

Dictionaries and DataFrames

Dictionaries are datastructures that do not assume an index value for the data stored in the structures.

```
In [4]: dct = {}
        dct
```

```
Out[4]: {}
```

```
In [5]: dct = {"run": "to move swiftly by foot",
               "walk": "to move slowly or leisurely by foot"}
        dct
```

```
Out[5]: {'run': 'to move swiftly by foot',
         'walk': 'to move slowly or leisurely by foot'}
```

```
In [6]: dct = {"run": {},
               "walk": {}}
        dct
```

```
Out[6]: {'run': {}, 'walk': {}}
```

```
In [10]: dct = {"run": {
                "verb": "to move swiftly by foot",
                "noun": "a period of time while one was running"},
              "walk": {
                "verb": "to move slowly or leisurely by foot",
                "noun": "a period of time while one was walking"}
        }
        dct
```

```
Out[10]: {'run': {'verb': 'to move swiftly by foot',
                  'noun': 'a period of time while one was running'},
          'walk': {'verb': 'to move slowly or leisurely by foot',
                  'noun': 'a period of time while one was walking'}}
```

```
In [12]: import pandas as pd
        df = pd.DataFrame(dct)
        df
```

```
Out[12]:
```

	run	walk
verb	to move swiftly by foot	to move slowly or leisurely by foot
noun	a period of time while one was running	a period of time while one was walking

```
In [13]: # call a coloumn in the df  
df["run"]
```

```
Out[13]: verb          to move swiftly by foot  
noun    a period of time while one was running  
Name: run, dtype: object
```

```
In [14]: df ["walk"]
```

```
Out[14]: verb          to move slowly or leisurely by foot  
noun    a period of time while one was walking  
Name: walk, dtype: object
```

```
In [16]: # call a row in the df  
df.loc["verb"]
```

```
Out[16]: run          to move swiftly by foot  
walk    to move slowly or leisurely by foot  
Name: verb, dtype: object
```

```
In [18]: # call a row in the df  
df.loc["noun"]
```

```
Out[18]: run    a period of time while one was running  
walk    a period of time while one was walking  
Name: noun, dtype: object
```

```
In [20]: # call a particular cell  
df.loc["noun", "walk"]
```

```
Out[20]: 'a period of time while one was walking'
```

```
In [24]: dct = {"Caden": {"Age": 19,
                        "Interesting Fact": " Played Hockey in High School"},
              "Jacob P": {"Age": 21,
                        "Interesting Fact": "Dr. Caton thought my last name was Keterson"},
              "Finnian": {"Age": 21,
                        "Interesting Fact": "Wrestled in highschool"},
              "Genesis": {"Age": 20,
                        "Interesting Fact": "Tore both ACLs"},
              "Sam": {"Age": 23,
                      "Interesting Fact": "Favorite color beige"},
              "Proma": {"Age": 24,
                      "Interesting Fact": "Learned classical dancing for 10 years"},
              "Zach": {"Age": 20,
                      "Interesting Fact": "On the track and field team for long-distance"},
              "Jacob R": {"Age": 20,
                      "Interesting Fact": "Plays classic rock on the guitar"},
              "Brandon": {"Age": 23,
                      "Interesting Fact": "Used play baseball in highschool and other leagues"},
              "Gabe": {"Age": 23,
                      "Interesting Fact": "A double major MIS and Accounting for undergrad"},
              "Drew": {"Age": 49,
                      "Interesting Fact": "Was in the Air Force and freed Keiko (Free Willy)"},
              "Isaac": {"Age": 21,
                      "Interesting Fact": "Traveling to Europe in the Summer 2022"},
              "Kodjo": {"Age": 30,
                      "Interesting Fact": "Wife is a soldier!"}}
```

dct

```
Out[24]: {'Caden': {'Age': 19, 'Interesting Fact': ' Played Hockey in High School'},
          'Jacob P': {'Age': 21,
                     'Interesting Fact': 'Dr. Caton thought my last name was Keterson'},
          'Finnian': {'Age': 21, 'Interesting Fact': 'Wrestled in highschool'},
          'Genesis': {'Age': 20, 'Interesting Fact': 'Tore both ACLs'},
          'Sam': {'Age': 23, 'Interesting Fact': 'Favorite color beige'},
          'Proma': {'Age': 24,
                   'Interesting Fact': 'Learned classical dancing for 10 years'},
          'Zach': {'Age': 20,
                  'Interesting Fact': 'On the track and field team for long-distance'},
          'Jacob R': {'Age': 20,
                     'Interesting Fact': 'Plays classic rock on the guitar'},
          'Brandon': {'Age': 23,
                     'Interesting Fact': 'Used play baseball in highschool and other leagues'},
          'Gabe': {'Age': 23,
                   'Interesting Fact': 'A double major MIS and Accounting for undergrad'},
          'Drew': {'Age': 49,
                   'Interesting Fact': 'Was in the Air Force and freed Keiko (Free Willy)'},
          'Isaac': {'Age': 21,
                   'Interesting Fact': 'Traveling to Europe in the Summer 2022'},
          'Kodjo': {'Age': 30, 'Interesting Fact': 'Wife is a soldier!'}}
```

