
Airtable Python Wrapper Documentation

Release

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Version:

For more information about the Airtable API see the [Airtable API Docs](#)

CHAPTER 1

Installation

```
>>> pip install airtable-python-wrapper
```

2.1 Airtable Class

2.1.1 Overview

Airtable Class Instance

```
>>> airtable = Airtable('base_key', 'table_name')
>>> airtable.get_all()
[{'id': 'rec123asa23', 'fields': {'Column': 'Value'}, ...}]
```

For more information on Api Key and authentication see the [Airtable Authentication](#).

Examples

For a full list of available methods see the [Airtable](#) class below. For more details on the Parameter filters see the documentation on the available [Parameter Filters](#) as well as the [Airtable API Docs](#)

Record/Page Iterator:

```
>>> for page in airtable.get_iter(view='ViewName', sort='COLUMN_A'):
...     for record in page:
...         value = record['fields']['COLUMN_A']
```

Get all Records:

```
>>> airtable.get_all(view='ViewName', sort='COLUMN_A')
[{'id': 'rec123asa23', 'fields': {'COLUMN_A': 'Value', ...}, ... ]
```

Search:

```
>>> airtable.search('ColumnA', 'SeachValue')
```

Formulas:

```
>>> airtable.get_all(formula="FIND('DUP', {COLUMN_STR})=1")
```

Insert:

```
>>> airtable.insert({'First Name', 'John'})
```

Delete:

```
>>> airtable.delete('recwPQIfs4wKPyc9D')
```

You can see the Airtable Class in action in this [Jupyter Notebook](#)

Return Values

Return Values: when records are returned, they will most often be a list of Airtable records (dictionary) in a format similar to this:

```
>>> [{
...     "records": [
...         {
...             "id": "recwPQIfs4wKPyc9D",
...             "fields": {
...                 "COLUMN_ID": "1",
...             },
...             "createdTime": "2017-03-14T22:04:31.000Z"
...         },
...         {
...             "id": "rechOLltN9SpPHq5o",
...             "fields": {
...                 "COLUMN_ID": "2",
...             },
...             "createdTime": "2017-03-20T15:21:50.000Z"
...         },
...         {
...             "id": "rec5eR7IzKSAOBHCz",
...             "fields": {
...                 "COLUMN_ID": "3",
...             },
...             "createdTime": "2017-08-05T21:47:52.000Z"
...         }
...     ],
...     "offset": "rec5eR7IzKSAOBHCz"
... }, ... ]
```

2.1.2 Class API

class `airtable.Airtable` (*base_key*, *table_name*, *api_key=None*)

`__init__(base_key, table_name, api_key=None)`

If `api_key` is not provided, `AirtableAuth` will attempt to use `os.environ['AIRTABLE_API_KEY']`

`batch_delete(record_ids)`

Calls `delete` repetitively, following set API Rate Limit (5/sec) To change the rate limit set value of `airtable.API_LIMIT` to the time in seconds it should sleep before calling the function again.

```
>>> record_ids = ['recwPQIfs4wKPyc9D', 'recwDxIfs3wDPyc3F']
>>> airtable.batch_delete(records)
```

Parameters `records` (list) – Record Ids to delete

Returns list of records deleted

Return type records (list)

`batch_insert(records)`

Calls `insert` repetitively, following set API Rate Limit (5/sec) To change the rate limit use `airtable.API_LIMIT = 0.2` (5 per second)

```
>>> records = [{'Name': 'John'}, {'Name': 'Marc'}]
>>> airtable.batch_insert(records)
```

Parameters `records` (list) – Records to insert

Returns list of added records

Return type records (list)

`delete(record_id)`

Deletes a record by its id

```
>>> record = airtable.match('Employee Id', 'DD13332454')
>>> airtable.delete(record['id'])
```

Parameters `record_id` (str) – Airtable record id

Returns Deleted Record

Return type record (dict)

`delete_by_field(field_name, field_value, **options)`

Deletes first record to match provided `field_name` and `field_value`.

```
>>> record = airtable.delete_by_field('Employee Id', 'DD13332454')
```

Parameters

- **field_name** (str) – Name of field to match (column name).
- **field_value** (str) – Value of field to match.

Keyword Arguments

- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).

Returns Deleted Record

Return type record (dict)

get (*record_id*)

Retrieves a record by its id

```
>>> record = airtable.get('recwPQIfs4wKPyc9D')
```

Parameters **record_id** (str) – Airtable record id

Returns Record

Return type record (dict)

get_all (***options*)

Retrieves all records repetitively and returns a single list.

```
>>> airtable.get_all()
>>> airtable.get_all(view='MyView', fields=['ColA', '-ColB'])
>>> airtable.get_all(maxRecords=50)
[{'fields': ... }, ...]
```

Keyword Arguments

- **max_records** (int, optional) – The maximum total number of records that will be returned. See [MaxRecordsParam](#)
- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).
- **fields** (str, list, optional) – Name of field or fields to be retrieved. Default is all fields. See [FieldsParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).
- **formula** (str, optional) – Airtable formula. See [FormulaParam](#).

