
        },
        "fontSize": 12,
        "bold": True
    }
})
```

The second argument to `format()` is a dictionary containing the fields to update. A full specification of format options is available at [CellFormat](#) in Sheet API Reference.

Tip: `gsread-formatting` offers extensive functionality to help you when you go beyond basics.

4.1.17 Using gsread with pandas

`pandas` is a popular library for data analysis. The simplest way to get data from a sheet to a pandas `DataFrame` is with `get_all_records()`:

```
import pandas as pd

dataframe = pd.DataFrame(worksheet.get_all_records())
```

Here's a basic example for writing a dataframe to a sheet. With `update()` we put the header of a dataframe into the first row of a sheet followed by the values of a dataframe:

```
import pandas as pd

worksheet.update([dataframe.columns.values.tolist()] + dataframe.values.tolist())
```

For advanced pandas use cases check out these libraries:

- `gsread-pandas`
- `gsread-dataframe`

4.1.18 Using gsread with NumPy

NumPy is a library for scientific computing in Python. It provides tools for working with high performance multi-dimensional arrays.

Read contents of a sheet into a NumPy array:

```
import numpy as np
array = np.array(worksheet.get_all_values())
```

The code above assumes that your data starts from the first row of the sheet. If you have a header row in the first row, you need replace `worksheet.get_all_values()` with `worksheet.get_all_values()[1:]`.

Write a NumPy array to a sheet:

```
import numpy as np

array = np.array([[1, 2, 3], [4, 5, 6]])

# Write the array to worksheet starting from the A2 cell
worksheet.update('A2', array.tolist())
```

5.1 Advanced Usage

5.1.1 Custom Authentication

Google Colaboratory

If you familiar with the Jupyter Notebook, [Google Colaboratory](#) is probably the easiest way to get started using gspread:

```
from google.colab import auth
auth.authenticate_user()

import gspread
from google.auth import default
creds, _ = default()

gc = gspread.authorize(creds)
```

See the full example in the [External data: Local Files, Drive, Sheets, and Cloud Storage](#) notebook.

Using Authlib

Using Authlib instead of google-auth. Similar to `google.auth.transport.requests.AuthorizedSession` Authlib's `AssertionSession` can automatically refresh tokens.:

```
import json
from gspread import Client
from authlib.integrations.requests_client import AssertionSession

def create_assertion_session(conf_file, scopes, subject=None):
    with open(conf_file, 'r') as f:
```

(continues on next page)

(continued from previous page)

```
conf = json.load(f)

token_url = conf['token_uri']
issuer = conf['client_email']
key = conf['private_key']
key_id = conf.get('private_key_id')

header = {'alg': 'RS256'}
if key_id:
    header['kid'] = key_id

# Google puts scope in payload
claims = {'scope': ' '.join(scopes)}
return AssertionSession(
    grant_type=AssertionSession.JWT_BEARER_GRANT_TYPE,
    token_url=token_url,
    issuer=issuer,
    audience=token_url,
    claims=claims,
    subject=subject,
    key=key,
    header=header,
)

scopes = [
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive',
]
session = create_assertion_session('your-google-conf.json', scopes)
gc = Client(None, session)

wks = gc.open("Where is the money Lebowski?").sheet1

wks.update_acell('B2', "it's down there somewhere, let me take another look.")

# Fetch a cell range
cell_list = wks.range('A1:B7')
```


6.1 API Reference

6.1.1 Top level

```
gsread.oauth(scopes=['https://www.googleapis.com/auth/spreadsheets',  
                    'https://www.googleapis.com/auth/drive'], flow=<function local_server_flow>,  
              credentials_filename='/home/docs/.config/gspread/credentials.json', autho-  
              rized_user_filename='/home/docs/.config/gspread/authorized_user.json')
```

Authenticate with OAuth Client ID.

By default this function will use the local server strategy and open the authorization URL in the user's browser:

```
gc = gspread.oauth()
```

Another option is to run a console strategy. This way, the user is instructed to open the authorization URL in their browser. Once the authorization is complete, the user must then copy & paste the authorization code into the application:

```
gc = gspread.oauth(flow=gspread.auth.console_flow)
```

`scopes` parameter defaults to read/write scope available in `gspread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```
DEFAULT_SCOPES = [  
    'https://www.googleapis.com/auth/spreadsheets',  
    'https://www.googleapis.com/auth/drive'  
]
```

You can also use `gspread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gspread` that updates a spreadsheet **will not work** in this case:

```
gc = gsread.oauth(scopes=gsread.auth.READONLY_SCOPES)

sh = gc.open("A spreadsheet")
sh.sheet1.update('A1', '42')    # <-- this will not work
```

If you're storing your user credentials in a place other than the default, you may provide a path to that file like so:

```
gc = gsread.oauth(
    credentials_filename='/alternative/path/credentials.json',
    authorized_user_filename='/alternative/path/authorized_user.json',
)
```

Parameters

- **scopes** (*list*) – The scopes used to obtain authorization.
- **flow** (*function*) – OAuth flow to use for authentication. Defaults to `local_server_flow()`
- **credentials_filename** (*str*) – Filepath (including name) pointing to a credentials `.json` file. Defaults to `DEFAULT_CREDENTIALS_FILENAME`:
 - `%APPDATA%gsreadcredentials.json` on Windows
 - `~/.config/gspread/credentials.json` everywhere else
- **authorized_user_filename** (*str*) – Filepath (including name) pointing to an authorized user `.json` file. Defaults to `DEFAULT_AUTHORIZED_USER_FILENAME`:
 - `%APPDATA%gsreadauthorized_user.json` on Windows
 - `~/.config/gspread/authorized_user.json` everywhere else

Return type `gsread.Client`

```
gsread.service_account(filename='/home/docs/.config/gspread/service_account.json',
                       scopes=['https://www.googleapis.com/auth/spreadsheets',
                               'https://www.googleapis.com/auth/drive'])
```

Authenticate using a service account.

`scopes` parameter defaults to read/write scope available in `gsread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```
DEFAULT_SCOPES = [
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive'
]
```

You can also use `gsread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gsread` that updates a spreadsheet **will not work** in this case.

Parameters

- **filename** (*str*) – The path to the service account `json` file.
- **scopes** (*list*) – The scopes used to obtain authorization.

Return type `gsread.Client`

`gsread.authorize(credentials, client_class=<class 'gsread.client.Client'>)`

Login to Google API using OAuth2 credentials. This is a shortcut function which instantiates *client_class*. By default *gsread.Client* is used.

Returns *client_class* instance.

6.1.2 Auth

gsread.auth

Simple authentication with OAuth.

`gsread.auth.console_flow(client_config, scopes)`

Run an OAuth flow using a console strategy.

Creates an OAuth flow and runs `google_auth_oauthlib.flow.InstalledAppFlow.run_console`.

Pass this function to `flow` parameter of `oauth()` to run a console strategy.

`gsread.auth.get_config_dir(config_dir_name='gsread', os_is_windows=False)`

Construct a config dir path.

By default:

- `%APPDATA%gsread` on Windows
- `~/.config/gspread` everywhere else

`gsread.auth.local_server_flow(client_config, scopes, port=0)`

Run an OAuth flow using a local server strategy.

Creates an OAuth flow and runs `google_auth_oauthlib.flow.InstalledAppFlow.run_local_server`. This will start a local web server and open the authorization URL in the user's browser.

Pass this function to `flow` parameter of `oauth()` to run a local server flow.

`gsread.auth.oauth(scopes=['https://www.googleapis.com/auth/spreadsheets',
'https://www.googleapis.com/auth/drive'], flow=<function local_server_flow>,
credentials_filename='/home/docs/.config/gspread/credentials.json', autho-
rized_user_filename='/home/docs/.config/gspread/authorized_user.json')`

Authenticate with OAuth Client ID.

By default this function will use the local server strategy and open the authorization URL in the user's browser:

```
gc = gsread.oauth()
```

Another option is to run a console strategy. This way, the user is instructed to open the authorization URL in their browser. Once the authorization is complete, the user must then copy & paste the authorization code into the application:

```
gc = gsread.oauth(flow=gsread.auth.console_flow)
```

`scopes` parameter defaults to read/write scope available in `gsread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```
DEFAULT_SCOPES = [  
    'https://www.googleapis.com/auth/spreadsheets',  
    'https://www.googleapis.com/auth/drive'  
]
```

You can also use `gsread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gsread` that updates a spreadsheet **will not work** in this case:

```
gc = gsread.oauth(scopes=gsread.auth.READONLY_SCOPES)

sh = gc.open("A spreadsheet")
sh.sheet1.update('A1', '42')    # <-- this will not work
```

If you're storing your user credentials in a place other than the default, you may provide a path to that file like so:

```
gc = gsread.oauth(
    credentials_filename='/alternative/path/credentials.json',
    authorized_user_filename='/alternative/path/authorized_user.json',
)
```

Parameters

- **scopes** (*list*) – The scopes used to obtain authorization.
- **flow** (*function*) – OAuth flow to use for authentication. Defaults to `local_server_flow()`
- **credentials_filename** (*str*) – Filepath (including name) pointing to a `credentials.json` file. Defaults to `DEFAULT_CREDENTIALS_FILENAME`:
 - `%APPDATA%gsreadcredentials.json` on Windows
 - `~/.config/gspread/credentials.json` everywhere else
- **authorized_user_filename** (*str*) – Filepath (including name) pointing to an authorized user `.json` file. Defaults to `DEFAULT_AUTHORIZED_USER_FILENAME`:
 - `%APPDATA%gsreadauthorized_user.json` on Windows
 - `~/.config/gspread/authorized_user.json` everywhere else

Return type `gsread.Client`

```
gsread.auth.oauth_from_dict(credentials=None,                authorized_user_info=None,
                             scopes=['https://www.googleapis.com/auth/spreadsheets',
                                       'https://www.googleapis.com/auth/drive'], flow=<function local_server_flow>)
```

Authenticate with OAuth Client ID.