In [26]: *# transpose a dataframe by calling df.T*

```
class_df = pd.DataFrame(dct).T
class_df
```

Out[26]:

	Age	Interesting Fact
Caden	19	Played Hockey in High School
Jacob P	21	Dr. Caton thought my last name was Ketersen
Finnian	21	Wrestled in highschool
Genesis	20	Tore both ACLs
Sam	23	Favorite color beige
Proma	24	Learned classical dancing for 10 years
Zach	20	On the track and field team for long-distance
Jacob R	20	Plays classic rock on the guitar
Brandon	23	Used play baseball in highschool and other lea...
Gabe	23	A double major MIS and Accounting for undergrad
Drew	49	Was in the Air Force and freed Keiko (Free Willy)
Isaac	21	Traveling to Europe in the Summer 2022
Kodjo	30	Wife is a soldier!

In [27]: `class_df.index`

Out[27]: Index(['Caden', 'Jacob P', 'Finnian', 'Genesis', 'Sam', 'Proma', 'Zach', 'Jacob R', 'Brandon', 'Gabe', 'Drew', 'Isaac', 'Kodjo'], dtype='object')

In [31]: `class_df["Age"]`

Out[31]:

Caden	19
Jacob P	21
Finnian	21
Genesis	20
Sam	23
Proma	24
Zach	20
Jacob R	20
Brandon	23
Gabe	23
Drew	49
Isaac	21
Kodjo	30

Name: Age, dtype: object

```
In [32]: class_df["Interesting Fact"]
```

```
Out[32]: Caden                Played Hockey in High School
Jacob P          Dr. Caton thought my last name was Keterson
Finnian                Wrestled in highschool
Genesis                Tore both ACLs
Sam                Favorite color beige
Proma                Learned classical dancing for 10 years
Zach                On the track and field team for long-distance
Jacob R                Plays classic rock on the guitar
Brandon          Used play baseball in highschool and other lea...
Gabe                A double major MIS and Accounting for undergrad
Drew                Was in the Air Force and freed Keiko (Free Willy)
Isaac                Traveling to Europe in the Summer 2022
Kodjo                Wife is a soldier!
Name: Interesting Fact, dtype: object
```

```
In [35]: dct["Dr. Caton"] = {}
dct["Dr. Caton"]["Age"] = "N.A"
dct["Dr. Caton"]["Interesting Fact"] = "I used to ride dirbikes"
dct
```

```
Out[35]: {'Caden': {'Age': 19, 'Interesting Fact': ' Played Hockey in High School'},
'Jacob P': {'Age': 21,
'Interesting Fact': 'Dr. Caton thought my last name was Keterson'},
'Finnian': {'Age': 21, 'Interesting Fact': 'Wrestled in highschool'},
'Genesis': {'Age': 20, 'Interesting Fact': 'Tore both ACLs'},
'Sam': {'Age': 23, 'Interesting Fact': 'Favorite color beige'},
'Proma': {'Age': 24,
'Interesting Fact': 'Learned classical dancing for 10 years'},
'Zach': {'Age': 20,
'Interesting Fact': 'On the track and field team for long-distance'},
'Jacob R': {'Age': 20,
'Interesting Fact': 'Plays classic rock on the guitar'},
'Brandon': {'Age': 23,
'Interesting Fact': 'Used play baseball in highschool and other leagues'},
'Gabe': {'Age': 23,
'Interesting Fact': 'A double major MIS and Accounting for undergrad'},
'Drew': {'Age': 49,
'Interesting Fact': 'Was in the Air Force and freed Keiko (Free Willy)'},
'Isaac': {'Age': 21,
'Interesting Fact': 'Traveling to Europe in the Summer 2022'},
'Kodjo': {'Age': 30, 'Interesting Fact': 'Wife is a soldier!'},
'Dr. Caton': {'Age': 'N.A', 'Interesting Fact': 'I used to ride dirbikes'}}
```

```
In [43]: dct["Joe Biden"] = {"Age":61,  
                             "Interesting Fact":"Plays Mario Kart with his grandchildren",  
                             "Job":"President of the United States"}  
  
dct
```

```
Out[43]: {'Caden': {'Age': 19, 'Interesting Fact': ' Played Hockey in High School'},  
          'Jacob P': {'Age': 21,  
                      'Interesting Fact': 'Dr. Caton thought my last name was Ketersen'},  
          'Finnian': {'Age': 21, 'Interesting Fact': 'Wrestled in highschool'},  
          'Genesis': {'Age': 20, 'Interesting Fact': 'Tore both ACLs'},  
          'Sam': {'Age': 23, 'Interesting Fact': 'Favorite color beige'},  
          'Proma': {'Age': 24,  
                   'Interesting Fact': 'Learned classical dancing for 10 years'},  
          'Zach': {'Age': 20,  
                  'Interesting Fact': 'On the track and field team for long-distance'},  
          'Jacob R': {'Age': 20,  
                     'Interesting Fact': 'Plays classic rock on the guitar'},  
          'Brandon': {'Age': 23,  
                      'Interesting Fact': 'Used play baseball in highschool and other leagues'},  
          'Gabe': {'Age': 23,  
                  'Interesting Fact': 'A double major MIS and Accounting for undergrad'},  
          'Drew': {'Age': 49,  
                  'Interesting Fact': 'Was in the Air Force and freed Keiko (Free Willy)'},  
          'Isaac': {'Age': 21,  
                   'Interesting Fact': 'Traveling to Europe in the Summer 2022'},  
          'Kodjo': {'Age': 30, 'Interesting Fact': 'Wife is a soldier!'},  
          'Dr. Caton': {'Age': 'N.A', 'Interesting Fact': 'I used to ride dirbikes'},  
          'Joe Biden': {'Age': 61,  
                        'Interesting Fact': 'Plays Mario Kart with his grandchildren',  
                        'Job': 'President of the United States'}}
```

```
In [ ]:
```

```
In [46]: class_df = pd.DataFrame(dct).T
class_df
```

```
Out[46]:
```