Returns List of Records

Return type records (list)

```
>>> records = get_all(maxRecords=3, view='All')
```

get_iter (***options*)

Record Retriever Iterator

Returns iterator with lists in batches according to pageSize. To get all records at once use [get_all](#)

```
>>> for page in airtable.get_iter():
...     for record in page:
...         print(record)
[{'fields': ... }, ...]
```

Keyword Arguments

- **max_records** (int, optional) – The maximum total number of records that will be returned. See [MaxRecordsParam](#)
- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).

- **page_size** (int, optional) – The number of records returned in each request. Must be less than or equal to 100. Default is 100. See [PageSizeParam](#).
- **fields** (str, list, optional) – Name of field or fields to be retrieved. Default is all fields. See [FieldsParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).
- **formula** (str, optional) – Airtable formula. See [FormulaParam](#).

Returns List of Records, grouped by pageSize

Return type iterator(list)

insert (fields)

Inserts a record

```
>>> record = {'Name': 'John'}
>>> airtable.insert(record)
```

Parameters **fields** (dict) – Fields to insert. Must be dictionary with Column names as Key.

Returns Inserted record

Return type record(dict)

match (field_name, field_value, **options)

Returns first match found in [get_all](#)

```
>>> airtable.match('Name', 'John')
{'fields': {'Name': 'John'}}
```

Parameters

- **field_name** (str) – Name of field to match (column name).
- **field_value** (str) – Value of field to match.

Keyword Arguments

- **max_records** (int, optional) – The maximum total number of records that will be returned. See [MaxRecordsParam](#)
- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).
- **fields** (str, list, optional) – Name of field or fields to be retrieved. Default is all fields. See [FieldsParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).

Returns First record to match the field_value provided

Return type record(dict)

mirror (records, **options)

Deletes all records on table or view and replaces with records.

```
>>> records = [{'Name': 'John'}, {'Name': 'Marc'}]
```

```
>>> record = airtable.mirror(records)
```

If view options are provided, only records visible on that view will be deleted.

```
>>> record = airtable.mirror(records, view='View')
([{'id': 'recwPQIfs4wKPyc9D', ... }], [{'deleted': True, ... }])
```

Parameters `records` (list) – Records to insert

Keyword Arguments

- **max_records** (int, optional) – The maximum total number of records that will be returned. See [MaxRecordsParam](#)
- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).

Returns (new_records, deleted_records)

Return type records (tuple)

record_url (*record_id*)

Builds URL with record id

replace (*record_id*, *fields*)

Replaces a record by its record id. All Fields are updated to match the new `fields` provided. If a field is not included in `fields`, value will bet set to null. To update only selected fields, use [update](#).

```
>>> record = airtable.match('Seat Number', '22A')
>>> fields = {'PassangerName': 'Mike', 'Passport': 'YASD232-23'}
>>> airtable.replace(record['id'], fields)
```

Parameters

- **record_id** (str) – Id of Record to update
- **fields** (dict) – Fields to replace with. Must be dictionary with Column names as Key.

Returns New record

Return type record (dict)

replace_by_field (*field_name*, *field_value*, *fields*, ***options*)

Replaces the first record to match field name and value. All Fields are updated to match the new `fields` provided. If a field is not included in `fields`, value will bet set to null. To update only selected fields, use [update](#).

Parameters

- **field_name** (str) – Name of field to match (column name).
- **field_value** (str) – Value of field to match.
- **fields** (dict) – Fields to replace with. Must be dictionary with Column names as Key.

Keyword Arguments

- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).

Returns New record

Return type record (dict)

search (*field_name*, *field_value*, *record=None*, ***options*)

Returns all matching records found in *get_all*

```
>>> airtable.search('Gender', 'Male')
[{'fields': {'Name': 'John', 'Gender': 'Male'}, ... ]
```

Parameters

- **field_name** (str) – Name of field to match (column name).
- **field_value** (str) – Value of field to match.

Keyword Arguments

- **max_records** (int, optional) – The maximum total number of records that will be returned. See *MaxRecordsParam*
- **view** (str, optional) – The name or ID of a view. See *ViewParam*.
- **fields** (str, list, optional) – Name of field or fields to be retrieved. Default is all fields. See *FieldsParam*.
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See *SortParam*.

Returns All records that matched *field_value*

Return type records (list)

update (*record_id*, *fields*)

Updates a record by its record id. Only Fields passed are updated, the rest are left as is.

```
>>> record = airtable.match('Employee Id', 'DD13332454')
>>> fields = {'Status': 'Fired'}
>>> airtable.update(record['id'], fields)
```

Parameters

- **record_id** (str) – Id of Record to update
- **fields** (dict) – Fields to update. Must be dictionary with Column names as Key

Returns Updated record

Return type record (dict)

update_by_field (*field_name*, *field_value*, *fields*, ***options*)

Updates the first record to match field name and value. Only Fields passed are updated, the rest are left as is.

```
>>> record = {'Name': 'John', 'Tel': '540-255-5522'}
>>> airtable.update_by_field('Name', 'John', record)
```

Parameters

- **field_name** (str) – Name of field to match (column name).
- **field_value** (str) – Value of field to match.
- **fields** (dict) – Fields to update. Must be dictionary with Column names as Key

Keyword Arguments

- **view** (str, optional) – The name or ID of a view. See [ViewParam](#).
- **sort** (list, optional) – List of fields to sort by. Default order is ascending. See [SortParam](#).

