SENDGRID INTEGRATION WITH PYTHON

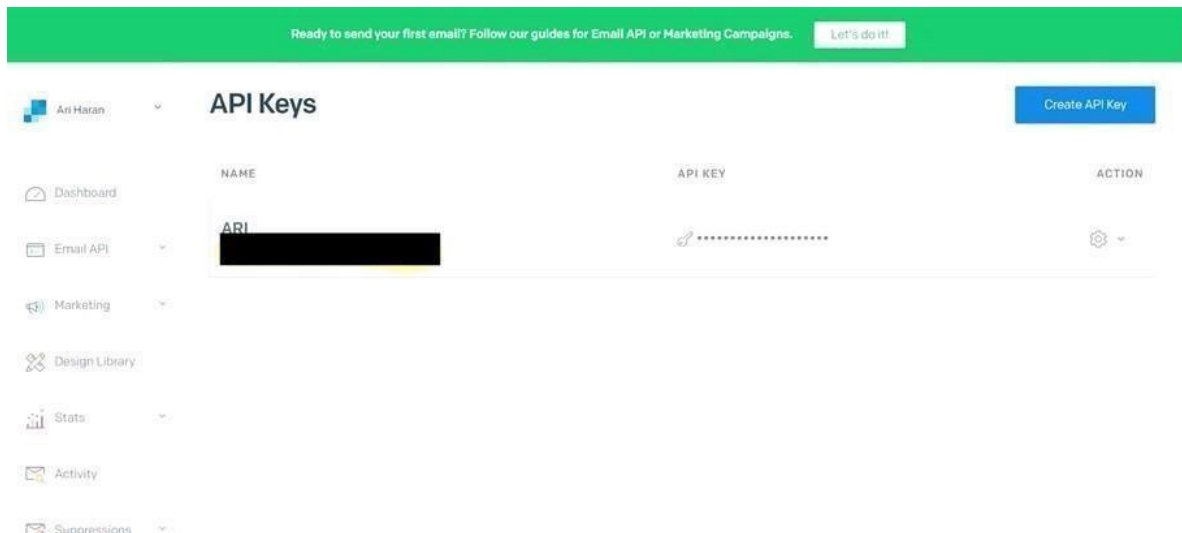| Date	16 November 2022
Project Name	Personal Expense Tracker Application

STEP 1:

REQUIREMENTS:

Python 2.6, 2.7, 3.4 or 3.5.

STEP 2:

Create an API key

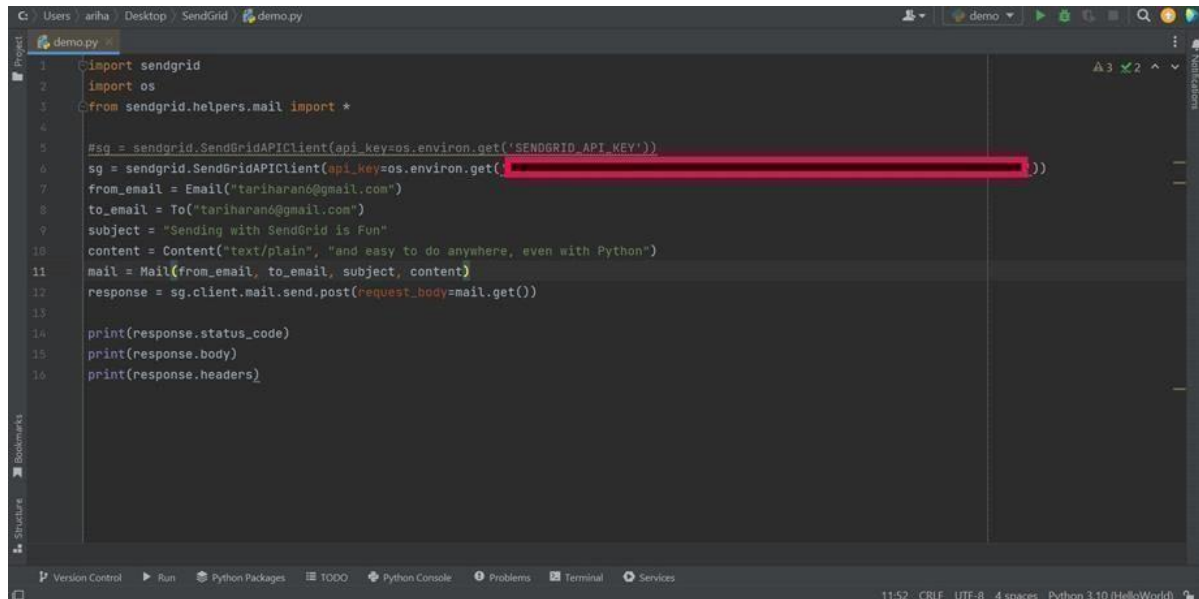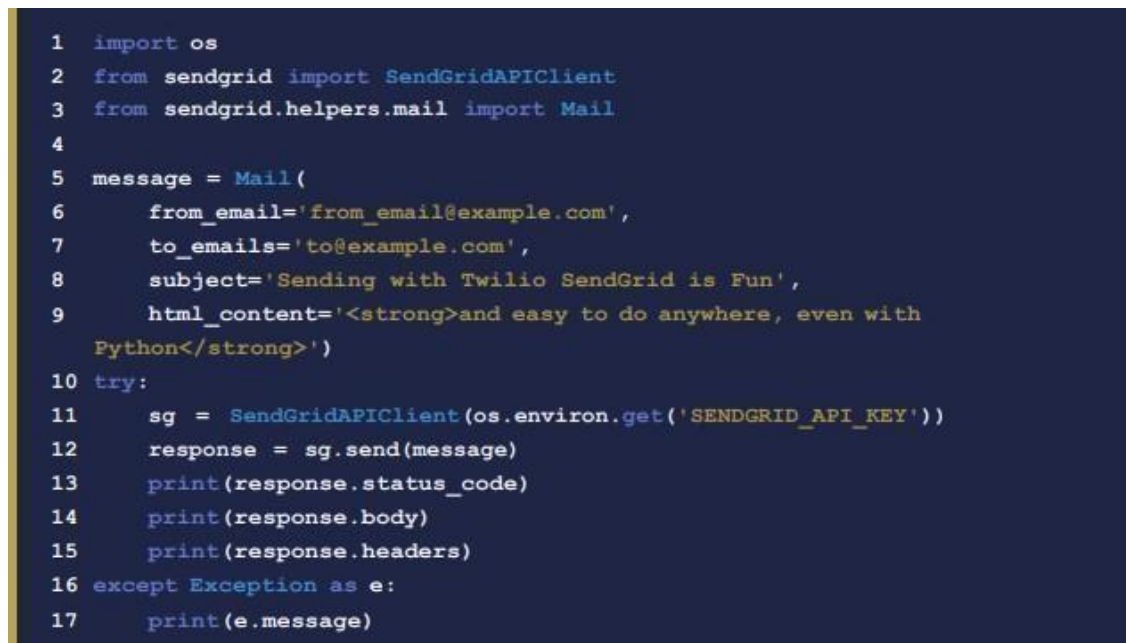## STEP 3:

INSTALL
PAKAGE: > pip installsendgrid

SETP 4:

SEND EMAIL

SENDGRID PYTHON CODE :

```
1  import os
2  from sendgrid import SendGridAPIClient
3  from sendgrid.helpers.mail import Mail
4
5  message = Mail(
6      from_email='from_email@example.com',
7      to_emails='to@example.com',
8      subject='Sending with Twilio SendGrid is Fun',
9      html_content='<strong>and easy to do anywhere, even with
   Python</strong>')
10 try:
11     sg = SendGridAPIClient(os.environ.get('SENDGRID_API_KEY'))
12     response = sg.send(message)
13     print(response.status_code)
14     print(response.body)
15     print(response.headers)
16 except Exception as e:
17     print(e.message)
```