	Age	Interesting Fact	Job
Caden	19	Played Hockey in High School	NaN
Jacob P	21	Dr. Caton thought my last name was Keterson	NaN
Finnian	21	Wrestled in highschool	NaN
Genesis	20	Tore both ACLs	NaN
Sam	23	Favorite color beige	NaN
Proma	24	Learned classical dancing for 10 years	NaN
Zach	20	On the track and field team for long-distance	NaN
Jacob R	20	Plays classic rock on the guitar	NaN
Brandon	23	Used play baseball in highschool and other lea...	NaN
Gabe	23	A double major MIS and Accounting for undergrad	NaN
Drew	49	Was in the Air Force and freed Keiko (Free Willy)	NaN
Isaac	21	Traveling to Europe in the Summer 2022	NaN
Kodjo	30	Wife is a soldier!	NaN
Dr. Caton	N.A	I used to ride dirbikes	NaN
Joe Biden	61	Plays Mario Kart with his grandchildren	President of the United States

```
In [47]: class_df.dtypes
```

```
Out[47]: Age          object
Interesting Fact    object
Job                object
dtype: object
```

```
In [48]: faculty_dict = {"William Nganje":{"Website":"https://www.ndsu.edu/agecon/faculty/
    "Areas of Specialization":"Risk management;
    "Bio":"NA"},
    "David Bullock": {"Website":"https://www.ndsu.edu/agecon/faculty
    "Areas of Specialization": "futures and optio
    "Bio":"Dr. David W. Bullock is a Research Ass
    "James Caton": {"Website":"https://www.ndsu.edu/centers/pcpe/abc
    "Areas of Specialization": "Entrepreneurship, Ir
    "Bio":"James Caton is a faculty fellow at the ND
    "David Englund": {"Website":"https://www.ndsu.edu/agecon/faculty
    "Areas of Specialization": "Teaches Economic Pri
    "Bio":"David Englund is a lecturer in the depart
    "Erik Hanson": {"Website":"https://www.ndsu.edu/agecon/faculty/h
    "Areas of Specialization": "Ag Management, Ag Fi
    "Bio":"Erik Hanson is an Assistant Professor in
    "Ronald Haugen": {"Website":"https://www.ndsu.edu/agecon/about_u
    "Areas of Specialization": "Farm management incl
    "Bio":"Ron Haugen is an Extension Farm Managemer
    "Robert Hearne": {"Website":"https://www.ndsu.edu/agecon/faculty
    "Areas of Specialization": "water resources mana
    "Bio":"Dr. Bob Hearne has been in the Department
    "Jeremy Jackson": {"Website":"https://www.ndsu.edu/centers/pcpe/
    "Areas of Specialization": "public choice and th
    "Bio":" Jeremy Jackson is director of the Center
    "Prithviraj Lakkakula":{"Website":"https://www.ndsu.edu/agecon/fa
    "Areas of Specialization":"Blockchain, Ag
    "Bio":""},
    "Siew Lim": {"Website":"https://www.ndsu.edu/agecon/faculty/lim/#
    "Areas of Specialization": "applied microeconomi
    "Bio":"Siew Hoon Lim is an associate professor c
    "Raymond March": {"Website":"https://www.ndsu.edu/centers/pcpe/a
    "Areas of Specialization": "public and private p
    "Bio":"Raymond March is a scholar at the Challey
    "Dragan Miljkovic": {"Website":"https://www.ndsu.edu/agecon/facu
    "Areas of Specialization": "agricultural price a
    "Bio":"Dragan Miljkovic is professor of agricult
    "Frayne Olson": {"Website":"https://www.ndsu.edu/agecon/faculty/
    "Areas of Specialization": " crop marketing stra