Returns Updated record**Return type** record (dict)

2.1.3 Source Code

```
import sys
import requests
from collections import OrderedDict
from requests.exceptions import HTTPError
import posixpath
import time
from six.moves.urllib.parse import unquote, quote

from .auth import AirtableAuth
from .params import AirtableParams

try:
    IS_IPY = sys.implementation.name == 'ironpython'
except AttributeError:
    IS_IPY = False

class Airtable():

    VERSION = 'v0'
    API_BASE_URL = 'https://api.airtable.com/'
    API_LIMIT = 1.0 / 5 # 5 per second
    API_URL = posixpath.join(API_BASE_URL, VERSION)

    def __init__(self, base_key, table_name, api_key=None):
        """
        If api_key is not provided, :any:`AirtableAuth` will attempt
        to use ``os.environ['AIRTABLE_API_KEY']``
        """
        session = requests.Session()
        session.auth = AirtableAuth(api_key=api_key)
        self.session = session
        self.table_name = table_name
        url_safe_table_name = quote(table_name, safe='')
        self.url_table = posixpath.join(self.API_URL, base_key,
                                         url_safe_table_name)
        self.is_authenticated = self.validate_session(self.url_table)

    def validate_session(self, url):
        response = self.session.get(url, params={'maxRecords': 1})
        if response.ok:
            return True
```

```

elif response.status_code == 404:
    raise ValueError('Invalid base or table name: {}'.format(url))
else:
    raise ValueError(
        'Authentication failed: {}'.format(response.reason))

def _process_params(self, params):
    """
    Process params names or values as needed using filters
    """
    new_params = OrderedDict()
    for param_name, param_value in sorted(params.items()):
        param_value = params[param_name]
        ParamClass = AirtableParams._get(param_name)
        new_params.update(ParamClass(param_value).to_param_dict())
    return new_params

def _process_response(self, response):
    try:
        response.raise_for_status()
    except requests.exceptions.HTTPError as exc:
        err_msg = str(exc)

        # Reports Decoded 422 Url for better troubleshooting
        # Disabled in IronPython Bug:
        # https://github.com/IronLanguages/ironpython2/issues/242
        if not IS_IPY and response.status_code == 422:
            err_msg = err_msg.replace(response.url, unquote(response.url))
            err_msg += (' (Decoded URL)')

        # Attempt to get Error message from response, Issue #16
        try:
            error_dict = response.json()
        except json.decoder.JSONDecodeError:
            pass
        else:
            if 'error' in error_dict:
                err_msg += ' [Error: {}]'.format(error_dict['error'])
            raise requests.exceptions.HTTPError(err_msg)
    else:
        return response.json()

def record_url(self, record_id):
    """ Builds URL with record id """
    return posixpath.join(self.url_table, record_id)

def _request(self, method, url, params=None, json_data=None):
    response = self.session.request(method, url, params=params,
                                     json=json_data)
    return self._process_response(response)

def _get(self, url, **params):
    processed_params = self._process_params(params)
    return self._request('get', url, params=processed_params)

def _post(self, url, json_data):
    return self._request('post', url, json_data=json_data)

```

```

def _put(self, url, json_data):
    return self._request('put', url, json_data=json_data)

def _patch(self, url, json_data):
    return self._request('patch', url, json_data=json_data)

def _delete(self, url):
    return self._request('delete', url)

def get(self, record_id):
    """
    Retrieves a record by its id

    >>> record = airtable.get('recwPQIfs4wKPyc9D')

    Args:
        record_id(``str``): Airtable record id

    Returns:
        record (``dict``): Record
    """
    record_url = self.record_url(record_id)
    return self._get(record_url)

def get_iter(self, **options):
    """
    Record Retriever Iterator

    Returns iterator with lists in batches according to pageSize.
    To get all records at once use :any:`get_all`

    >>> for page in airtable.get_iter():
    ...     for record in page:
    ...         print(record)
    [{'fields': ... }, ...]

    Keyword Args:
        max_records (``int``, optional): The maximum total number of
            records that will be returned. See :any:`MaxRecordsParam`
        view (``str``, optional): The name or ID of a view.
            See :any:`ViewParam`.
        page_size (``int``, optional ): The number of records returned
            in each request. Must be less than or equal to 100.
            Default is 100. See :any:`PageSizeParam`.
        fields (``str``, ``list``, optional): Name of field or fields to
            be retrieved. Default is all fields. See :any:`FieldsParam`.
        sort (``list``, optional): List of fields to sort by.
            Default order is ascending. See :any:`SortParam`.
        formula (``str``, optional): Airtable formula.
            See :any:`FormulaParam`.

    Returns:
        iterator (``list``): List of Records, grouped by pageSize

    """
    offset = None
    while True:
        data = self._get(self.url_table, offset=offset, **options)

