

Merging Dataframes

```
In [1]: import numpy as np
import pandas as pd
from IPython.core.interactiveshell import InteractiveShell
InteractiveShell.ast_node_interactivity = "all"
```

Merging Dataframes

```
In [2]: emp1= pd.DataFrame({'empid':['E90','E87'],
                       'Name':['Asif','Basit']})
emp1

emp2= pd.DataFrame({'empid':['E22','E74','E90'],
                     'Name':['Minil','Akash','Asif']})
emp2

address= pd.DataFrame({'empid':['E87','E22','E49'],
                       'City':['Mumbai','Banglore','Pune'] ,
                       'State':['Maharashtra','Karnataka','Maharashtra']})
address
```

Out[2]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |

Out[2]:

| | empid | Name |
|---|-------|-------|
| 0 | E22 | Minil |
| 1 | E74 | Akash |
| 2 | E90 | Asif |

Out[2]:

| | empid | City | State |
|---|-------|----------|-------------|
| 0 | E87 | Mumbai | Maharashtra |
| 1 | E22 | Banglore | Karnataka |
| 2 | E49 | Pune | Maharashtra |

```
In [3]: #Concat Dataframes
# Method-1
employees = pd.concat([emp1,emp2])
employees
employees=employees.reset_index(drop=True)
employees
```

Out[3]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |
| 0 | E22 | Minil |
| 1 | E74 | Akash |
| 2 | E90 | Asif |

Out[3]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |
| 2 | E22 | Minil |
| 3 | E74 | Akash |
| 4 | E90 | Asif |

In [4]:

```
#Concat Dataframe
# Method-2
employees1 = emp1.append(emp2)
employees1
employees1.reset_index(drop=True)
```

Out[4]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |
| 0 | E22 | Minil |
| 1 | E74 | Akash |
| 2 | E90 | Asif |

Out[4]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |
| 2 | E22 | Minil |
| 3 | E74 | Akash |
| 4 | E90 | Asif |

In [40]:

```
employees2 = pd.concat([emp1,emp2],ignore_index=True)
employees2
```

Out[40]:

| | empid | Name |
|---|-------|-------|
| 0 | E90 | Asif |
| 1 | E87 | Basit |
| 2 | E22 | Minil |
| 3 | E74 | Akash |
| 4 | E90 | Asif |

In [41]:

```
# Check for duplicates after concatenation
duplicates = employees[employees.duplicated()]
duplicates
```

Out[41]:

| | empid | Name |
|---|-------|------|
| 4 | E90 | Asif |

In [42]:

```
# Remove duplicates
employees.drop_duplicates(keep='last',inplace=True)
employees
```

Out[42]:

| | empid | Name |
|---|-------|-------|
| 1 | E87 | Basit |
| 2 | E22 | Minil |
| 3 | E74 | Akash |
| 4 | E90 | Asif |

In [43]:

```
employees.reset_index(drop=True,inplace=True)
employees
```

Out[43]:

| | empid | Name |
|---|-------|-------|
| 0 | E87 | Basit |
| 1 | E22 | Minil |
| 2 | E74 | Akash |
| 3 | E90 | Asif |

```
In [44]: employees  
address
```