By default this function will use the local server strategy and open the authorization URL in the user's browser:

```
gc = gsread.oauth_from_dict()
```

Another option is to run a console strategy. This way, the user is instructed to open the authorization URL in their browser. Once the authorization is complete, the user must then copy & paste the authorization code into the application:

```
gc = gsread.oauth_from_dict(flow=gsread.auth.console_flow)
```

`scopes` parameter defaults to read/write scope available in `gsread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```

DEFAULT_SCOPES =[
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive'
]

```

You can also use `gsread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gsread` that updates a spreadsheet **will not work** in this case:

```

gc = gsread.oauth_from_dict(scopes=gsread.auth.READONLY_SCOPES)

sh = gc.open("A spreadsheet")
sh.sheet1.update('A1', '42')    # <-- this will not work

```

This function requires you to pass the credentials directly as a python dict. After the first authentication the function returns the authenticated user info, this can be passed again to authenticate the user without the need to run the flow again.

```

gc = gsread.oauth_from_dict(
    credentials=my_creds,
    authorized_user_info=my_auth_user
)

```

Parameters

- **credentials** (*dict*) – The credentials from google cloud platform
- **authorized_user_info** (*dict*) – The authenticated user if already authenticated.
- **scopes** (*list*) – The scopes used to obtain authorization.
- **flow** (*function*) – OAuth flow to use for authentication. Defaults to `local_server_flow()`

Return type `gsread.Client`

```

gsread.auth.service_account(filename='/home/docs/.config/gspread/service_account.json',
                             scopes=['https://www.googleapis.com/auth/spreadsheets',
                                       'https://www.googleapis.com/auth/drive'])

```

Authenticate using a service account.

`scopes` parameter defaults to read/write scope available in `gsread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```

DEFAULT_SCOPES =[
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive'
]

```

You can also use `gsread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gsread` that updates a spreadsheet **will not work** in this case.

Parameters

- **filename** (*str*) – The path to the service account json file.
- **scopes** (*list*) – The scopes used to obtain authorization.

Return type `gsread.Client`

```
gsread.auth.service_account_from_dict (info, scopes=['https://www.googleapis.com/auth/spreadsheets',  
                                                    'https://www.googleapis.com/auth/drive'])
```

Authenticate using a service account (json).

scopes parameter defaults to read/write scope available in `gsread.auth.DEFAULT_SCOPES`. It's read/write for Sheets and Drive API:

```
DEFAULT_SCOPES = [  
    'https://www.googleapis.com/auth/spreadsheets',  
    'https://www.googleapis.com/auth/drive'  
]
```

You can also use `gsread.auth.READONLY_SCOPES` for read only access. Obviously any method of `gsread` that updates a spreadsheet **will not work** in this case.

Parameters

- **(Mapping[str, str]) (info)** – The service account info in Google format
- **scopes (list)** – The scopes used to obtain authorization.

Return type `gsread.Client`

6.1.3 Client

```
class gsread.Client (auth, session=None)
```

An instance of this class communicates with Google API.

Parameters

- **auth** – An OAuth2 credential object. Credential objects created by `google-auth`.
- **session** – (optional) A session object capable of making HTTP requests while persisting some parameters across requests. Defaults to `google.auth.transport.requests.AuthorizedSession`.

```
>>> c = gsread.Client(auth=OAuthCredentialObject)
```

```
copy (file_id, title=None, copy_permissions=False, folder_id=None, copy_comments=True)
```

Copies a spreadsheet.

Parameters

- **file_id (str)** – A key of a spreadsheet to copy.
- **title (str)** – (optional) A title for the new spreadsheet.
- **copy_permissions (bool)** – (optional) If True, copy permissions from the original spreadsheet to the new spreadsheet.
- **folder_id (str)** – Id of the folder where we want to save the spreadsheet.
- **copy_comments (bool)** – (optional) If True, copy the comments from the original spreadsheet to the new spreadsheet.

Returns a Spreadsheet instance.

New in version 3.1.0.

Note: If you're using custom credentials without the Drive scope, you need to add `https://www.googleapis.com/auth/drive` to your OAuth scope in order to use this method.

Example:

```
scope = [
    'https://www.googleapis.com/auth/spreadsheets',
    'https://www.googleapis.com/auth/drive'
]
```

Otherwise, you will get an `Insufficient Permission` error when you try to copy a spreadsheet.

create (*title*, *folder_id=None*)

Creates a new spreadsheet.

Parameters

- **title** (*str*) – A title of a new spreadsheet.
- **folder_id** (*str*) – Id of the folder where we want to save the spreadsheet.

Returns a Spreadsheet instance.

del_spreadsheet (*file_id*)

Deletes a spreadsheet.

Parameters **file_id** (*str*) – a spreadsheet ID (a.k.a file ID).

export (*file_id*, *format='application/pdf'*)

Export the spreadsheet in the format.

Parameters

- **file_id** (*str*) – A key of a spreadsheet to export
- **format** (*str*) – The format of the resulting file. Possible values are:
 - `ExportFormat.PDF`
 - `ExportFormat.EXCEL`
 - `ExportFormat.CSV`
 - `ExportFormat.OPEN_OFFICE_SHEET`
 - `ExportFormat.TSV`
 - `ExportFormat.ZIPPED_HTML`

See [ExportFormat](#) in the Drive API.

Returns bytes A content of the exported file.

import_csv (*file_id*, *data*)

Imports data into the first page of the spreadsheet.

Parameters **data** (*str*) – A CSV string of data.

Example:

```
# Read CSV file contents
content = open('file_to_import.csv', 'r').read()

gc.import_csv(spreadsheet.id, content)
```

Note: This method removes all other worksheets and then entirely replaces the contents of the first worksheet.

insert_permission (*file_id*, *value*, *perm_type*, *role*, *notify=True*, *email_message=None*,
with_link=False)

Creates a new permission for a file.

Parameters

- **file_id** (*str*) – a spreadsheet ID (aka file ID).
- **value** (*str*, *None*) – user or group e-mail address, domain name or *None* for ‘default’ type.
- **perm_type** (*str*) – (optional) The account type. Allowed values are: *user*, *group*, *domain*, *anyone*
- **role** (*str*) – (optional) The primary role for this user. Allowed values are: *owner*, *writer*, *reader*
- **notify** (*bool*) – (optional) Whether to send an email to the target user/domain.
- **email_message** (*str*) – (optional) An email message to be sent if *notify=True*.
- **with_link** (*bool*) – (optional) Whether the link is required for this permission to be active.

Examples:

```
# Give write permissions to otto@example.com

gc.insert_permission(
    '0BmgG6nO_6dprnRRUWl1UFE',
    'otto@example.org',
    perm_type='user',
    role='writer'
)

# Make the spreadsheet publicly readable

gc.insert_permission(
    '0BmgG6nO_6dprnRRUWl1UFE',
    None,
    perm_type='anyone',
    role='reader'
)
```

list_permissions (*file_id*)

Retrieve a list of permissions for a file.

Parameters **file_id** (*str*) – a spreadsheet ID (aka file ID).

list_spreadsheet_files (*title=None*, *folder_id=None*)

List all the spreadsheet files

Will list all spreadsheet files owned by/shared with this user account.

Parameters

- **title** (*str*) – Filter only spreadsheet files with this title

- **folder_id** (*str*) – Only look for spreadsheet files in this folder The parameter *folder_id* can be obtained from the URL when looking at a folder in a web browser as follow: `https://drive.google.com/drive/u/0/folders/<folder_id>`

open (*title*, *folder_id=None*)

Opens a spreadsheet.

Parameters

- **title** (*str*) – A title of a spreadsheet.
- **folder_id** (*str*) – (optional) If specified can be used to filter spreadsheets by parent folder ID.

Returns a Spreadsheet instance.

If there's more than one spreadsheet with same title the first one will be opened.

Raises `gsread.SpreadsheetNotFound` – if no spreadsheet with specified *title* is found.

```
>>> gc.open('My fancy spreadsheet')
```

open_by_key (*key*)

Opens a spreadsheet specified by *key* (a.k.a Spreadsheet ID).

Parameters **key** (*str*) – A key of a spreadsheet as it appears in a URL in a browser.

Returns a Spreadsheet instance.

```
>>> gc.open_by_key('0BmgG6nO_6dprdS1MN3d3MkdPa142WFRrdnRRUWl1UFE')
```

open_by_url (*url*)

Opens a spreadsheet specified by *url*.

Parameters **url** (*str*) – URL of a spreadsheet as it appears in a browser.

Returns a Spreadsheet instance.

Raises `gsread.SpreadsheetNotFound` – if no spreadsheet with specified *url* is found.

```
>>> gc.open_by_url('https://docs.google.com/spreadsheet/ccc?key=0Bm...FE&hl')
```

openall (*title=None*)

Opens all available spreadsheets.

Parameters **title** (*str*) – (optional) If specified can be used to filter spreadsheets by title.

Returns a list of Spreadsheet instances.

remove_permission (*file_id*, *permission_id*)

Deletes a permission from a file.

Parameters

- **file_id** (*str*) – a spreadsheet ID (aka file ID.)
- **permission_id** (*str*) – an ID for the permission.

class `gsread.client.BackoffClient` (*auth*, *session=None*)

BackoffClient is a gsread client with exponential backoff retries.

In case a request fails due to some API rate limits, it will wait for some time, then retry the request.

This can help by trying the request after some time and prevent the application from failing (by raising an `APIError` exception).

Warning: This Client is not production ready yet. Use it at your own risk !

Note: Currently known issues are:

- will retry exponentially even when the error should raise instantly. Due to the Drive API that raises 403 (Forbidden) errors for forbidden access and for api rate limit exceeded.
-

6.1.4 Models

The models represent common spreadsheet entities: *a spreadsheet*, *a worksheet* and *a cell*.

Note: The classes described below should not be instantiated by the end-user. Their instances result from calling other objects' methods.

Spreadsheet

class `gsread.spreadsheet.Spreadsheet` (*client, properties*)

The class that represents a spreadsheet.

add_worksheet (*title, rows, cols, index=None*)

Adds a new worksheet to a spreadsheet.

Parameters

- **title** (*str*) – A title of a new worksheet.
- **rows** (*int*) – Number of rows.
- **cols** (*int*) – Number of columns.
- **index** (*int*) – Position of the sheet.

Returns a newly created *worksheets*.

batch_update (*body*)

Lower-level method that directly calls `spreadsheets/<ID>:batchUpdate`.

Parameters **body** (*dict*) – Request body.