```

```

        records = data.get('records', [])
        time.sleep(self.API_LIMIT)
        yield records
        offset = data.get('offset')
        if not offset:
            break

def get_all(self, **options):
    """
    Retrieves all records repetitively and returns a single list.

    >>> airtable.get_all()
    >>> airtable.get_all(view='MyView', fields=['ColA', '-ColB'])
    >>> airtable.get_all(maxRecords=50)
    [{'fields': ... }, ...]

    Keyword Args:
        max_records (`int`, optional): The maximum total number of
            records that will be returned. See :any:`MaxRecordsParam`.
        view (`str`, optional): The name or ID of a view.
            See :any:`ViewParam`.
        fields (`str`, `list`, optional): Name of field or fields to
            be retrieved. Default is all fields. See :any:`FieldsParam`.
        sort (`list`, optional): List of fields to sort by.
            Default order is ascending. See :any:`SortParam`.
        formula (`str`, optional): Airtable formula.
            See :any:`FormulaParam`.

    Returns:
        records (`list`): List of Records

    >>> records = get_all(maxRecords=3, view='All')

    """
    all_records = []
    for records in self.get_iter(**options):
        all_records.extend(records)
    return all_records

def match(self, field_name, field_value, **options):
    """
    Returns first match found in :any:`get_all`

    >>> airtable.match('Name', 'John')
    {'fields': {'Name': 'John'}}

    Args:
        field_name (`str`): Name of field to match (column name).
        field_value (`str`): Value of field to match.

    Keyword Args:
        max_records (`int`, optional): The maximum total number of
            records that will be returned. See :any:`MaxRecordsParam`.
        view (`str`, optional): The name or ID of a view.
            See :any:`ViewParam`.
        fields (`str`, `list`, optional): Name of field or fields to
            be retrieved. Default is all fields. See :any:`FieldsParam`.
        sort (`list`, optional): List of fields to sort by.

```

```

        Default order is ascending. See :any:`SortParam`.

Returns:
    record (``dict```): First record to match the field_value provided
    """
    from_name_and_value = AirtableParams.FormulaParam.from_name_and_value
    formula = from_name_and_value(field_name, field_value)
    options['formula'] = formula
    for record in self.get_all(**options):
        return record
    else:
        return {}

def search(self, field_name, field_value, record=None, **options):
    """
    Returns all matching records found in :any:`get_all`

    >>> airtable.search('Gender', 'Male')
    [{'fields': {'Name': 'John', 'Gender': 'Male'}, ... ]

Args:
    field_name (``str```): Name of field to match (column name).
    field_value (``str```): Value of field to match.

Keyword Args:
    max_records (``int```, optional): The maximum total number of
        records that will be returned. See :any:`MaxRecordsParam`
    view (``str```, optional): The name or ID of a view.
        See :any:`ViewParam`.
    fields (``str```, ``list``, optional): Name of field or fields to
        be retrieved. Default is all fields. See :any:`FieldsParam`.
    sort (``list``, optional): List of fields to sort by.
        Default order is ascending. See :any:`SortParam`.

Returns:
    records (``list```): All records that matched ``field_value``

    """
    records = []
    from_name_and_value = AirtableParams.FormulaParam.from_name_and_value
    formula = from_name_and_value(field_name, field_value)
    options['formula'] = formula
    records = self.get_all(**options)
    return records

def insert(self, fields):
    """
    Inserts a record

    >>> record = {'Name': 'John'}
    >>> airtable.insert(record)

Args:
    fields (``dict```): Fields to insert.
        Must be dictionary with Column names as Key.

Returns:
    record (``dict```): Inserted record

```

```

    """
    return self._post(self.url_table, json_data={"fields": fields})

def _batch_request(self, func, iterable):
    """ Internal Function to limit batch calls to API limit """
    responses = []
    for item in iterable:
        responses.append(func(item))
        time.sleep(self.API_LIMIT)
    return responses

def batch_insert(self, records):
    """
    Calls :any:`insert` repetitively, following set API Rate Limit (5/sec)
    To change the rate limit use ``airtable.API_LIMIT = 0.2``
    (5 per second)

    >>> records = [{'Name': 'John'}, {'Name': 'Marc'}]
    >>> airtable.batch_insert(records)

    Args:
        records(``list``): Records to insert

    Returns:
        records (``list``): list of added records

    """
    return self._batch_request(self.insert, records)

def update(self, record_id, fields):
    """
    Updates a record by its record id.
    Only Fields passed are updated, the rest are left as is.

    >>> record = airtable.match('Employee Id', 'DD13332454')
    >>> fields = {'Status': 'Fired'}
    >>> airtable.update(record['id'], fields)

    Args:
        record_id(``str``): Id of Record to update
        fields(``dict``): Fields to update.
            Must be dictionary with Column names as Key

    Returns:
        record (``dict``): Updated record
    """
    record_url = self.record_url(record_id)
    return self._patch(record_url, json_data={"fields": fields})

def update_by_field(self, field_name, field_value, fields, **options):
    """
    Updates the first record to match field name and value.
    Only Fields passed are updated, the rest are left as is.

    >>> record = {'Name': 'John', 'Tel': '540-255-5522'}
    >>> airtable.update_by_field('Name', 'John', record)