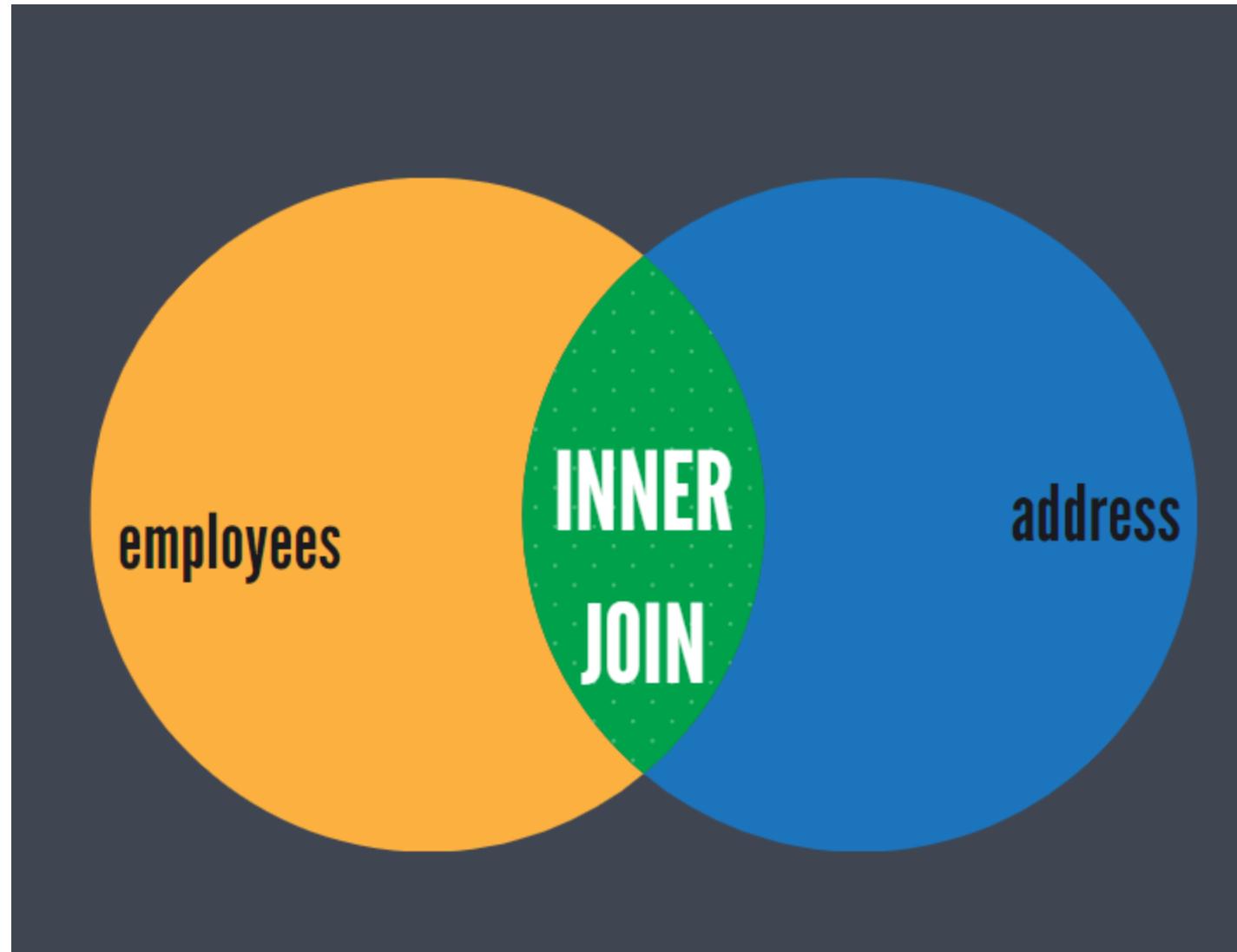
Out[44]:

| | empid | Name |
|---|-------|-------|
| 0 | E87 | Basit |
| 1 | E22 | Minil |
| 2 | E74 | Akash |
| 3 | E90 | Asif |

Out[44]:

| | empid | City | State |
|---|-------|----------|-------------|
| 0 | E87 | Mumbai | Maharashtra |
| 1 | E22 | Banglore | Karnataka |
| 2 | E49 | Pune | Maharashtra |

Inner Join



```
In [20]: # Inner Join  
inner = pd.merge(employees,address,on='empid')  
inner
```

Out[20]:

| | empid | Name | City | State |
|---|-------|-------|----------|-------------|
| 0 | E87 | Basit | Mumbai | Maharashtra |
| 1 | E22 | Minil | Banglore | Karnataka |

```
In [21]: # Inner Join  
inner = pd.merge(employees,address,on='empid',how='inner')  
inner
```

Out[21]:

| | empid | Name | City | State |
|---|-------|-------|----------|-------------|
| 0 | E87 | Basit | Mumbai | Maharashtra |
| 1 | E22 | Minil | Banglore | Karnataka |