HTTP CLIENT PROGRAM

```python
 1  """HTTP Client library"""
 2  import json
 3  import logging
 4  from .exceptions import handle_error
 5
 6  try:
 7      # Python 3
 8      import urllib.request as urllib
 9      from urllib.parse import urlencode
10      from urllib.error import HTTPError
11  except ImportError:
12      # Python 2
```

```python
13      import urllib2 as urllib
14      from urllib2 import HTTPError
15      from urllib import urlencode
16
17 _logger = logging.getLogger(__name__)
18
19
20 class Response(object):
21      """Holds the response from an API call."""
22
23      def __init__(self, response):
24          """
25          :param response: The return value from a open call
26                           on a urllib.build_opener()
27          :type response:  urllib response object
28          """
29          self._status_code = response.getcode()
30          self._body = response.read()
31          self._headers = response.info()
32
33      @property
34      def status_code(self):
35          """
36          :return: integer, status code of API call
37          """
38          return self._status_code
39
40      @property
41      def body(self):
42          """
43          :return: response from the API
44          """
45          return self._body
46
47      @property
```

```python
48      def headers(self):
49          """
50          :return: dict of response headers
51          """
52          return self._headers
53
54      @property
55      def to_dict(self):
56          """
57          :return: dict of response from the API
58          """
59          if self.body:
60              return json.loads(self.body.decode('utf-8'))
61          else:
62              return None
63
64
65  class Client(object):
66      """Quickly and easily access any REST or REST-like API."""
67
68      # These are the supported HTTP verbs
69      methods = ('delete', 'get', 'patch', 'post', 'put')
70
71      def __init__(self,
72                   host,
73                   request_headers=None,
74                   version=None,
75                   url_path=None,
76                   append_slash=False,
77                   timeout=None):
78          """
79          :param host: Base URL for the api. (e.g.
    https://api.sendgrid.com)
80          :type host:   string
81          :param request_headers: A dictionary of the headers you want
```

```
82                              applied on all calls
83          :type request_headers: dictionary
84          :param version: The version number of the API.
85                          Subclass _build_versioned_url for custom
  behavior.
86                          Or just pass the version as part of the URL
87                          (e.g. client._("/v3"))
88          :type version: integer
89          :param url_path: A list of the url path segments
90          :type url_path: list of strings
91          """
92          self.host = host
93          self.request_headers = request_headers or {}
94          self._version = version
95          # _url_path keeps track of the dynamically built url
96          self._url_path = url_path or []
97          # APPEND SLASH set
98          self.append_slash = append_slash
99          self.timeout = timeout
100
101     def _build_versioned_url(self, url):
102         """Subclass this function for your own needs.
103            Or just pass the version as part of the URL
104            (e.g. client._('/v3'))
105         :param url: URI portion of the full URL being requested
106         :type url: string
107         :return: string
108         """
109         return '{}/v{}{}'.format(self.host, str(self._version),
  url)
110
111     def _build_url(self, query_params):
112         """Build the final URL to be passed to urllib
113
114         :param query_params: A dictionary of all the query
```

```python
     parameters
115         :type query_params: dictionary
116         :return: string
117         """
118         url = ''
119         count = 0
120         while count < len(self._url_path):
121             url += '/{}'.format(self._url_path[count])
122             count += 1
123
124         # add slash
125         if self.append_slash:
126             url += '/'
127
128         if query_params:
129             url_values = urlencode(sorted(query_params.items()),
     True)
130             url = '{}?{}'.format(url, url_values)
131
132         if self._version:
133             url = self._build_versioned_url(url)
134         else:
135             url = '{}{}'.format(self.host, url)
136         return url
137
138     def _update_headers(self, request_headers):
139         """Update the headers for the request
140
141         :param request_headers: headers to set for the API call
142         :type request_headers: dictionary
143         :return: dictionary
144         """
145         self.request_headers.update(request_headers)
146
147     def _build_client(self, name=None):
```

```
148            """Make a new Client object
149
150            :param name: Name of the url segment
151            :type name: string
152            :return: A Client object
153            """
154            url_path = self._url_path + [name] if name else
      self._url_path
155            return Client(host=self.host,
156                          version=self._version,
157                          request_headers=self.request_headers,
158                          url_path=url_path,
159                          append_slash=self.append_slash,
160                          timeout=self.timeout)
161
162        def _make_request(self, opener, request, timeout=None):