```

```

    Args:
        field_name (`str`): Name of field to match (column name).
        field_value (`str`): Value of field to match.
        fields (`dict`): Fields to update.
            Must be dictionary with Column names as Key

    Keyword Args:
        view (`str`, optional): The name or ID of a view.
            See :any:`ViewParam`.
        sort (`list`, optional): List of fields to sort by.
            Default order is ascending. See :any:`SortParam`.

    Returns:
        record (`dict`): Updated record
    """
    record = self.match(field_name, field_value, **options)
    return {} if not record else self.update(record['id'], fields)

def replace(self, record_id, fields):
    """
    Replaces a record by its record id.
    All Fields are updated to match the new ``fields`` provided.
    If a field is not included in ``fields``, value will bet set to null.
    To update only selected fields, use :any:`update`.

    >>> record = airtable.match('Seat Number', '22A')
    >>> fields = {'PassangerName': 'Mike', 'Passport': 'YASD232-23'}
    >>> airtable.replace(record['id'], fields)

    Args:
        record_id (`str`): Id of Record to update
        fields (`dict`): Fields to replace with.
            Must be dictionary with Column names as Key.

    Returns:
        record (`dict`): New record
    """
    record_url = self.record_url(record_id)
    return self._put(record_url, json_data={"fields": fields})

def replace_by_field(self, field_name, field_value, fields, **options):
    """
    Replaces the first record to match field name and value.
    All Fields are updated to match the new ``fields`` provided.
    If a field is not included in ``fields``, value will bet set to null.
    To update only selected fields, use :any:`update`.

    Args:
        field_name (`str`): Name of field to match (column name).
        field_value (`str`): Value of field to match.
        fields (`dict`): Fields to replace with.
            Must be dictionary with Column names as Key.

    Keyword Args:
        view (`str`, optional): The name or ID of a view.
            See :any:`ViewParam`.
        sort (`list`, optional): List of fields to sort by.
            Default order is ascending. See :any:`SortParam`.

```

```

Returns:
    record (`dict`): New record
    """
    record = self.match(field_name, field_value, **options)
    return {} if not record else self.replace(record['id'], fields)

def delete(self, record_id):
    """
    Deletes a record by its id

    >>> record = airtable.match('Employee Id', 'DD13332454')
    >>> airtable.delete(record['id'])

Args:
    record_id (`str`): Airtable record id

Returns:
    record (`dict`): Deleted Record
    """
    record_url = self.record_url(record_id)
    return self._delete(record_url)

def delete_by_field(self, field_name, field_value, **options):
    """
    Deletes first record to match provided `field_name` and
    `field_value`.

    >>> record = airtable.delete_by_field('Employee Id', 'DD13332454')

Args:
    field_name (`str`): Name of field to match (column name).
    field_value (`str`): Value of field to match.

Keyword Args:
    view (`str`, optional): The name or ID of a view.
        See :any:`ViewParam`.
    sort (`list`, optional): List of fields to sort by.
        Default order is ascending. See :any:`SortParam`.

Returns:
    record (`dict`): Deleted Record
    """
    record = self.match(field_name, field_value, **options)
    record_url = self.record_url(record['id'])
    return self._delete(record_url)

def batch_delete(self, record_ids):
    """
    Calls :any:`delete` repetitively, following set API Rate Limit (5/sec)
    To change the rate limit set value of `airtable.API_LIMIT` to
    the time in seconds it should sleep before calling the function again.

    >>> record_ids = ['recwPQIfs4wKPyc9D', 'recwDxIfs3wDPyc3F']
    >>> airtable.batch_delete(records)

Args:
    records (`list`): Record Ids to delete

```

```

Returns:
    records (`list`): list of records deleted

"""
return self._batch_request(self.delete, record_ids)

def mirror(self, records, **options):
    """
    Deletes all records on table or view and replaces with records.

    >>> records = [{'Name': 'John'}, {'Name': 'Marc'}]

    >>> record = airtable.mirror(records)

    If view options are provided, only records visible on that view will
    be deleted.

    >>> record = airtable.mirror(records, view='View')
    (['id': 'recwPQIfs4wKPyc9D', ... ], [{'deleted': True, ... }])

Args:
    records (`list`): Records to insert

Keyword Args:
    max_records (`int`, optional): The maximum total number of
        records that will be returned. See :any:`MaxRecordsParam`
    view (`str`, optional): The name or ID of a view.
        See :any:`ViewParam`.

Returns:
    records (`tuple`): (new_records, deleted_records)
    """

    all_record_ids = [r['id'] for r in self.get_all(**options)]
    deleted_records = self.batch_delete(all_record_ids)
    new_records = self.batch_insert(records)
    return (new_records, deleted_records)

def __repr__(self):
    return '<Airtable table:{}>'.format(self.table_name)

```

2.2 Parameter Filters

2.2.1 Overview

Parameter filters are instantiated internally by using the corresponding keywords.