    "Bio":"Dr. Frayne Olson is the Crop Economist/Ma
    "Bryon Parman": {"Website":"https://www.ndsu.edu/agecon/faculty/
    "Areas of Specialization": "",
    "Bio":""},
    "Tim Petry": {"Website":"https://www.ndsu.edu/agecon/faculty/pet
    "Areas of Specialization": "Price Forecasting",
    "Bio":"Tim Petry was raised on a livestock ranch
    "Xudong Rao": {"Website":"https://www.ndsu.edu/agecon/faculty/ra
    "Areas of Specialization": "Farm and Agribusines
    "Bio":"Rao is an assistant professor of agricult
    "Veeshan Rayamajhee": {"Website":"https://www.ndsu.edu/centers/p
    "Areas of Specialization": "Public Choice and Ne
    "Bio":"Veeshan Rayamajhee is a scholar at the Ch
    "David Ripplinger": {"Website":"https://www.ndsu.edu/agecon/facu
    "Areas of Specialization": "Bioenergy",
    "Bio":"David Ripplinger is an Associate Professo
    "David Roberts": {"Website":"https://www.ndsu.edu/agecon/faculty
    "Areas of Specialization": "agricultural product
```



```
"Bio": "David Roberts is an Assistant Professor of  
"Kristi Schweiss": {"Website": "https://www.ndsu.edu/agecon/facu  
    "Areas of Specialization": "",  
    "Bio": "Assistant Director, QBCC"},  
"Anupa Sharma": {"Website": "https://www.ndsu.edu/agecon/faculty/  
    "Areas of Specialization": "International Trade  
    "Bio": "Anupa Sharma is an Assistant Professor in  
"Cheryl Wachenheim": {"Website": "https://www.ndsu.edu/agecon/fac  
    "Bio": "Cheryl Wachenheim is a Professor in the  
    "Areas of Specialization": " eliciting perceptior  
"William Wilson": {"Website": "https://www.ndsu.edu/agecon/facult  
    "Bio": "Dr. William W. Wilson received his PhD i  
    "Areas of Specialization": "commodity marketing,  
  
}
```

faculty_dict

```
Out[48]: {'William Nganje': {'Website': 'https://www.ndsu.edu/agecon/faculty/william_nganje/#c622350',  
    'Areas of Specialization': 'Risk management; financial analysis; economics of obesity, food safety and food terrorism; experimental economics; and consumer choice theory',  
    'Bio': 'NA'},  
    'David Bullock': {'Website': 'https://www.ndsu.edu/agecon/faculty/bullock/#c622728',  
    'Areas of Specialization': 'futures and options markets, over-the-counter derivatives, trading, risk management, agrifinance, Monte Carlo simulation, and Big Data',  
    'Bio': 'Dr. David W. Bullock is a Research Associate Professor affiliated with the Center for Trading and Risk at NDSU. His research interests include futures and options markets, over-the-counter derivatives, trading, risk management, agrifinance, Monte Carlo simulation, and Big Data applications in agriculture. His academic research in option portfolio theory has been published in both the Journal of Economics and Business and the International Review of Economics and Finance. Additionally, he was the primary contributor behind the AgriBank Insights publication series which won a National AgriMarketing Association (NAMA) award for the best company publication in 2016. Before com
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