Returns *Response* body.

Return type *dict*

New in version 3.0.

creationTime

Spreadsheet Creation time.

del_worksheet (*worksheet*)

Deletes a worksheet from a spreadsheet.

Parameters **worksheet** (*Worksheet*) – The worksheet to be deleted.

duplicate_sheet (*source_sheet_id, insert_sheet_index=None, new_sheet_id=None, new_sheet_name=None*)

Duplicates the contents of a sheet.

Parameters

- **source_sheet_id** (*int*) – The sheet ID to duplicate.
- **insert_sheet_index** (*int*) – (optional) The zero-based index where the new sheet should be inserted. The index of all sheets after this are incremented.
- **new_sheet_id** (*int*) – (optional) The ID of the new sheet. If not set, an ID is chosen. If set, the ID must not conflict with any existing sheet ID. If set, it must be non-negative.
- **new_sheet_name** (*str*) – (optional) The name of the new sheet. If empty, a new name is chosen for you.

Returns a newly created `gsread.worksheet.Worksheet`

New in version 3.1.

export (*format*=`'application/pdf'`)

Export the spreadsheet in the given format.

Parameters

- **file_id** (*str*) – A key of a spreadsheet to export
- **format** (*str*) – The format of the resulting file. Possible values are:
`ExportFormat.PDF`, `ExportFormat.EXCEL`, `ExportFormat.CSV`,
`ExportFormat.OPEN_OFFICE_SHEET`, `ExportFormat.TSV`, and
`ExportFormat.ZIPPED_HTML`.

See `ExportFormat` in the Drive API. Default value is `ExportFormat.PDF`.

Returns bytes The content of the exported file.

get_worksheet (*index*)

Returns a worksheet with specified *index*.

Parameters **index** (*int*) – An index of a worksheet. Indexes start from zero.

Returns an instance of `gsread.worksheet.Worksheet`.

Raises `WorksheetNotFound`: if can't find the worksheet

Example. To get third worksheet of a spreadsheet:

```
>>> sht = client.open('My fancy spreadsheet')
>>> worksheet = sht.get_worksheet(2)
```

get_worksheet_by_id (*id*)

Returns a worksheet with specified *worksheet id*.

Parameters **id** (*int*) – The id of a worksheet. it can be seen in the url as the value of the parameter 'gid'.

Returns an instance of `gsread.worksheet.Worksheet`.

Raises `WorksheetNotFound`: if can't find the worksheet

Example. To get the worksheet 123456 of a spreadsheet:

```
>>> sht = client.open('My fancy spreadsheet')
>>> worksheet = sht.get_worksheet_by_id(123456)
```

id

Spreadsheet ID.

lastUpdateTime

Spreadsheet last updated time.

list_named_ranges()

Lists the spreadsheet's named ranges.

list_permissions()

Lists the spreadsheet's permissions.

list_protected_ranges(sheetid)

Lists the spreadsheet's protected named ranges

locale

Spreadsheet locale

named_range(named_range)

return a list of `gsread.cell.Cell` objects from the specified named range.

Parameters **name** (*str*) – A string with a named range value to fetch.

remove_permissions(value, role='any')

Remove permissions from a user or domain.

Parameters

- **value** (*str*) – User or domain to remove permissions from
- **role** (*str*) – (optional) Permission to remove. Defaults to all permissions.

Example:

```
# Remove Otto's write permission for this spreadsheet
sh.remove_permissions('otto@example.com', role='writer')

# Remove all Otto's permissions for this spreadsheet
sh.remove_permissions('otto@example.com')
```

reorder_worksheets(worksheets_in_desired_order)

Updates the `index` property of each Worksheets to reflect its index in the provided sequence of Worksheets.

Parameters **worksheets_in_desired_order** – Iterable of Worksheet objects in desired order.

Note: If you omit some of the Spreadsheet's existing Worksheet objects from the provided sequence, those Worksheets will be appended to the end of the sequence in the order that they appear in the list returned by `gsread.spreadsheet.Spreadsheet.worksheets()`.

New in version 3.4.

share(value, perm_type, role, notify=True, email_message=None, with_link=False)

Share the spreadsheet with other accounts.

Parameters

- **value** (*str*, *None*) – user or group e-mail address, domain name or *None* for 'default' type.
- **perm_type** (*str*) – The account type. Allowed values are: `user`, `group`, `domain`, `anyone`.
- **role** (*str*) – The primary role for this user. Allowed values are: `owner`, `writer`, `reader`.
- **notify** (*bool*) – (optional) Whether to send an email to the target user/domain.

- **email_message** (*str*) – (optional) The email to be sent if notify=True
- **with_link** (*bool*) – (optional) Whether the link is required for this permission

Example:

```
# Give Otto a write permission on this spreadsheet
sh.share('otto@example.com', perm_type='user', role='writer')

# Transfer ownership to Otto
sh.share('otto@example.com', perm_type='user', role='owner')
```

sheet1

Shortcut property for getting the first worksheet.

timezone

Spreadsheet timeZone

title

Spreadsheet title.

update_locale (*locale*)

Update the locale of the spreadsheet. Can be any of the ISO 639-1 language codes, such as: de, fr, en, ... Or an ISO 639-2 if no ISO 639-1 exists. Or a combination of the ISO language code and country code, such as en_US, de_CH, fr_FR, ...

Note: Note: when updating this field, not all locales/languages are supported.

update_timezone (*timezone*)

Updates the current spreadsheet timezone. Can be any timezone in CLDR format such as “America/New_York” or a custom time zone such as GMT-07:00.

update_title (*title*)

Renames the spreadsheet.

Parameters **title** (*str*) – A new title.

updated

Deprecated since version 2.0.

This feature is not supported in Sheets API v4.

url

Spreadsheet URL.

values_append (*range, params, body*)

Lower-level method that directly calls `spreadsheets/<ID>/values:append`.

Parameters

- **range** (*str*) – The [A1 notation](#) of a range to search for a logical table of data. Values will be appended after the last row of the table.
- **params** (*dict*) – [Query parameters](#).
- **body** (*dict*) – [Request body](#).

Returns [Response body](#).

Return type `dict`

New in version 3.0.

values_batch_get (*ranges*, *params=None*)

Lower-level method that directly calls `spreadsheets/<ID>/values:batchGet`.

Parameters

- **ranges** – List of ranges in the A1 notation of the values to retrieve.
- **params** (*dict*) – (optional) Query parameters.

Returns Response body.

Return type dict

values_clear (*range*)

Lower-level method that directly calls `spreadsheets/<ID>/values:clear`.

Parameters **range** (*str*) – The A1 notation of the values to clear.

Returns Response body.

Return type dict

New in version 3.0.

values_get (*range*, *params=None*)

Lower-level method that directly calls `spreadsheets/<ID>/values/<range>`.

Parameters

- **range** (*str*) – The A1 notation of the values to retrieve.
- **params** (*dict*) – (optional) Query parameters.

Returns Response body.

Return type dict

New in version 3.0.

values_update (*range*, *params=None*, *body=None*)

Lower-level method that directly calls `spreadsheets/<ID>/values/<range>`.

Parameters

- **range** (*str*) – The A1 notation of the values to update.
- **params** (*dict*) – (optional) Query parameters.
- **body** (*dict*) – (optional) Request body.

Returns Response body.

Return type dict

Example:

```
sh.values_update(  
    'Sheet1!A2',  
    params={  
        'valueInputOption': 'USER_ENTERED'  
    },  
    body={  
        'values': [[1, 2, 3]]  
    }  
)
```

New in version 3.0.

worksheet (*title*)

Returns a worksheet with specified *title*.

Parameters **title** (*str*) – A title of a worksheet. If there're multiple worksheets with the same title, first one will be returned.

Returns an instance of `gsread.worksheet.Worksheet`.

Raises `WorksheetNotFound`: if can't find the worksheet

Example. Getting worksheet named 'Annual bonuses'

```
>>> sht = client.open('Sample one')
>>> worksheet = sht.worksheet('Annual bonuses')
```

worksheets ()

Returns a list of all *worksheets* in a spreadsheet.

Worksheet

ValueRange

class `gsread.worksheet.ValueRange`

The class holds the returned values.

This class inherit the `list` object type. It behaves exactly like a list.

The values are stored in a matrix.

The property `gsread.worksheet.ValueRange.major_dimension()` holds the major dimension of the first list level.

The inner lists will contain the actual values.

Examples:

```
>>> worksheet.get("A1:B2")
[
  [
    "A1 value",
    "B1 values",
  ],
  [
    "A2 value",
    "B2 value",
  ]
]

>>> worksheet.get("A1:B2").major_dimension
ROW
```

Note: This class should never be instantiated manually. It will be instantiated using the response from the sheet API.

first (*default=None*)

Returns the value of a first cell in a range.

If the range is empty, return the default value.

major_dimension

The major dimension of this range

Can be one of:

- **ROW**: the first list level holds rows of values
- **COLUMNS**: the first list level holds columns of values

range

The range of the values

Worksheet

class `gsread.worksheet.Worksheet` (*spreadsheet, properties*)

The class that represents a single sheet in a spreadsheet (aka “worksheet”).

acell (*label, value_render_option='FORMATTED_VALUE'*)

Returns an instance of a `gsread.cell.Cell`.

Parameters

- **label** (*str*) – Cell label in A1 notation Letter case is ignored.
- **value_render_option** ((*ValueRenderOption.formatted* | *ValueRenderOption.unformatted* | *ValueRenderOption.formula*)) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.

Example:

```
>>> worksheet.acell('A1')
<Cell R1C1 "I'm cell A1">
```

add_cols (*cols*)

Adds columns to worksheet.

Parameters **cols** (*int*) – Number of new columns to add.

add_dimension_group_columns (*start, end*)

Group columns in order to hide them in the UI.

Note: API behavior with nested groups and non matching [*start*:*end*] range can be found here [Add Dimension Group Request](#)

Parameters

- **start** (*int*) – The start (inclusive) of the group
- **end** (*int*) – The end (exclusive) of the group

add_dimension_group_rows (*start, end*)

Group rows in order to hide them in the UI.