Filter names (kwargs) can be either the API camelCase name (ie `maxRecords`) or the snake-case equivalent (`max_records`).

Refer to the `Airtable` class to verify which kwargs can be used with each method.

The purpose of these classes is to 1. improve flexibility and ways in which parameter filter values can be passed, and 2. properly format the parameter names and values on the request url.

For more information see the full implementation below.

2.2.2 Parameter Filters

class `airtable.params.AirtableParams`

class `FieldsParam` (*value*)

Fields Param

Kwargs: `fields=`

Only data for fields whose names are in this list will be included in the records. If you don't need every field, you can use this parameter to reduce the amount of data transferred.

Usage:

```
>>> airtable.get(fields='ColumnA')
```

Multiple Columns:

```
>>> airtable.get(fields=['ColumnA', 'ColumnB'])
```

Parameters `fields` (`str`, `list`) – Name of columns you want to retrieve.

class `FormulaParam` (*value*)

Formula Param

Kwargs: `formula=` or `filterByFormula=`

The formula will be evaluated for each record, and if the result is not 0, false, "", NaN, [], or #Error! the record will be included in the response.

If combined with view, only records in that view which satisfy the formula will be returned. For example, to only include records where COLUMN_A isn't empty, pass in: "NOT ({ COLUMN_A } = ' ')"

For more information see [Airtable Docs on formulas](#).

Usage - Text Column is not empty:

```
>>> airtable.get_all(formula="NOT ( { COLUMN_A } = ' ' )")
```

Usage - Text Column contains:

```
>>> airtable.get_all(formula="FIND ( 'SomeSubText', { COLUMN_STR } ) = 1")
```

Parameters `formula` (`str`) – A valid Airtable formula.

static `from_name_and_value` (*field_name*, *field_value*)

Creates a formula to match cells from `field_name` and `value`

class `MaxRecordsParam` (*value*)

Max Records Param

Kwargs: `max_records=` or `maxRecords=`

The maximum total number of records that will be returned.

Usage:

```
>>> airtable.get_all(max_records=10)
```

Parameters `max_records` (int) – The maximum total number of records that will be returned.

class `PageSizeParam`(*value*)

Page Size Param

Kwargs: `page_size=` or `pageSize=`

Limits the maximum number of records returned in each request. Default is 100.

Usage:

```
>>> airtable.get_all(page_size=50)
```

Parameters `page_size` (int) – The number of records returned in each request. Must be less than or equal to 100. Default is 100.

class `SortParam`(*value*)

Sort Param

Kwargs: `sort=`

Specifies how the records will be ordered. If you set the view parameter, the returned records in that view will be sorted by these fields.

If sorting by multiple columns, column names can be passed as a list. Sorting Direction is ascending by default, but can be reversed by prefixing the column name with a minus sign `-`, or passing `COLUMN_NAME, DIRECTION` tuples. Direction options are `asc` and `desc`.

Usage:

```
>>> airtable.get(sort='ColumnA')
```

Multiple Columns:

```
>>> airtable.get(sort=['ColumnA', '-ColumnB'])
```

Explicit Directions:

```
>>> airtable.get(sort=[('ColumnA', 'asc'), ('ColumnB', 'desc')])
```

Parameters `fields` (str, list) – Name of columns and directions.

class `ViewParam`(*value*)

View Param

Kwargs: `view=`

If set, only the records in that view will be returned. The records will be sorted according to the order of the view.

Usage:

```
>>> airtable.get_all(view='My View')
```

Parameters **view** (str) – The name or ID of a view.

