Pandas DataFrame to_json

ddas.tech/pandas-dataframe-to_json/

January 4, 2023

In this post we will create a sample data set and will export the same to json using **Pandas DataFrame to_json** function. We will use different orientation mechanisms while exporting to json format. This can be utilized in returning a JSON as the response to a REST API.

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Lets begin with creating a sample data set

```
import pandas as pd
import random
import json

# Lets create the DataFrame
regionCountry = {"AMR":["USA"],"EUROPE":["Austria"]}
cars = ["Audi"]
weeks = ["WK_1","WK_2"]
salesData = []
for region,countries in regionCountry.items():
    for country in countries:
        for car in cars:
            for week in weeks:
                salesRecord =
{"region":region,"country":country,"car":car,"week":week}
                salesRecord["Sales_unit"] = random.randint(100,2000)
                salesData.append(salesRecord)

df = pd.DataFrame(salesData)
print(df)

region  country   car  week  Sales_unit
0     AMR      USA  Audi  WK_1        1752
1     AMR      USA  Audi  WK_2        1815
2  EUROPE  Austria  Audi  WK_1         965
3  EUROPE  Austria  Audi  WK_2         267
```

to_json(orient='records')

```
json_data = df.to_json(orient='records')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
[
    {
        "region": "AMR",
        "country": "USA",
        "car": "Audi",
        "week": "WK_1",
        "Sales_unit": 1898
    },
    {
        "region": "AMR",
        "country": "USA",
        "car": "Audi",
        "week": "WK_2",
        "Sales_unit": 106
    },
    {
        "region": "EUROPE",
        "country": "Austria",
        "car": "Audi",
        "week": "WK_1",
        "Sales_unit": 832
    },
    {
        "region": "EUROPE",
        "country": "Austria",
        "car": "Audi",
        "week": "WK_2",
        "Sales_unit": 1961
    }
]
```

to_json(orient='split')

If the split orientation is used the json is split into columns, index and an list of list of data values

```
json_data = df.to_json(orient='split')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
{
    "columns": [
        "region",
        "country",
        "car",
        "week",
        "Sales_unit"
    ],
    "index": [
        0,
        1,
        2,
        3
    ],
    "data": [
        [
            "AMR",
            "USA",
            "Audi",
            "WK_1",
            1898
        ],
        [
            "AMR",
            "USA",
            "Audi",
            "WK_2",
            106
        ],
        [
            "EUROPE",
            "Austria",
            "Audi",
            "WK_1",
            832
        ],
        [
            "EUROPE",
            "Austria",
            "Audi",
            "WK_2",
            1961
        ]
    ]
}
```


to_json(orient='index')

```
json_data = df.to_json(orient='index')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
{
    "0": {
        "region": "AMR",
        "country": "USA",
        "car": "Audi",
        "week": "WK_1",
        "Sales_unit": 1898
    },
    "1": {
        "region": "AMR",
        "country": "USA",
        "car": "Audi",
        "week": "WK_2",
        "Sales_unit": 106
    },
    "2": {
        "region": "EUROPE",
        "country": "Austria",
        "car": "Audi",
        "week": "WK_1",
        "Sales_unit": 832
    },
    "3": {
        "region": "EUROPE",
        "country": "Austria",
        "car": "Audi",
        "week": "WK_2",
        "Sales_unit": 1961
    }
}
```


to_json(orient='columns')

```
json_data = df.to_json(orient='columns')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
{
    "region": {
        "0": "AMR",
        "1": "AMR",
        "2": "EUROPE",
        "3": "EUROPE"
    },
    "country": {
        "0": "USA",
        "1": "USA",
        "2": "Austria",
        "3": "Austria"
    },
    "car": {
        "0": "Audi",
        "1": "Audi",
        "2": "Audi",
        "3": "Audi"
    },
    "week": {
        "0": "WK_1",
        "1": "WK_2",
        "2": "WK_1",
        "3": "WK_2"
    },
    "Sales_unit": {
        "0": 1898,
        "1": 106,
        "2": 832,
        "3": 1961
    }
}
```


to_json(orient='values')

```
json_data = df.to_json(orient='values')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
[
    [
        "AMR",
        "USA",
        "Audi",
        "WK_1",
        1898
    ],
    [
        "AMR",
        "USA",
        "Audi",
        "WK_2",
        106
    ],
    [
        "EUROPE",
        "Austria",
        "Audi",
        "WK_1",
        832
    ],
    [
        "EUROPE",
        "Austria",
        "Audi",
        "WK_2",
        1961
    ]
]
```


to_json(orient='table')

```
json_data = df.to_json(orient='table')
parsed = json.loads(json_data)
pretty_object = json.dumps(parsed, indent=4)
print(pretty_object)
```

```
{
    "schema": {
        "fields": [
            {
                "name": "index",
                "type": "integer"
            },
            {
                "name": "region",
                "type": "string"
            },
            {
                "name": "country",
                "type": "string"
            },
            {
                "name": "car",
                "type": "string"
            },
            {
                "name": "week",
                "type": "string"
            },
            {
                "name": "Sales_unit",
                "type": "integer"
            }
        ],
        "primaryKey": [
            "index"
        ],
        "pandas_version": "1.4.0"
    },
    "data": [
        {
            "index": 0,
            "region": "AMR",
            "country": "USA",
            "car": "Audi",
            "week": "WK_1",
            "Sales_unit": 1898
        },
        {
            "index": 1,
            "region": "AMR",
            "country": "USA",
            "car": "Audi",
            "week": "WK_2",
            "Sales_unit": 106
        },
        {
            "index": 2,
```

```
            "region": "EUROPE",
            "country": "Austria",
            "car": "Audi",
            "week": "WK_1",
            "Sales_unit": 832
        },
        {
            "index": 3,
            "region": "EUROPE",
            "country": "Austria",
            "car": "Audi",
            "week": "WK_2",
            "Sales_unit": 1961
        }
    ]
}
```