Left Outer Join



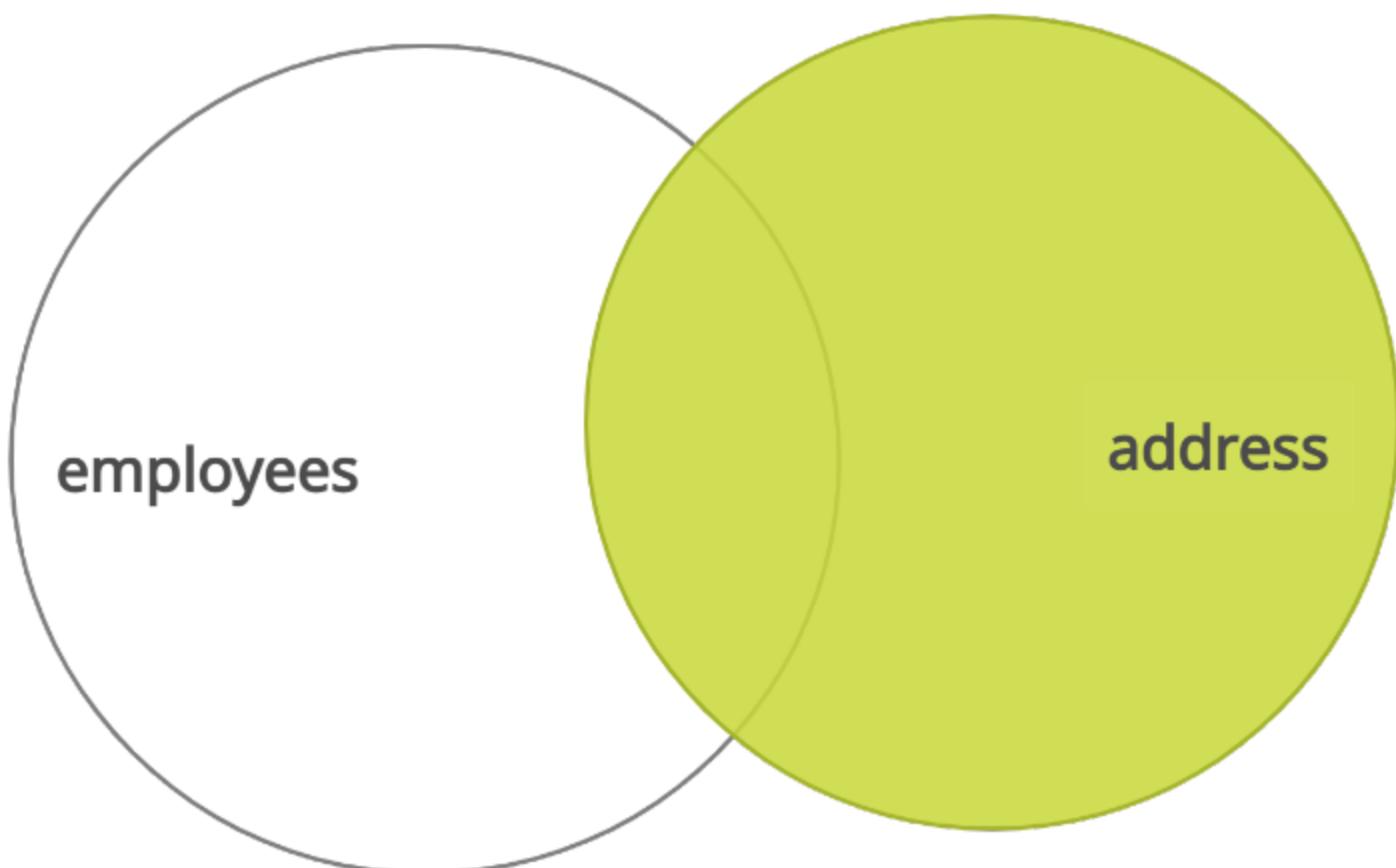
Left Outer Join

```
In [22]: # Left Outer Join
left = pd.merge(employees,address,on='empid',how='left')
left
```

Out[22]:

| | empid | Name | City | State |
|---|-------|-------|----------|-------------|
| 0 | E87 | Basit | Mumbai | Maharashtra |
| 1 | E22 | Minil | Banglore | Karnataka |
| 2 | E74 | Akash | NaN | NaN |
| 3 | E90 | Asif | NaN | NaN |

▼ Right Outer Join



Right Outer Join

```
In [48]: # Right Outer Join
right = pd.merge(employees,address,on='empid',how='right')
right
```

Out[48]:

| | empid | Name | City | State |
|---|-------|-------|----------|-------------|
| 0 | E87 | Basit | Mumbai | Maharashtra |
| 1 | E22 | Minil | Banglore | Karnataka |
| 2 | E49 | NaN | Pune | Maharashtra |



Full Outer Join

In [24]: employees
address

Out[24]:

| | empid | Name |
|---|-------|-------|
| 0 | E87 | Basit |
| 1 | E22 | Minil |
| 2 | E74 | Akash |
| 3 | E90 | Asif |

Out[24]:

| | empid | City | State |
|---|-------|----------|-------------|
| 0 | E87 | Mumbai | Maharashtra |
| 1 | E22 | Banglore | Karnataka |
| 2 | E49 | Pune | Maharashtra |

In [25]:

```
#Full outer join
full = pd.merge(employees,address,how='outer',on='empid')
full
```