2.2.3 Source Code

```
from collections import OrderedDict

class _BaseParam():

    def __init__(self, value):
        self.value = value

    def to_param_dict(self):
        return {self.param_name: self.value}

class _BaseStringArrayParam(_BaseParam):
    """
    Api Expects Array Of Strings:
    >>> ['FieldOne', 'Field2']

    Requests Params Input:
    >>> params={'fields': ['FieldOne', 'FieldTwo']}

    Requests Url Params Encoding:
    >>> ?fields=FieldOne&fields=FieldTwo

    Expected Url Params:
    >>> ?fields[]=FieldOne&fields[]=FieldTwo
    """

    def to_param_dict(self):
        encoded_param = self.param_name + '[]'
        return {encoded_param: self.value}

class _BaseObjectArrayParam(_BaseParam):
    """
    Api Expects Array of Objects:
    >>> [{field: "UUID", direction: "desc"}, {...}]

    Requests Params Input:
    >>> params={'sort': ['FieldOne', '-FieldTwo']}
    or
    >>> params={'sort': [('FieldOne', 'asc'), ('-FieldTwo', 'desc')]}

    Requests Url Params Encoding:
    >>> ?sort=field&sort=direction&sort=field&sort=direction

    Expected Url Params:
```

```

>>> ?sort[0][field]=FieldOne&sort[0][direction]=asc
"""

def to_param_dict(self):
    """ Sorts to ensure Order is consistent for Testing """
    param_dict = {}
    for index, dictionary in enumerate(self.value):
        for key, value in dictionary.items():
            param_name = '{param_name}[{index}][{key}].format(
                                param_name=self.param_name,
                                index=index,
                                key=key)
            param_dict[param_name] = value
    return OrderedDict(sorted(param_dict.items()))

class AirtableParams():

    class MaxRecordsParam(_BaseParam):
        """
        Max Records Param

        Kwargs:
            ``max_records`` or ``maxRecords``

        The maximum total number of records that will be returned.

        Usage:

        >>> airtable.get_all(max_records=10)

        Args:
            max_records (``int``): The maximum total number of records that
            will be returned.

        """

        # Class Input > Output
        # >>> filter = MaxRecordsParam(100)
        # >>> filter.to_param_dict()
        # {'maxRecords': 100}

        param_name = 'maxRecords'
        kwarg = 'max_records'

    class ViewParam(_BaseParam):
        """
        View Param

        Kwargs:
            ``view``

        If set, only the records in that view will be returned.
        The records will be sorted according to the order of the view.

        Usage:

```

```

>>> airtable.get_all(view='My View')

Args:
    view (`str`): The name or ID of a view.

"""

# Class Input > Output
# >>> filter = ViewParam('Name or Id Of View')
# >>> filter.to_param_dict()
# {'view': 'Name or Id Of View'}

param_name = 'view'
kwarg = param_name

class PageSizeParam(_BaseParam):
    """
    Page Size Param

    Kwargs:
        `page_size=` or `pageSize=`

    Limits the maximum number of records returned in each request.
    Default is 100.

    Usage:

    >>> airtable.get_all(page_size=50)

    Args:
        page_size (`int`): The number of records returned in each request.
        Must be less than or equal to 100. Default is 100.

    """
    # Class Input > Output
    # >>> filter = PageSizeParam(50)
    # >>> filter.to_param_dict()
    # {'pageSize': 50}

    param_name = 'pageSize'
    kwarg = 'page_size'

class FormulaParam(_BaseParam):
    """
    Formula Param

    Kwargs:
        `formula=` or `filterByFormula=`

    The formula will be evaluated for each record, and if the result
    is not 0, false, "", NaN, [], or #Error! the record will be included
    in the response.

    If combined with view, only records in that view which satisfy the
    formula will be returned. For example, to only include records where
    `COLUMN_A` isn't empty, pass in: ``"NOT({COLUMN_A}='')``

    For more information see

```

```

`Airtable Docs on formulas. <https://airtable.com/api>`_

Usage - Text Column is not empty:

>>> airtable.get_all(formula="NOT({COLUMN_A}='')")

Usage - Text Column contains:

>>> airtable.get_all(formula="FIND('SomeSubText', {COLUMN_STR})=1")

Args:
    formula (`str`): A valid Airtable formula.

"""

# Class Input > Output
# >>> param = FormulaParams("FIND('DUP', {COLUMN_STR})=1")
# >>> param.to_param_dict()
# {'formula': "FIND('WW')=1"}

param_name = 'filterByFormula'
kwarg = 'formula'

@staticmethod
def from_name_and_value(field_name, field_value):
    """
    Creates a formula to match cells from from field_name and value
    """
    if isinstance(field_value, str):
        field_value = "{}{}".format(field_value)

    formula = "{{{name}}}={value}".format(name=field_name,
                                          value=field_value)

    return formula

class _OffsetParam(_BaseParam):
    """
    Offset Param

    Kwargs:
        ``offset``

    If there are more records what was in the response,
    the response body will contain an offset value.
    To fetch the next page of records,
    include offset in the next request's parameters.

    This is used internally by :any:`get_all` and :any:`get_iter`.

    Usage:

    >>> airtable.get_iter(offset='recjAle5lryYOpMKk')

    Args:
        record_id (`str`, `list`):

    """
    # Class Input > Output

