


```
d21 = pd.DataFrame(d2,index=[0, 1, 2, 3])
```

```
print(d12, "\n\n", d21)
```

EXERCISE 5.8

```
frames1 = [d12, d21]
```

```
res1 = pd.concat(frames1)
```

```
res1
```

EXERCISE 5.9

```
data1 = {'Name':['Jai', 'Princi', 'Gaurav', 'Anuj'],  
        'Age':[27, 24, 22, 32],  
        'Address':['Nagpur', 'Kanpur', 'Allahabad', 'Kannuaj'],  
        'Qualification':['Msc', 'MA', 'MCA', 'Phd'],  
        'Mobile No': [97, 91, 58, 76]}
```

```
data2 = {'Name':['Gaurav', 'Anuj', 'Dhiraj', 'Hitesh'],  
        'Age':[22, 32, 12, 52],  
        'Address':['Allahabad', 'Kannuaj', 'Allahabad', 'Kannuaj'],  
        'Qualification':['MCA', 'Phd', 'Bcom', 'B.hons'],  
        'Salary':[1000, 2000, 3000, 4000]}
```

```
df = pd.DataFrame(data1,index=[0, 1, 2, 3])
```

```
# Convert the dictionary into DataFrame
```

```
df1 = pd.DataFrame(data2, index=[2, 3, 6, 7])
```

```
print(df, "\n\n", df1)
```

EXERCISE 5.10

```
res2 = pd.concat([df, df1], axis=1, join='inner')
```

```
res2
```

EXERCISE 5.11

```
res4 = pd.concat([df, df1], axis=1, join_axes=[df.index])
```

```
res4
```

EXERCISE 5.12

```
res = df.append(df1)
```

```
res
```

EXERCISE 5.13

```
res = pd.concat([df, df1], ignore_index=True)
```

```
res
```

EXERCISE 5.14

```
frames = [df, df1 ]
```

```
res = pd.concat(frames, keys=['x', 'y'])
```

```
res
```

EXERCISE 5.15

```
raw_data = {
    'subject_id': ['1', '2', '3', '4', '5'],
    'first_name': ['Alex', 'Amy', 'Allen', 'Alice', 'Ayoung'],
    'last_name': ['Anderson', 'Ackerman', 'Ali', 'Aoni', 'Atiches']}
df1 = pd.DataFrame(raw_data, columns = ['subject_id', 'first_name', 'last_name'])
df1
```

```
raw_data = {
    'subject_id': ['4', '5', '6', '7', '8'],
    'first_name': ['Billy', 'Brian', 'Bran', 'Bryce', 'Betty'],
    'last_name': ['Bonder', 'Black', 'Balwner', 'Brice', 'Btisan']}
df2 = pd.DataFrame(raw_data, columns = ['subject_id', 'first_name', 'last_name'])
df2
```

```
raw_data = {
    'subject_id': ['1', '2', '3', '4', '5', '7', '8', '9', '10', '11'],
    'test_id': [51, 15, 15, 61, 16, 14, 15, 1, 61, 16]}
df3 = pd.DataFrame(raw_data, columns = ['subject_id', 'test_id'])
df3
```

EXERCISE 5.16

```
df_new = pd.concat([df1, df2])
df_new
```

EXERCISE 5.17

```
pd.concat([df_a, df_b], axis=1)
```

EXERCISE 5.18

```
pd.merge(df_new, df_n, left_on='subject_id', right_on='subject_id')
```

EXERCISE 5.19

```
pd.merge(df_new, df_n, left_on='subject_id', right_on='subject_id')
```

EXERCISE 5.20

```
pd.merge(df_a, df_b, on='subject_id', how='outer')
```

EXERCISE 5.21

```
pd.merge(df_a, df_b, on='subject_id', how='right')
```

EXERCISE 5.22

```
pd.merge(df_a, df_b, on='subject_id', how='left')
```

EXERCISE 5.23

```
pd.merge(df_a, df_b, on='subject_id', how='left', suffixes=('_left', '_right'))
```

EXERCISE 5.24

```
pd.merge(df_a, df_b, right_index=True, left_index=True)
```

EXERCISE 5.25

```
d1 = pd.DataFrame({'Name': ['AB', 'AC', 'AD'],
                    'Id': ['0', '1', '2']},
                  index=['K0', 'K1', 'K2'])

d2 = pd.DataFrame({'Subject': ['C0', 'C2', 'C3'],
                  'Age': ['20', '19', '18']},
```

```
index=['K0', 'K2', 'K3'])
res = d1.join(d2)
```

EXERCISE 5.26

```
result = d1.join(d2, how='outer')
```

EXERCISE 5.27

```
result = d1.join(d2, how='inner')
```

EXERCISE 5.28

```
result = d1.join(d2, on='k1')
```

EXERCISE 5.29

```
left = pd.DataFrame({'Name': ['AB', 'AC', 'AD', 'AE'],
                        'Id': [0,1,2],
                        'k1': ['K0', 'K0', 'K1', 'K2'],
                        'k3': ['K0', 'K1', 'K0', 'K1']})

index = pd.MultiIndex.from_tuples([('K0', 'K0'), ('K1', 'K0'),
                                   ('K2', 'K0'), ('K2', 'K1')])
right = pd.DataFrame({'Subject': ['C0', 'C1', 'C2', 'C3'],
                      'Age': ['20', '19', '18', '17']},
                      index=index)

result = d1.join(d2, on=['k1', 'k3'])
```

EXERCISE 5.30

```
d3= pd.DataFrame({'clg': [A, B, C]}, index=['K1', 'K1', 'K2'])

result = d1.join([d2,d3])
```

EXERCISE 5.31

```
d1= d1.set_index('k')

d2 = d2.set_index('k')

result = d1.join(d2, lsuffix='_l', rsuffix='_r')
```