Note: API behavior with nested groups and non matching [*start*:*end*] range can be found here [Add Dimension Group Request](#)

Parameters

- **start** (*int*) – The start (inclusive) of the group
- **end** (*int*) – The end (exclusive) of the group

add_protected_range (*name*, *editor_users_emails*, *editor_groups_emails*=[], *description*=None, *warning_only*=False, *requesting_user_can_edit*=False)
Add protected range to the sheet. Only the editors can edit the protected range.

Google API will automatically add the owner of this Spreadsheet. The list *editor_users_emails* must at least contain the e-mail address used to open that Spreadsheet.

editor_users_emails must only contain e-mail addresses who already have a write access to the spreadsheet.

Parameters *name* (*str*) – A string with range value in A1 notation, e.g. 'A1:A5'.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

For both A1 and numeric notation:

Parameters

- **editor_users_emails** (*list*) – The email addresses of users with edit access to the protected range. This must include your e-mail address at least.
- **editor_groups_emails** (*list*) – (optional) The email addresses of groups with edit access to the protected range.
- **description** (*str*) – (optional) Description for the protected ranges.
- **warning_only** (*boolean*) – (optional) When true this protected range will show a warning when editing. Defaults to False.
- **requesting_user_can_edit** (*boolean*) – (optional) True if the user who requested this protected range can edit the protected cells. Defaults to False.

add_rows (*rows*)

Adds rows to worksheet.

Parameters *rows* (*int*) – Number of new rows to add.

append_row (*values*, *value_input_option*='RAW', *insert_data_option*=None, *table_range*=None, *include_values_in_response*=False)

Adds a row to the worksheet and populates it with values.

Widens the worksheet if there are more values than columns.

Parameters

- **values** (*list*) – List of values for the new row.
- **value_input_option** (*str*) – (optional) Determines how the input data should be interpreted. See [ValueInputOption](#) in the Sheets API reference.
- **insert_data_option** (*str*) – (optional) Determines how the input data should be inserted. See [InsertDataOption](#) in the Sheets API reference.

- **table_range** (*str*) – (optional) The A1 notation of a range to search for a logical table of data. Values are appended after the last row of the table. Examples: A1 or B2:D4
- **include_values_in_response** (*bool*) – (optional) Determines if the update response should include the values of the cells that were appended. By default, responses do not include the updated values.

append_rows (*values*, *value_input_option*='RAW', *insert_data_option*=None, *table_range*=None, *include_values_in_response*=False)

Adds multiple rows to the worksheet and populates them with values.

Widens the worksheet if there are more values than columns.

Parameters

- **values** (*list*) – List of rows each row is List of values for the new row.
- **value_input_option** (*str*) – (optional) Determines how input data should be interpreted. Possible values are `ValueInputOption.raw` or `ValueInputOption.user_entered`. See [ValueInputOption](#) in the Sheets API.
- **insert_data_option** (*str*) – (optional) Determines how the input data should be inserted. See [InsertDataOption](#) in the Sheets API reference.
- **table_range** (*str*) – (optional) The A1 notation of a range to search for a logical table of data. Values are appended after the last row of the table. Examples: A1 or B2:D4
- **include_values_in_response** (*bool*) – (optional) Determines if the update response should include the values of the cells that were appended. By default, responses do not include the updated values.

batch_clear (*ranges*)

Clears multiple ranges of cells with 1 API call.

Batch Clear

Examples:

```
worksheet.batch_clear(['A1:B1', 'my_range'])

# Note: named ranges are defined in the scope of
# a spreadsheet, so even if `my_range` does not belong to
# this sheet it is still updated
```

New in version 3.8.0.

batch_format (*formats*)

Formats cells in batch.

Parameters **formats** (*list*) – List of ranges to format and they actual format to apply for each range.

The list is composed of dict object with the following keys/values:

- **range** : A1 range notation
- **format** : a valid dict object with the format to apply for that range see [CellFormat](#) in the Sheets API for available fields.

Examples:

```
# Format the range ``A1:C1`` with bold text
# and format the range ``A2:C2`` a font size of 16

formats = [
    {
        "range": "A1:C1",
        "format": {
            "textFormat": {
                "bold": True,
            },
        },
    },
    {
        "range": "A2:C2",
        "format": {
            "textFormat": {
                "fontSize": 16,
            },
        },
    },
]
worksheet.batch_update(formats)
```

New in version 5.4.

batch_get (*ranges*, ***kwargs*)

Returns one or more ranges of values from the sheet.

Parameters

- **ranges** (*list*) – List of cell ranges in the A1 notation or named ranges.
- **major_dimension** (*str*) – (optional) The major dimension that results should use. Either ROWS or COLUMNS.
- **value_render_option** (*str*) – (optional) How values should be represented in the output. The default render option is `ValueRenderOption.formatted`.
- **date_time_render_option** (*str*) – (optional) How dates, times, and durations should be represented in the output. This is ignored if `value_render_option` is `ValueRenderOption.formatted`. The default `dateTime` render option is `SERIAL_NUMBER`.

New in version 3.3.

Examples:

```
# Read values from 'A1:B2' range and 'F12' cell
worksheet.batch_get(['A1:B2', 'F12'])
```

batch_update (*data*, ***kwargs*)

Sets values in one or more cell ranges of the sheet at once.

Parameters

- **data** (*list*) – List of dictionaries in the form of `{'range': '...', 'values': [[.., ..], ...]}` where *range* is a target range to update in A1 notation or a named range, and *values* is a list of lists containing new values.
- **value_input_option** (*str*) – (optional) How the input data should be interpreted. Possible values are:

- `ValueInputOption.raw`

The values the user has entered will not be parsed and will be stored as-is.

- `ValueInputOption.user_entered`

The values will be parsed as if the user typed them into the UI. Numbers will stay as numbers, but strings may be converted to numbers, dates, etc. following the same rules that are applied when entering text into a cell via the Google Sheets UI.

Examples:

```
worksheet.batch_update([{\n    'range': 'A1:B1',\n    'values': [['42', '43']],\n}, {\n    'range': 'my_range',\n    'values': [['44', '45']],\n}])\n\n# Note: named ranges are defined in the scope of\n# a spreadsheet, so even if `my_range` does not belong to\n# this sheet it is still updated
```

New in version 3.3.

cell (row, col, value_render_option='FORMATTED_VALUE')

Returns an instance of a `gsread.cell.Cell` located at row and col column.

Parameters

- **row** (*int*) – Row number.
- **col** (*int*) – Column number.
- **value_render_option** ((`ValueRenderOption.formatted` | `ValueRenderOption.unformatted` | `ValueRenderOption.formula`)) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.

Example:

```
>>> worksheet.cell(1, 1)\n<Cell R1C1 "I'm cell A1">
```

Return type `gsread.cell.Cell`

clear ()

Clears all cells in the worksheet.

clear_basic_filter ()

Remove the basic filter from a worksheet.

New in version 3.4.

clear_note (cell)

Clear a note. The note is attached to a certain cell.

Parameters **cell** (*str*) – A string with cell coordinates in A1 notation, e.g. 'D7'.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

New in version 3.7.

col_count

Number of columns.

Warning: This value is fetched when opening the worksheet. This is not dynamically updated when adding columns, yet.

col_values (*col*, *value_render_option*='FORMATTED_VALUE')

Returns a list of all values in column *col*.

Empty cells in this list will be rendered as `None`.

Parameters

- **col** (*int*) – Column number (one-based).
- **value_render_option** (*str*) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.

columns_auto_resize (*start_column_index*, *end_column_index*)

Updates the size of rows or columns in the worksheet.

Index start from 0

Parameters

- **start_column_index** – The index (inclusive) to begin resizing
- **end_column_index** – The index (exclusive) to finish resizing

New in version 3.4.

Changed in version 5.3.3.

copy_to (*spreadsheet_id*)

Copies this sheet to another spreadsheet.

Parameters **spreadsheet_id** (*str*) – The ID of the spreadsheet to copy the sheet to.

Returns a dict with the response containing information about the newly created sheet.

Return type `dict`

define_named_range (*name*, *range_name*)

Parameters **name** (*str*) – A string with range value in A1 notation, e.g. 'A1:A5'.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

- **range_name** – The name to assign to the range of cells

Returns the response body from the request

Return type `dict`

delete_columns (*start_index*, *end_index=None*)

Deletes multiple columns from the worksheet at the specified index.

Parameters

- **start_index** (*int*) – Index of a first column for deletion.
- **end_index** (*int*) – Index of a last column for deletion. When `end_index` is not specified this method only deletes a single column at `start_index`.

delete_dimension (*dimension*, *start_index*, *end_index=None*)

Deletes multi rows from the worksheet at the specified index.

Parameters

- **dimension** (*str*) – A dimension to delete. `Dimension.rows` or `Dimension.cols`.
- **start_index** (*int*) – Index of a first row for deletion.
- **end_index** (*int*) – Index of a last row for deletion. When `end_index` is not specified this method only deletes a single row at `start_index`.

delete_dimension_group_columns (*start*, *end*)

Delete a grouped columns

Note: API behavior with nested groups and non matching `[start:end[` range can be found here [Delete Dimension Group Request](#)

Parameters

- **start** (*int*) – The start (inclusive) of the group
- **end** (*int*) – The end (exclusive) of the group

delete_dimension_group_rows (*start*, *end*)

Delete a grouped rows

Note: API behavior with nested groups and non matching `[start:end[` range can be found here [Delete Dimension Group Request](#)

Parameters

- **start** (*int*) – The start (inclusive) of the group
- **end** (*int*) – The end (exclusive) of the group

delete_named_range (*named_range_id*)

Parameters **named_range_id** (*str*) – The ID of the named range to delete. Can be obtained with `Spreadsheet.list_named_ranges()`

Returns the response body from the request

Return type `dict`

delete_protected_range (*id*)

Delete protected range identified by the ID *id*.

To retrieve the ID of a protected range use the following method to list them all:
`list_protected_ranges()`

delete_row (*index*)

Deprecated since version 5.0.

Deletes the row from the worksheet at the specified index.

Parameters *index* (*int*) – Index of a row for deletion.

delete_rows (*start_index*, *end_index=None*)

Deletes multiple rows from the worksheet at the specified index.

Parameters

- **start_index** (*int*) – Index of a first row for deletion.
- **end_index** (*int*) – Index of a last row for deletion. When *end_index* is not specified this method only deletes a single row at *start_index*.