Out[25]:

| | empid | Name | City | State |
|---|-------|-------|----------|-------------|
| 0 | E87 | Basit | Mumbai | Maharashtra |
| 1 | E22 | Minil | Banglore | Karnataka |
| 2 | E74 | Akash | NaN | NaN |
| 3 | E90 | Asif | NaN | NaN |
| 4 | E49 | NaN | Pune | Maharashtra |

In [26]:

```
# Salary Data
sal = pd.DataFrame({'empid':['E87','E22','E74','E90','E49'],
                     'salary':[ '$10,000', '$30,000', '$20,000', '$60,000', '$90,000' ]})
sal
```

Out[26]:

| | empid | salary |
|---|-------|----------|
| 0 | E87 | \$10,000 |
| 1 | E22 | \$30,000 |
| 2 | E74 | \$20,000 |
| 3 | E90 | \$60,000 |
| 4 | E49 | \$90,000 |

```
In [27]: # Add Salary details ( Merge sal & full dataframes)
employee_details = pd.merge(full,sal,how='inner',on='empid')
employee_details
```

Out[27]:

| | empid | Name | City | State | salary |
|---|-------|-------|----------|-------------|----------|
| 0 | E87 | Basit | Mumbai | Maharashtra | \$10,000 |
| 1 | E22 | Minil | Banglore | Karnataka | \$30,000 |
| 2 | E74 | Akash | Nan | Nan | \$20,000 |
| 3 | E90 | Asif | Nan | Nan | \$60,000 |
| 4 | E49 | NaN | Pune | Maharashtra | \$90,000 |

In [28]:

```
# Employee experience
exp = pd.DataFrame({'employee_id':['E87','E22','E74','E90','E49'],
                     'experience':['5 years','3 years','7 years','2 years','10 years']})
exp
```

Out[28]:

| | employee_id | experience |
|---|-------------|------------|
| 0 | E87 | 5 years |
| 1 | E22 | 3 years |
| 2 | E74 | 7 years |
| 3 | E90 | 2 years |
| 4 | E49 | 10 years |

In [29]:

```
# Add employee experinece using merge()
# As column names are different (empid , employee_id) we have to use left_on & right_on parameter
pd.merge(employee_details,exp,left_on=['empid'],right_on=['employee_id'],how='inner')
```

Out[29]:

| | empid | Name | City | State | salary | employee_id | experience |
|---|-------|-------|----------|-------------|----------|-------------|------------|
| 0 | E87 | Basit | Mumbai | Maharashtra | \$10,000 | E87 | 5 years |
| 1 | E22 | Minil | Banglore | Karnataka | \$30,000 | E22 | 3 years |
| 2 | E74 | Akash | Nan | Nan | \$20,000 | E74 | 7 years |
| 3 | E90 | Asif | Nan | Nan | \$60,000 | E90 | 2 years |
| 4 | E49 | NaN | Pune | Maharashtra | \$90,000 | E49 | 10 years |

In [30]:

```
# Add employee experinece using merge() and drop the duplicate column (employee_id)
pd.merge(employee_details,exp,left_on=['empid'],right_on=['employee_id'],how='inner').drop('employee_id',axis=1)
```

Out[30]:

| | empid | Name | City | State | salary | experience |
|---|-------|-------|----------|-------------|----------|------------|
| 0 | E87 | Basit | Mumbai | Maharashtra | \$10,000 | 5 years |
| 1 | E22 | Minil | Banglore | Karnataka | \$30,000 | 3 years |
| 2 | E74 | Akash | Nan | Nan | \$20,000 | 7 years |
| 3 | E90 | Asif | Nan | Nan | \$60,000 | 2 years |
| 4 | E49 | NaN | Pune | Maharashtra | \$90,000 | 10 years |

In [31]:

```
#Save the dataframe
employee_details=pd.merge(employee_details,exp,
                           left_on=['empid'],
                           right_on=['employee_id'],
                           how='inner').drop('employee_id',axis=1)

employee_details
```

Out[31]:

| | empid | Name | City | State | salary | experience |
|---|-------|-------|----------|-------------|----------|------------|
| 0 | E87 | Basit | Mumbai | Maharashtra | \$10,000 | 5 years |
| 1 | E22 | Minil | Banglore | Karnataka | \$30,000 | 3 years |
| 2 | E74 | Akash | Nan | Nan | \$20,000 | 7 years |
| 3 | E90 | Asif | Nan | Nan | \$60,000 | 2 years |
| 4 | E49 | NaN | Pune | Maharashtra | \$90,000 | 10 years |

End