163            """Make the API call and return the response. This is
       separated into
164               it's own function, so we can mock it easily for testing.
165
166            :param opener:
167            :type opener:
168            :param request: url payload to request
169            :type request: urllib.Request object
170            :param timeout: timeout value or None
171            :type timeout: float
172            :return: urllib response
173            """
174            timeout = timeout or self.timeout
175            try:
176                return opener.open(request, timeout=timeout)
177            except HTTPError as err:
178                exc = handle_error(err)
179                exc.__cause__ = None
180                _logger.debug('{method} Response: {status}
```

```python
        {body}'.format(
181                    method=request.get_method(),
182                    status=exc.status_code,
183                    body=exc.body))
184            raise exc
185
186    def _(self, name):
187        """Add variable values to the url.
188            (e.g. /your/api/{variable_value}/call)
189            Another example: if you have a Python reserved word,
    such as global,
190            in your url, you must use this method.
191
192        :param name: Name of the url segment
193        :type name: string
194        :return: Client object
195        """
196        return self._build_client(name)
197
198    def __getattr__(self, name):
199        """Dynamically add method calls to the url, then call a
    method.
200            (e.g. client.name.name.method())
201            You can also add a version number by using
    .version(<int>)
202
203        :param name: Name of the url segment or method call
204        :type name: string or integer if name == version
205        :return: mixed
206        """
207        if name == 'version':
208            def get_version(*args, **kwargs):
209                """
210                    :param args: dict of settings
211                    :param kwargs: unused
```

```
212                     :return: string, version
213                     """
214                     self._version = args[0]
215                     return self._build_client()
216               return get_version
217
218          # We have reached the end of the method chain, make the API call
219          if name in self.methods:
220              method = name.upper()
221
222              def http_request(
223                      request_body=None,
224                      query_params=None,
225                      request_headers=None,
226                      timeout=None,
227                      **_):
228                  """Make the API call
229                  :param timeout: HTTP request timeout. Will be propagated to
230                      urllib client
231                  :type timeout: float
232                  :param request_headers: HTTP headers. Will be merged into
233                      current client object state
234                  :type request_headers: dict
235                  :param query_params: HTTP query parameters
236                  :type query_params: dict
237                  :param request_body: HTTP request body
238                  :type request_body: string or json-serializable object
239                  :param kwargs:
240                  :return: Response object
241                  """
242                  if request_headers:
```

```python
243                     self._update_headers(request_headers)
244
245             if request_body is None:
246                 data = None
247             else:
248                 # Don't serialize to a JSON formatted str
249                 # if we don't have a JSON Content-Type
250                 if 'Content-Type' in self.request_headers and \
251                         self.request_headers['Content-Type'] != \
252                         'application/json':
253                     data = request_body.encode('utf-8')
254                 else:
255                     self.request_headers.setdefault(
256                         'Content-Type', 'application/json')
257                     data =
json.dumps(request_body).encode('utf-8')
258
259             opener = urllib.build_opener()
260             request = urllib.Request(
261                 self._build_url(query_params),
262                 headers=self.request_headers,
263                 data=data,
264             )
265             request.get_method = lambda: method
266
267             _logger.debug('{method} Request: {url}'.format(
268                 method=method,
269                 url=request.get_full_url()))
270             if request.data:
271                 _logger.debug('PAYLOAD: {data}'.format(
272                     data=request.data))
273             _logger.debug('HEADERS: {headers}'.format(
274                 headers=request.headers))
275
```

```python
276                     response = Response(
277                         self._make_request(opener, request,
    timeout=timeout)
278                     )
279
280                     _logger.debug('{method} Response: {status}
    {body}'.format(
281                         method=method,
282                         status=response.status_code,
283                         body=response.body))
284
285                     return response
286
287             return http_request
288         else:
289             # Add a segment to the URL
290             return self._(name)
291
292     def __getstate__(self):
293         return self.__dict
294
295     def __setstate__(self, state):
```