Example:

```
# Delete rows 5 to 10 (inclusive)
worksheet.delete_rows(5, 10)

# Delete only the second row
worksheet.delete_rows(2)
```

duplicate (*insert_sheet_index=None*, *new_sheet_id=None*, *new_sheet_name=None*)

Duplicate the sheet.

Parameters

- **insert_sheet_index** (*int*) – (optional) The zero-based index where the new sheet should be inserted. The index of all sheets after this are incremented.
- **new_sheet_id** (*int*) – (optional) The ID of the new sheet. If not set, an ID is chosen. If set, the ID must not conflict with any existing sheet ID. If set, it must be non-negative.
- **new_sheet_name** (*str*) – (optional) The name of the new sheet. If empty, a new name is chosen for you.

Returns a newly created `gsread.worksheet.Worksheet`.

New in version 3.1.

export (*format*)

Deprecated since version 2.0.

This feature is not supported in Sheets API v4.

find (*query*, *in_row=None*, *in_column=None*, *case_sensitive=True*)

Finds the first cell matching the query.

Parameters

- **query** (*str*, *re.RegexObject*) – A literal string to match or compiled regular expression.
- **in_row** (*int*) – (optional) One-based row number to scope the search.

- **in_column** (*int*) – (optional) One-based column number to scope the search.
- **case_sensitive** (*bool*) – (optional) comparison is case sensitive if set to True, case insensitive otherwise. Default is True. Does not apply to regular expressions.

Returns the first matching cell or None otherwise

Return type `gsread.cell.Cell`

findall (*query*, *in_row=None*, *in_column=None*, *case_sensitive=True*)

Finds all cells matching the query.

Returns a list of `gsread.cell.Cell`.

Parameters

- **query** (*str*, *re.RegexObject*) – A literal string to match or compiled regular expression.
- **in_row** (*int*) – (optional) One-based row number to scope the search.
- **in_column** (*int*) – (optional) One-based column number to scope the search.
- **case_sensitive** (*bool*) – (optional) comparison is case sensitive if set to True, case insensitive otherwise. Default is True. Does not apply to regular expressions.

Returns the list of all matching cells or empty list otherwise

Return type `list`

format (*ranges*, *format*)

Format a list of ranges with the given format.

Parameters

- **ranges** (*str/list*) – Target ranges in the A1 notation.
- **cell_format** (*dict*) – Dictionary containing the fields to update. See `CellFormat` in the Sheets API for available fields.

Examples:

```
# Set 'A4' cell's text format to bold
worksheet.format("A4", {"textFormat": {"bold": True}})

# Set 'A1:D4' and 'A10:D10' cells's text format to bold
worksheet.format(["A1:D4", "A10:D10"], {"textFormat": {"bold": True}})

# Color the background of 'A2:B2' cell range in black,
# change horizontal alignment, text color and font size
worksheet.format("A2:B2", {
    "backgroundColor": {
        "red": 0.0,
        "green": 0.0,
        "blue": 0.0
    },
    "horizontalAlignment": "CENTER",
    "textFormat": {
        "foregroundColor": {
            "red": 1.0,
            "green": 1.0,
            "blue": 1.0
        },
        "fontSize": 12,
```

(continues on next page)

(continued from previous page)

```

        "bold": True
    }
})

```

New in version 3.3.

freeze (*rows=None, cols=None*)

Freeze rows and/or columns on the worksheet.

Parameters

- **rows** – Number of rows to freeze.
- **cols** – Number of columns to freeze.

frozen_col_count

Number of frozen columns.

frozen_row_count

Number of frozen rows.

get (*range_name=None, **kwargs*)

Reads values of a single range or a cell of a sheet.

Parameters

- **range_name** (*str*) – (optional) Cell range in the A1 notation or a named range.
- **major_dimension** (*str*) – (optional) The major dimension that results should use. Either ROWS or COLUMNS.
- **value_render_option** (*str*) – (optional) How values should be represented in the output. The default render option is `ValueRenderOption.formatted`.
- **date_time_render_option** (*str*) – (optional) How dates, times, and durations should be represented in the output. This is ignored if `value_render_option` is `ValueRenderOption.formatted`. The default `date_time_render_option` is `SERIAL_NUMBER`.

Return type `gsread.worksheet.ValueRange`

Examples:

```

# Return all values from the sheet
worksheet.get()

# Return value of 'A1' cell
worksheet.get('A1')

# Return values of 'A1:B2' range
worksheet.get('A1:B2')

# Return values of 'my_range' named range
worksheet.get('my_range')

```

New in version 3.3.

get_all_cells ()

Returns a list of all *Cell* of the current sheet.

get_all_records (*empty2zero=False*, *head=1*, *default_blank=""*, *allow_underscores_in_numeric_literals=False*, *numericise_ignore=None*, *value_render_option=None*, *expected_headers=None*)

Returns a list of dictionaries, all of them having the contents of the spreadsheet with the head row as keys and each of these dictionaries holding the contents of subsequent rows of cells as values.

Cell values are numericised (strings that can be read as ints or floats are converted), unless specified in *numericise_ignore*

Parameters

- **empty2zero** (*bool*) – (optional) Determines whether empty cells are converted to zeros.
- **head** (*int*) – (optional) Determines which row to use as keys, starting from 1 following the numeration of the spreadsheet.
- **default_blank** (*str*) – (optional) Determines which value to use for blank cells, defaults to empty string.
- **allow_underscores_in_numeric_literals** (*bool*) – (optional) Allow underscores in numeric literals, as introduced in PEP 515
- **numericise_ignore** (*list*) – (optional) List of ints of indices of the row (starting at 1) to ignore numericising, special use of ['all'] to ignore numericising on all columns.
- **value_render_option** (*str*) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.
- **expected_headers** (*list*) – (optional) List of expected headers, they must be unique.

Note: returned dictionaries will contain all headers even if not included in this list

get_all_values (***kwargs*)

Returns a list of lists containing all cells' values as strings.

This is an alias to [get_values\(\)](#)

Note: This is a legacy method. Use [get_values\(\)](#) instead.

Examples:

```
# Return all values from the sheet
worksheet.get_all_values()

# Is equivalent to
worksheet.get_values()
```

get_note (*cell*)

Get the content of the note located at *cell*, or the empty string if the cell does not have a note.

Parameters **cell** (*str*) – A string with cell coordinates in A1 notation, e.g. 'D7'.

get_values (*range_name=None*, ***kwargs*)

Returns a list of lists containing all values from specified range.

By default values are returned as strings. See *value_render_option* to change the default format.

Parameters

- **range_name** (*str*) – (optional) Cell range in the A1 notation or a named range. If not specified the method returns values from all non empty cells.
- **major_dimension** (*str*) – (optional) The major dimension of the values. *Dimension.rows* (“ROWS”) or *Dimension.cols* (“COLUMNS”). Defaults to *Dimension.rows*
- **value_render_option** (*str*) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.

Possible values are:

ValueRenderOption.formatted (default) Values will be calculated and formatted according to the cell’s formatting. Formatting is based on the spreadsheet’s locale, not the requesting user’s locale.

ValueRenderOption.unformatted Values will be calculated, but not formatted in the reply. For example, if A1 is 1.23 and A2 is =A1 and formatted as currency, then A2 would return the number 1.23.

ValueRenderOption.formula Values will not be calculated. The reply will include the formulas. For example, if A1 is 1.23 and A2 is =A1 and formatted as currency, then A2 would return “=A1”.

Parameters date_time_render_option (*str*) – (optional) How dates, times, and durations should be represented in the output. This is ignored if `value_render_option` is `ValueRenderOption.formatted`. The default `date_time_render_option` is `SERIAL_NUMBER`.

Note: Empty trailing rows and columns will not be included.

Examples:

```
# Return all values from the sheet
worksheet.get_values()

# Return all values from columns "A" and "B"
worksheet.get_values('A:B')

# Return values from range "A2:C10"
worksheet.get_values('A2:C10')

# Return values from named range "my_range"
worksheet.get_values('my_range')

# Return unformatted values (e.g. numbers as numbers)
worksheet.get_values('A2:B4', value_render_option=ValueRenderOption.
    ↪unformatted)

# Return cell values without calculating formulas
worksheet.get_values('A2:B4', value_render_option=ValueRenderOption.formula)
```

hide()

Hides the current worksheet from the UI.

hide_columns (*start, end*)

Explicitly hide the given column index range.

Index start from 0.

Parameters

- **start** (*int*) – The (inclusive) starting column to hide
- **end** (*int*) – The (exclusive) end column to hide

hide_rows (*start, end*)

Explicitly hide the given row index range.

Index start from 0.

Parameters

- **start** (*int*) – The (inclusive) starting row to hide
- **end** (*int*) – The (exclusive) end row to hide

id

Worksheet ID.

index

Worksheet index.

insert_cols (*values, col=1, value_input_option='RAW'*)

Adds multiple new cols to the worksheet at specified index and populates them with values.

Parameters

- **values** (*list*) – List of col lists. a list of lists, with the lists each containing one col's values. Increases the number of rows if there are more values than columns.
- **col** (*int*) – Start col to update (one-based). Defaults to 1 (one).
- **value_input_option** (*str*) – (optional) Determines how input data should be interpreted. Possible values are `ValueInputOption.raw` or `ValueInputOption.user_entered`. See [ValueInputOption](#) in the Sheets API.

insert_note (*cell, content*)

Insert a note. The note is attached to a certain cell.

Parameters

- **cell** (*str*) – A string with cell coordinates in A1 notation, e.g. 'D7'.
- **content** (*str*) – The text note to insert.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

New in version 3.7.

insert_row (*values, index=1, value_input_option='RAW'*)

Adds a row to the worksheet at the specified index and populates it with values.

Widens the worksheet if there are more values than columns.

Parameters

- **values** (*list*) – List of values for the new row.

- **index** (*int*) – (optional) Offset for the newly inserted row.
- **value_input_option** (*str*) – (optional) Determines how input data should be interpreted. Possible values are `ValueInputOption.raw` or `ValueInputOption.user_entered`. See [ValueInputOption](#) in the Sheets API.

insert_rows (*values*, *row=1*, *value_input_option='RAW'*)

Adds multiple rows to the worksheet at the specified index and populates them with values.