```

```
# >>> filter = _OffsetParam('recqggqThAnETLuH58')
# >>> filter.to_param_dict()
# {'offset': 'recqggqThAnETLuH58'}

param_name = 'offset'
kwarg = param_name

class FieldsParam(_BaseStringArrayParam):
    """
    Fields Param

    Kwargs:
        ``fields``

    Only data for fields whose names are in this list will be included in
    the records. If you don't need every field, you can use this parameter
    to reduce the amount of data transferred.

    Usage:

    >>> airtable.get(fields='ColumnA')

    Multiple Columns:

    >>> airtable.get(fields=['ColumnA', 'ColumnB'])

    Args:
        fields (``str``, ``list``): Name of columns you want to retrieve.

    """

    # Class Input > Output
    # >>> param = FieldsParam(['FieldOne', 'FieldTwo'])
    # >>> param.to_param_dict()
    # {'fields[]': ['FieldOne', 'FieldTwo']}

    param_name = 'fields'
    kwarg = param_name

class SortParam(_BaseObjectArrayParam):
    """
    Sort Param

    Kwargs:
        ``sort``

    Specifies how the records will be ordered. If you set the view
    parameter, the returned records in that view will be sorted by these
    fields.

    If sorting by multiple columns, column names can be passed as a list.
    Sorting Direction is ascending by default, but can be reversed by
    prefixing the column name with a minus sign ``-``, or passing
    ``COLUMN_NAME, DIRECTION`` tuples. Direction options
    are ``asc`` and ``desc``.

    Usage:
```

```

>>> airtable.get(sort='ColumnA')

Multiple Columns:

>>> airtable.get(sort=['ColumnA', '-ColumnB'])

Explicit Directions:

>>> airtable.get(sort=[('ColumnA', 'asc'), ('ColumnB', 'desc')])

Args:
    fields (`str`, `list`): Name of columns and directions.

"""

# Class Input > Output
# >>> filter = SortParam(['field': 'col', 'direction': 'asc'])
# >>> filter.to_param_dict()
# {'sort[0]['field']: 'col', sort[0]['direction']: 'asc'}

param_name = 'sort'
kwarg = param_name

def __init__(self, value):
    # Wraps string into list to avoid string iteration
    if hasattr(value, 'startswith'):
        value = [value]

    self.value = []
    direction = 'asc'

    for item in value:
        if not hasattr(item, 'startswith'):
            field_name, direction = item
        else:
            if item.startswith('-'):
                direction = 'desc'
                field_name = item[1:]
            else:
                field_name = item

        sort_param = {'field': field_name, 'direction': direction}
        self.value.append(sort_param)

    @classmethod
    def _discover_params(cls):
        """
        Returns a dict where filter keyword is key, and class is value.
        To handle param alias (maxRecords or max_records), both versions are
        added.
        """

        try:
            return cls.filters
        except AttributeError:
            filters = {}
            for param_class_name in dir(cls):
                param_class = getattr(cls, param_class_name)

```

```

        if hasattr(param_class, 'kwarg'):
            filters[param_class.kwarg] = param_class
            filters[param_class.param_name] = param_class
        cls.filters = filters
    return cls.filters

    @classmethod
    def _get(cls, kwarg_name):
        """ Returns a Param Class Instance, by its kwarg or param name """
        param_classes = cls._discover_params()
        try:
            param_class = param_classes[kwarg_name]
        except KeyError:
            raise ValueError('invalid param keyword {}'.format(kwarg_name))
        else:
            return param_class

```

2.3 Airtable Authentication

2.3.1 Overview

Authentication is handled by the `Airtable` class. The class can handle authentication automatically if the environment variable `AIRTABLE_API_KEY` is set with your api key.

```
>>> airtable = Airtable(base_key, table_name)
```

Alternatively, you can pass the key explicitly:

```
>>> airtable = Airtable(base_key, table_name, api_key='yourapikey')
```

Note: You can also use this class to handle authentication for you if you are making your own wrapper:

```
>>> auth = AirtableAuth(api_key)
>>> response = requests.get('https://api.airtable.com/v0/{basekey}/{table_name}',
    ↪auth=auth)
```

2.3.2 Authentication Class

```
class airtable.auth.AirtableAuth (api_key=None)
```

```
    __init__ (api_key=None)
```

Authentication used by Airtable Class

Parameters `api_key` (`str`) – Airtable API Key. Optional. If not set, it will look for environment variable `AIRTABLE_API_KEY`

2.3.3 Source Code

```
from __future__ import absolute_import
import os
import requests

class AirtableAuth(requests.auth.AuthBase):

    def __init__(self, api_key=None):
        """
        Authentication used by Airtable Class

        Args:
            api_key (`str`): Airtable API Key. Optional.
                If not set, it will look for
                enviroment variable ``AIRTABLE_API_KEY``
        """
        try:
            self.api_key = api_key or os.environ['AIRTABLE_API_KEY']
        except KeyError:
            raise KeyError('Api Key not found. Pass api_key as a kwarg \
                or set an env var AIRTABLE_API_KEY with your key')

    def __call__(self, request):
        auth_token = {'Authorization': 'Bearer {}'.format(self.api_key)}
        request.headers.update(auth_token)
        return request
```

- [genindex](#)
- [modindex](#)

CHAPTER 3

Release Notes

Release Notes

CHAPTER 4

Questions

Post them over in the project's [Github Page](#)

CHAPTER 5

Contribute

<https://www.github.com/gtalarico/airtable-python-wrapper>

CHAPTER 6

License

MIT License

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