Parameters

- **values** (*list*) – List of row lists. a list of lists, with the lists each containing one row's values. Widens the worksheet if there are more values than columns.
- **row** (*int*) – Start row to update (one-based). Defaults to 1 (one).
- **value_input_option** (*str*) – (optional) Determines how input data should be interpreted. Possible values are `ValueInputOption.raw` or `ValueInputOption.user_entered`. See [ValueInputOption](#) in the Sheets API.

list_dimension_group_columns ()

List all the grouped columns in this worksheet

Returns list of the grouped columns

Return type [list](#)

list_dimension_group_rows ()

List all the grouped rows in this worksheet

Returns list of the grouped rows

Return type [list](#)

merge_cells (*name*, *merge_type='MERGE_ALL'*)

Merge cells. There are 3 merge types: `MERGE_ALL`, `MERGE_COLUMNS`, and `MERGE_ROWS`.

Parameters

- **name** (*str*) – Range name in A1 notation, e.g. 'A1:A5'.
- **merge_type** (*str*) – (optional) one of `MERGE_ALL`, `MERGE_COLUMNS`, or `MERGE_ROWS`. Defaults to `MERGE_ROWS`. See [MergeType](#) in the Sheets API reference.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

Returns the response body from the request

Return type [dict](#)

range (*name=""*)

Returns a list of [gsread.cell.Cell](#) objects from a specified range.

Parameters **name** (*str*) – A string with range value in A1 notation (e.g. 'A1:A5') or the named range to fetch.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

Return type *list*

Example:

```
>>> # Using A1 notation
>>> worksheet.range('A1:B7')
[<Cell R1C1 "42">, ...]

>>> # Same with numeric boundaries
>>> worksheet.range(1, 1, 7, 2)
[<Cell R1C1 "42">, ...]

>>> # Named ranges work as well
>>> worksheet.range('NamedRange')
[<Cell R1C1 "42">, ...]

>>> # All values in a single API call
>>> worksheet.range()
[<Cell R1C1 'Hi mom'>, ...]
```

resize (*rows=None, cols=None*)

Resizes the worksheet. Specify one of *rows* or *cols*.

Parameters

- **rows** (*int*) – (optional) New number of rows.
- **cols** (*int*) – (optional) New number columns.

row_count

Number of rows.

row_values (*row, **kwargs*)

Returns a list of all values in a *row*.

Empty cells in this list will be rendered as *None*.

Parameters

- **row** (*int*) – Row number (one-based).
- **value_render_option** (*str*) – (optional) Determines how values should be rendered in the the output. See [ValueRenderOption](#) in the Sheets API.

rows_auto_resize (*start_row_index, end_row_index*)

Updates the size of rows or columns in the worksheet.

Index start from 0

Parameters

- **start_row_index** – The index (inclusive) to begin resizing
- **end_row_index** – The index (exclusive) to finish resizing

New in version 5.3.3.

set_basic_filter (*name=None*)

Add a basic filter to the worksheet. If a range or boundaries are passed, the filter will be limited to the given range.

Parameters **name** (*str*) – A string with range value in A1 notation, e.g. A1:A5.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

New in version 3.4.

show ()

Show the current worksheet in the UI.

sort (**specs, **kwargs*)

Sorts worksheet using given sort orders.

Parameters

- **specs** (*list*) – The sort order per column. Each sort order represented by a tuple where the first element is a column index and the second element is the order itself: 'asc' or 'des'.
- **range** (*str*) – The range to sort in A1 notation. By default sorts the whole sheet excluding frozen rows.

Example:

```
# Sort sheet A -> Z by column 'B'
wks.sort((2, 'asc'))

# Sort range A2:G8 basing on column 'G' A -> Z
# and column 'B' Z -> A
wks.sort((7, 'asc'), (2, 'des'), range='A2:G8')
```

New in version 3.4.

title

Worksheet title.

unhide_columns (*start, end*)

Explicitly unhide the given column index range.

Index start from 0.

Parameters

- **start** (*int*) – The (inclusive) starting column to hide
- **end** (*int*) – The (exclusive) end column to hide

unhide_rows (*start, end*)

Explicitly unhide the given row index range.

Index start from 0.

Parameters

- **start** (*int*) – The (inclusive) starting row to hide

- **end** (*int*) – The (exclusive) end row to hide

unmerge_cells (*name*)

Unmerge cells.

Unmerge previously merged cells.

Parameters **name** (*str*) – Range name in A1 notation, e.g. 'A1:A5'.

Alternatively, you may specify numeric boundaries. All values index from 1 (one):

Parameters

- **first_row** (*int*) – First row number
- **first_col** (*int*) – First column number
- **last_row** (*int*) – Last row number
- **last_col** (*int*) – Last column number

Returns the response body from the request

Return type `dict`

update (*range_name*, *values=None*, ***kwargs*)

Sets values in a cell range of the sheet.

Parameters

- **range_name** (*str*) – The A1 notation of the values to update.
- **values** (*list*) – The data to be written.
- **raw** (*bool*) – The values will not be parsed by Sheets API and will be stored as-is. For example, formulas will be rendered as plain strings. Defaults to `True`. This is a shortcut for the `value_input_option` parameter.
- **major_dimension** (*str*) – (optional) The major dimension of the values. Either `ROWS` or `COLUMNS`.
- **value_input_option** (*str*) – (optional) How the input data should be interpreted. Possible values are:

ValueInputOption.raw The values the user has entered will not be parsed and will be stored as-is.

ValueInputOption.user_entered The values will be parsed as if the user typed them into the UI. Numbers will stay as numbers, but strings may be converted to numbers, dates, etc. following the same rules that are applied when entering text into a cell via the Google Sheets UI.

Examples:

```
# Sets 'Hello world' in 'A2' cell
worksheet.update('A2', 'Hello world')

# Updates cells A1, B1, C1 with values 42, 43, 44 respectively
worksheet.update([42, 43, 44])

# Updates A2 and A3 with values 42 and 43
# Note that update range can be bigger than values array
worksheet.update('A2:B4', [[42], [43]])

# Add a formula
```

(continues on next page)

(continued from previous page)

```
worksheet.update('A5', '=SUM(A1:A4)', row=False)

# Update 'my_range' named range with values 42 and 43
worksheet.update('my_range', [[42], [43]])

# Note: named ranges are defined in the scope of
# a spreadsheet, so even if 'my_range' does not belong to
# this sheet it is still updated
```

New in version 3.3.

update_acell (*label*, *value*)

Updates the value of a cell.

Parameters

- **label** (*str*) – Cell label in A1 notation.
- **value** – New value.

Example:

```
worksheet.update_acell('A1', '42')
```

update_cell (*row*, *col*, *value*)

Updates the value of a cell.

Parameters

- **row** (*int*) – Row number.
- **col** (*int*) – Column number.
- **value** – New value.

Example:

```
worksheet.update_cell(1, 1, '42')
```

update_cells (*cell_list*, *value_input_option*=*'RAW'*)

Updates many cells at once.

Parameters

- **cell_list** (*list*) – List of *gsread.cell.Cell* objects to update.
- **value_input_option** (*str*) – (optional) How the input data should be interpreted. Possible values are:

ValueInputOption.raw The values the user has entered will not be parsed and will be stored as-is.

ValueInputOption.user_entered The values will be parsed as if the user typed them into the UI. Numbers will stay as numbers, but strings may be converted to numbers, dates, etc. following the same rules that are applied when entering text into a cell via the Google Sheets UI.

See [ValueInputOption](#) in the Sheets API.

Example:

```
# Select a range
cell_list = worksheet.range('A1:C7')

for cell in cell_list:
    cell.value = 'O_o'

# Update in batch
worksheet.update_cells(cell_list)
```

update_index (*index*)

Updates the `index` property for the worksheet.

See the [Sheets API documentation](#) for information on how updating the `index` property affects the order of worksheets in a spreadsheet.

To reorder all worksheets in a spreadsheet, see *Spreadsheet.reorder_worksheets*.

New in version 3.4.

update_note (*cell*, *content*)

Update the content of the note located at *cell*.

Parameters

- **cell** (*str*) – A string with cell coordinates in A1 notation, e.g. 'D7'.
- **note** (*str*) – The text note to insert.

New in version 3.7.

update_title (*title*)

Renames the worksheet.

Parameters **title** (*str*) – A new title.

updated

Deprecated since version 2.0.

This feature is not supported in Sheets API v4.

url

Worksheet URL.

Cell

class `gsread.cell.Cell` (*row*, *col*, *value=""*)

An instance of this class represents a single cell in a *Worksheet*.

address

Cell address in A1 notation.

Type *str*

col

Column number of the cell.

Type *int*

classmethod `from_address` (*label*, *value=""*)

Instantiate a new *Cell* from an A1 notation address and a value

Parameters

- **label** (*string*) – the A1 label of the returned cell
- **value** (*string*) – the value for the returned cell

Return type *Cell*

numeric_value

Numeric value of this cell.

Will try to numericise this cell value, upon success will return its numeric value with the appropriate type.

Type *int* or *float*

row

Row number of the cell.

Type *int*

value = None

Value of the cell.

6.1.5 Utils

gsread.utils

This module contains utility functions.

`gsread.utils.al_range_to_grid_range` (*name*, *sheet_id=None*)

Converts a range defined in A1 notation to a dict representing a *GridRange*.

All indexes are zero-based. Indexes are half open, e.g the start index is inclusive and the end index is exclusive: [startIndex, endIndex).

Missing indexes indicate the range is unbounded on that side.

Examples:

```
>>> al_range_to_grid_range('A1:A1')
{'startRowIndex': 0, 'endRowIndex': 1, 'startColumnIndex': 0, 'endColumnIndex': 1}
```

```
>>> al_range_to_grid_range('A3:B4')
{'startRowIndex': 2, 'endRowIndex': 4, 'startColumnIndex': 0, 'endColumnIndex': 2}
```

```
>>> al_range_to_grid_range('A:B')
{'startColumnIndex': 0, 'endColumnIndex': 2}
```

```
>>> al_range_to_grid_range('A5:B')
{'startRowIndex': 4, 'startColumnIndex': 0, 'endColumnIndex': 2}
```

```
>>> al_range_to_grid_range('A1')
{'startRowIndex': 0, 'endRowIndex': 1, 'startColumnIndex': 0, 'endColumnIndex': 1}
```

```
>>> al_range_to_grid_range('A')
{'startColumnIndex': 0, 'endColumnIndex': 1}
```

```
>>> al_range_to_grid_range('1')
{'startRowIndex': 0, 'endRowIndex': 1}
```

```
>>> al_range_to_grid_range('A1', sheet_id=0)
{'sheetId': 0, 'startRowIndex': 0, 'endRowIndex': 1, 'startColumnIndex': 0,
↪ 'endColumnIndex': 1}
```

`gsread.utils.al_to_rowcol(label)`

Translates a cell's address in A1 notation to a tuple of integers.

Parameters `label` (*str*) – A cell label in A1 notation, e.g. 'B1'. Letter case is ignored.

Returns a tuple containing *row* and *column* numbers. Both indexed from 1 (one).

Return type *tuple*

Example:

```
>>> al_to_rowcol('A1')
(1, 1)
```

`gsread.utils.absolute_range_name(sheet_name, range_name=None)`

Return an absolutized path of a range.

```
>>> absolute_range_name("Sheet1", "A1:B1")
"'Sheet1'!A1:B1"
```

```
>>> absolute_range_name("Sheet1", "A1")
"'Sheet1'!A1"
```

```
>>> absolute_range_name("Sheet1")
"'Sheet1'"
```

```
>>> absolute_range_name("Sheet'1")
"'Sheet''1'"
```

```
>>> absolute_range_name("Sheet''1")
"'Sheet''''1'"
```

```
>>> absolute_range_name('"'sheet12"', "A1:B2")
"'''''sheet12''''!A1:B2"
```

`gsread.utils.accepted_kwargs(**default_kwargs)`

```
>>> @accepted_kwargs(d='d', e=None)
... def foo(a, b, c='c', **kwargs):
...     return {
...         'a': a,
...         'b': b,
...         'c': c,
...         'd': kwargs['d'],
...         'e': kwargs['e'],
...     }
... 
```

```
>>> foo('a', 'b')
{'a': 'a', 'b': 'b', 'c': 'c', 'd': 'd', 'e': None}
```

```
>>> foo('a', 'b', 'NEW C')
{'a': 'a', 'b': 'b', 'c': 'NEW C', 'd': 'd', 'e': None}
```

```
>>> foo('a', 'b', e='Not None')
{'a': 'a', 'b': 'b', 'c': 'c', 'd': 'd', 'e': 'Not None'}
```

```
>>> foo('a', 'b', d='NEW D')
{'a': 'a', 'b': 'b', 'c': 'c', 'd': 'NEW D', 'e': None}
```

```
>>> foo('a', 'b', a_typo='IS DETECTED')
Traceback (most recent call last):
...
TypeError: foo got unexpected keyword arguments: ['a_typo']
```

```
>>> foo('a', 'b', d='NEW D', c='THIS DOES NOT WORK BECAUSE OF d')
Traceback (most recent call last):
...
TypeError: foo got unexpected keyword arguments: ['c']
```

`gsread.utils.cast_to_a1_notation` (*method*)

Decorator function casts wrapped arguments to A1 notation in range method calls.

`gsread.utils.cell_list_to_rect` (*cell_list*)

`gsread.utils.convert_credentials` (*credentials*)

`gsread.utils.extract_id_from_url` (*url*)

`gsread.utils.fill_gaps` (*L*, *rows=None*, *cols=None*)

`gsread.utils.filter_dict_values` (*D*)

Return a shallow copy of *D* with all *None* values excluded.

```
>>> filter_dict_values({'a': 1, 'b': 2, 'c': None})
{'a': 1, 'b': 2}
```

```
>>> filter_dict_values({'a': 1, 'b': 2, 'c': 0})
{'a': 1, 'b': 2, 'c': 0}
```

```
>>> filter_dict_values({})
{}
```

```
>>> filter_dict_values({'imnone': None})
{}
```

`gsread.utils.finditem` (*func*, *seq*)

Finds and returns first item in iterable for which `func(item)` is `True`.

`gsread.utils.is_scalar` (*x*)

Return `True` if the value is scalar.

A scalar is not a sequence but can be a string.

```
>>> is_scalar([])
False
```

```
>>> is_scalar([1, 2])
False
```

```
>>> is_scalar(42)
True
```

```
>>> is_scalar('nice string')
True
```

```
>>> is_scalar({})
True
```

```
>>> is_scalar(set())
True
```

`gsread.utils.numericise` (*value*, *empty2zero=False*, *default_blank=""*, *allow_underscores_in_numeric_literals=False*)

Returns a value that depends on the input:

- Float if input is a string that can be converted to Float
- Integer if input is a string that can be converted to integer
- Zero if the input is a string that is empty and `empty2zero` flag is set
- The unmodified input value, otherwise.

Examples:

```
>>> numericise("faa")
'faa'
```

```
>>> numericise("3")
3
```

```
>>> numericise("3_2", allow_underscores_in_numeric_literals=False)
'3_2'
```

```
>>> numericise("3_2", allow_underscores_in_numeric_literals=True)
32
```

```
>>> numericise("3.1")
3.1
```

```
>>> numericise("2,000.1")
2000.1
```

```
>>> numericise("", empty2zero=True)
0
```

```
>>> numericise("", empty2zero=False)
''
```

```
>>> numericise("", default_blank=None)
>>>
```

```
>>> numericise("", default_blank="foo")
'foo'
```

```
>>> numericise("")
''
```

```
>>> numericise(None)
>>>
```

`gsread.utils.numericise_all(input, empty2zero=False, default_blank="", allow_underscores_in_numeric_literals=False, ignore=None)`
Returns a list of numericised values from strings except those from the row specified as ignore.

Parameters

- **input** (*list*) – Input row
- **empty2zero** (*bool*) – (optional) Whether or not to return empty cells as 0 (zero). Defaults to False.
- **default_blank** (*str*) – Which value to use for blank cells, defaults to empty string.
- **allow_underscores_in_numeric_literals** (*bool*) – Whether or not to allow visual underscores in numeric literals
- **ignore** (*list*) – List of ints of indices of the row (index 1) to ignore numericising.

`gsread.utils.quote(value, safe=",", encoding='utf-8')`

`gsread.utils.rightpad(row, max_len)`

`gsread.utils.rowcol_to_a1(row, col)`

Translates a row and column cell address to A1 notation.

Parameters

- **row** (*int*, *str*) – The row of the cell to be converted. Rows start at index 1.
- **col** – The column of the cell to be converted. Columns start at index 1.

Returns a string containing the cell's coordinates in A1 notation.

Example:

```
>>> rowcol_to_a1(1, 1)
A1
```

`gsread.utils.wid_to_gid(wid)`

Calculate gid of a worksheet from its wid.

6.1.6 Exceptions

exception `gsread.exceptions.APIError(response)`

exception `gsread.exceptions.CellNotFound`
Cell lookup exception.

exception `gsread.exceptions.GSreadException`
A base class for gsread's exceptions.

exception `gsread.exceptions.IncorrectCellLabel`
The cell label is incorrect.

exception `gsread.exceptions.NoValidUrlKeyFound`
No valid key found in URL.

exception `gsread.exceptions.SpreadsheetNotFound`
Trying to open non-existent or inaccessible spreadsheet.

exception `gsread.exceptions.UnsupportedExportFormat`
Raised when export format is not supported.

exception `gsread.exceptions.WorksheetNotFound`
Trying to open non-existent or inaccessible worksheet.

Please make sure to take a moment and read the [Code of Conduct](#).

7.1 Ask Questions

The best way to get an answer to a question is to ask on [Stack Overflow](#) with a `gsread` tag.

7.2 Report Issues

Please report bugs and suggest features via the [GitHub Issues](#).

Before opening an issue, search the tracker for possible duplicates. If you find a duplicate, please add a comment saying that you encountered the problem as well.

7.3 Contribute code

Please make sure to read the [Contributing Guide](#) before making a pull request.

CHAPTER 8

Indices and tables

- `genindex`
- `modindex`
- `search`

g

`gspread`, [21](#)

`gspread.auth`, [23](#)

`gspread.utils`, [55](#)

A

`al_range_to_grid_range()` (in module `gspread.utils`), 55
`al_to_rowcol()` (in module `gspread.utils`), 56
`absolute_range_name()` (in module `gspread.utils`), 56
`accepted_kwargs()` (in module `gspread.utils`), 56
`acell()` (`gspread.worksheet.Worksheet` method), 36
`add_cols()` (`gspread.worksheet.Worksheet` method), 36
`add_dimension_group_columns()` (`gspread.worksheet.Worksheet` method), 36
`add_dimension_group_rows()` (`gspread.worksheet.Worksheet` method), 36
`add_protected_range()` (`gspread.worksheet.Worksheet` method), 37
`add_rows()` (`gspread.worksheet.Worksheet` method), 37
`add_worksheet()` (`gspread.spreadsheet.Spreadsheet` method), 30
`address` (`gspread.cell.Cell` attribute), 54
`APIError`, 59
`append_row()` (`gspread.worksheet.Worksheet` method), 37
`append_rows()` (`gspread.worksheet.Worksheet` method), 38
`authorize()` (in module `gspread`), 22

B

`BackoffClient` (class in `gspread.client`), 29
`batch_clear()` (`gspread.worksheet.Worksheet` method), 38
`batch_format()` (`gspread.worksheet.Worksheet` method), 38
`batch_get()` (`gspread.worksheet.Worksheet` method), 39

`batch_update()` (`gspread.spreadsheet.Spreadsheet` method), 30
`batch_update()` (`gspread.worksheet.Worksheet` method), 39

C

`cast_to_al_notation()` (in module `gspread.utils`), 57
`Cell` (class in `gspread.cell`), 54
`cell()` (`gspread.worksheet.Worksheet` method), 40
`cell_list_to_rect()` (in module `gspread.utils`), 57
`CellNotFound`, 59
`clear()` (`gspread.worksheet.Worksheet` method), 40
`clear_basic_filter()` (`gspread.worksheet.Worksheet` method), 40
`clear_note()` (`gspread.worksheet.Worksheet` method), 40
`Client` (class in `gspread`), 26
`col` (`gspread.cell.Cell` attribute), 54
`col_count` (`gspread.worksheet.Worksheet` attribute), 41
`col_values()` (`gspread.worksheet.Worksheet` method), 41
`columns_auto_resize()` (`gspread.worksheet.Worksheet` method), 41
`console_flow()` (in module `gspread.auth`), 23
`convert_credentials()` (in module `gspread.utils`), 57
`copy()` (`gspread.Client` method), 26
`copy_to()` (`gspread.worksheet.Worksheet` method), 41
`create()` (`gspread.Client` method), 27
`creationTime` (`gspread.spreadsheet.Spreadsheet` attribute), 30

D

`define_named_range()` (`gspread.worksheet.Worksheet` method), 41

[del_spreadsheet\(\)](#) (*gsread.Client method*), 27
[del_worksheet\(\)](#) (*gsread.spreadsheet.Spreadsheet method*), 30
[delete_columns\(\)](#) (*gsread.worksheet.Worksheet method*), 42
[delete_dimension\(\)](#) (*gsread.worksheet.Worksheet method*), 42
[delete_dimension_group_columns\(\)](#) (*gsread.worksheet.Worksheet method*), 42
[delete_dimension_group_rows\(\)](#) (*gsread.worksheet.Worksheet method*), 42
[delete_named_range\(\)](#) (*gsread.worksheet.Worksheet method*), 42
[delete_protected_range\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[delete_row\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[delete_rows\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[duplicate\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[duplicate_sheet\(\)](#) (*gsread.spreadsheet.Spreadsheet method*), 30

E

[export\(\)](#) (*gsread.Client method*), 27
[export\(\)](#) (*gsread.spreadsheet.Spreadsheet method*), 31
[export\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[extract_id_from_url\(\)](#) (*in module gsread.utils*), 57

F

[fill_gaps\(\)](#) (*in module gsread.utils*), 57
[filter_dict_values\(\)](#) (*in module gsread.utils*), 57
[find\(\)](#) (*gsread.worksheet.Worksheet method*), 43
[findall\(\)](#) (*gsread.worksheet.Worksheet method*), 44
[finditem\(\)](#) (*in module gsread.utils*), 57
[first\(\)](#) (*gsread.worksheet.ValueRange method*), 35
[format\(\)](#) (*gsread.worksheet.Worksheet method*), 44
[freeze\(\)](#) (*gsread.worksheet.Worksheet method*), 45
[from_address\(\)](#) (*gsread.cell.Cell class method*), 54
[frozen_col_count](#) (*gsread.worksheet.Worksheet attribute*), 45
[frozen_row_count](#) (*gsread.worksheet.Worksheet attribute*), 45

G

[get\(\)](#) (*gsread.worksheet.Worksheet method*), 45
[get_all_cells\(\)](#) (*gsread.worksheet.Worksheet method*), 45
[get_all_records\(\)](#) (*gsread.worksheet.Worksheet method*), 45
[get_all_values\(\)](#) (*gsread.worksheet.Worksheet method*), 46
[get_config_dir\(\)](#) (*in module gsread.auth*), 23
[get_note\(\)](#) (*gsread.worksheet.Worksheet method*), 46
[get_values\(\)](#) (*gsread.worksheet.Worksheet method*), 46
[get_worksheet\(\)](#) (*gsread.spreadsheet.Spreadsheet method*), 31
[get_worksheet_by_id\(\)](#) (*gsread.spreadsheet.Spreadsheet method*), 31
[gsread](#) (*module*), 21
[gsread.auth](#) (*module*), 23
[gsread.utils](#) (*module*), 55
[GSpreadException](#), 59

H

[hide\(\)](#) (*gsread.worksheet.Worksheet method*), 47
[hide_columns\(\)](#) (*gsread.worksheet.Worksheet method*), 47
[hide_rows\(\)](#) (*gsread.worksheet.Worksheet method*), 48

I

[id](#) (*gsread.spreadsheet.Spreadsheet attribute*), 31
[id](#) (*gsread.worksheet.Worksheet attribute*), 48
[import_csv\(\)](#) (*gsread.Client method*), 27
[IncorrectCellLabel](#), 59
[index](#) (*gsread.worksheet.Worksheet attribute*), 48
[insert_cols\(\)](#) (*gsread.worksheet.Worksheet method*), 48
[insert_note\(\)](#) (*gsread.worksheet.Worksheet method*), 48
[insert_permission\(\)](#) (*gsread.Client method*), 28
[insert_row\(\)](#) (*gsread.worksheet.Worksheet method*), 48
[insert_rows\(\)](#) (*gsread.worksheet.Worksheet method*), 49
[is_scalar\(\)](#) (*in module gsread.utils*), 57

L

[lastUpdateTime](#) (*gsread.spreadsheet.Spreadsheet attribute*), 31
[list_dimension_group_columns\(\)](#) (*gsread.worksheet.Worksheet method*), 49

`list_dimension_group_rows()`
 (*gsread.worksheet.Worksheet* *method*),
 49

`list_named_ranges()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 32

`list_permissions()` (*gsread.Client* *method*), 28

`list_permissions()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 32

`list_protected_ranges()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 32

`list_spreadsheet_files()` (*gsread.Client*
 method), 28

`local_server_flow()` (*in module gsread.auth*),
 23

`locale` (*gsread.spreadsheet.Spreadsheet* *attribute*), 32

M

`major_dimension` (*gsread.worksheet.ValueRange*
 attribute), 35

`merge_cells()` (*gsread.worksheet.Worksheet*
 method), 49

N

`named_range()` (*gsread.spreadsheet.Spreadsheet*
 method), 32

`NoValidUrlKeyFound`, 60

`numeric_value` (*gsread.cell.Cell* *attribute*), 55

`numericise()` (*in module gsread.utils*), 58

`numericise_all()` (*in module gsread.utils*), 59

O

`oauth()` (*in module gsread*), 21

`oauth()` (*in module gsread.auth*), 23

`oauth_from_dict()` (*in module gsread.auth*), 24

`open()` (*gsread.Client* *method*), 29

`open_by_key()` (*gsread.Client* *method*), 29

`open_by_url()` (*gsread.Client* *method*), 29

`openall()` (*gsread.Client* *method*), 29

Q

`quote()` (*in module gsread.utils*), 59

R

`range` (*gsread.worksheet.ValueRange* *attribute*), 36

`range()` (*gsread.worksheet.Worksheet* *method*), 49

`remove_permission()` (*gsread.Client* *method*), 29

`remove_permissions()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 32

`reorder_worksheets()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 32

`resize()` (*gsread.worksheet.Worksheet* *method*), 50

`rightpad()` (*in module gsread.utils*), 59

`row` (*gsread.cell.Cell* *attribute*), 55

`row_count` (*gsread.worksheet.Worksheet* *attribute*),
 50

`row_values()` (*gsread.worksheet.Worksheet*
 method), 50

`rowcol_to_al()` (*in module gsread.utils*), 59

`rows_auto_resize()`
 (*gsread.worksheet.Worksheet* *method*),
 50

S

`service_account()` (*in module gsread*), 22

`service_account()` (*in module gsread.auth*), 25

`service_account_from_dict()` (*in module*
 gsread.auth), 25

`set_basic_filter()`
 (*gsread.worksheet.Worksheet* *method*),
 50

`share()` (*gsread.spreadsheet.Spreadsheet* *method*), 32

`sheet1` (*gsread.spreadsheet.Spreadsheet* *attribute*), 33

`show()` (*gsread.worksheet.Worksheet* *method*), 51

`sort()` (*gsread.worksheet.Worksheet* *method*), 51

`Spreadsheet` (*class in gsread.spreadsheet*), 30

`SpreadsheetNotFound`, 60

T

`timezone` (*gsread.spreadsheet.Spreadsheet* *attribute*),
 33

`title` (*gsread.spreadsheet.Spreadsheet* *attribute*), 33

`title` (*gsread.worksheet.Worksheet* *attribute*), 51

U

`unhide_columns()` (*gsread.worksheet.Worksheet*
 method), 51

`unhide_rows()` (*gsread.worksheet.Worksheet*
 method), 51

`unmerge_cells()` (*gsread.worksheet.Worksheet*
 method), 52

`UnsupportedExportFormat`, 60

`update()` (*gsread.worksheet.Worksheet* *method*), 52

`update_acell()` (*gsread.worksheet.Worksheet*
 method), 53

`update_cell()` (*gsread.worksheet.Worksheet*
 method), 53

`update_cells()` (*gsread.worksheet.Worksheet*
 method), 53

`update_index()` (*gsread.worksheet.Worksheet*
 method), 54

`update_locale()` (*gsread.spreadsheet.Spreadsheet*
 method), 33

`update_note()` (*gsread.worksheet.Worksheet*
 method), 54

`update_timezone()`
 (*gsread.spreadsheet.Spreadsheet* *method*), 33

`update_title()` (*gsread.spreadsheet.Spreadsheet method*), 33
`update_title()` (*gsread.worksheet.Worksheet method*), 54
`updated` (*gsread.spreadsheet.Spreadsheet attribute*), 33
`updated` (*gsread.worksheet.Worksheet attribute*), 54
`url` (*gsread.spreadsheet.Spreadsheet attribute*), 33
`url` (*gsread.worksheet.Worksheet attribute*), 54

V

`value` (*gsread.cell.Cell attribute*), 55
`ValueRange` (*class in gsread.worksheet*), 35
`values_append()` (*gsread.spreadsheet.Spreadsheet method*), 33
`values_batch_get()` (*gsread.spreadsheet.Spreadsheet method*), 33
`values_clear()` (*gsread.spreadsheet.Spreadsheet method*), 34
`values_get()` (*gsread.spreadsheet.Spreadsheet method*), 34
`values_update()` (*gsread.spreadsheet.Spreadsheet method*), 34

W

`wid_to_gid()` (*in module gsread.utils*), 59
`Worksheet` (*class in gsread.worksheet*), 36
`worksheet()` (*gsread.spreadsheet.Spreadsheet method*), 34
`WorksheetNotFound`, 60
`worksheets()` (*gsread.spreadsheet.Spreadsheet method*), 35