```
import pandas as pd

data={"Name": ["Alice","Bob","Charlie","David","Emma"],
      "Age":[24,27,22,32,29],
"Department": ["HR","Finance","IT","Marketing","Sales"],
"Salary" : [45000, 54000,50000,61000,58000]}


df= pd.DataFrame(data)
print (df)
```

```
      Name  Age Department  Salary
0    Alice   24         HR   45000
1      Bob   27    Finance   54000
2  Charlie   22         IT   50000
3    David   32  Marketing   61000
4     Emma   29      Sales   58000
```

Average age of employees

```
age=df["Age"].mean()
print (age)
```

```
26.8
```

Total salary exepnse

```
salary=df["Salary"].sum()
print (salary)
```

```
268000
```

Maximum and minimum age

```
min=df["Age"].min()
max=df["Age"].max()
print (min)
print(max)
```

```
22
32
```

Salary difference from company average

```
df["Avg"] = df["Salary"]- df["Salary"].mean()
print(df["Avg"])
```

```
0   -8600.0
1     400.0
```

```
2   -3600.0
3    7400.0
4    4400.0
Name: Avg, dtype: float64
```

Add a 10% annual bonus column

```
df["Bonus"]=df["Salary"]* 0.10
print (df)
```

```
     Name   Age  Deprtment  Salary     Avg   Bonus
0    Alice   24         HR   45000 -8600.0  4500.0
1      Bob   27    Finance   54000   400.0  5400.0
2  Charlie   22         IT   50000 -3600.0  5000.0
3    David   32  Marketing   61000  7400.0  6100.0
4     Emma   29      Sales   58000  4400.0  5800.0
```

Names and salary of emplloyees younger than 30

```
age=df[df["Age"] < 30]
print (age)
```

```
     Name   Age Deprtment  Salary     Avg   Bonus
0    Alice   24         HR   45000 -8600.0  4500.0
1      Bob   27    Finance   54000   400.0  5400.0
2  Charlie   22         IT   50000 -3600.0  5000.0
4     Emma   29      Sales   58000  4400.0  5800.0
```

Employees with salary between 45,000 and 60,000

```
mid_salary=df[(df["Salary"] >= 45000) & (df["Salary"] <= 60000)]
print (mid_salary)
```

```
      Name  Age Department  Salary
0    Alice   24         HR   45000
1      Bob   27    Finance   54000
2  Charlie   22         IT   50000
4     Emma   29      Sales   58000
```

Names and salries of employees younger than 30

```
young=df[df["Age"] < 30] [["Name","Salary"]]
print (young)
```

```
      Name  Salary
0    Alice   45000
1      Bob   54000
2  Charlie   50000
4     Emma   58000
```

Employees in IT deartment

```
it=df[df["Department"] == "IT"]
print (it)
```

```
      Name  Age Department  Salary
2  Charlie   22         IT   50000
```

Employees with the highest salary

```
high=df.loc[df["Salary"].idxmax()]
print ("Employee with the highest salary:\n", high)
```

```
Employee with the highest salary:
 Name              David
Age                  32
Department    Marketing
Salary            61000
Name: 3, dtype: object
```

Number of employees per department

```
dep=df["Department"].value_counts()
print(dep)
```

```
Department
HR           1
Finance      1
IT           1
Marketing    1
Sales        1
Name: count, dtype: int64
```

Medain salary

```
median=df["Salary"].median()
print("Medain Salary:", median)
```

```
Medain Salary: 54000.0
```

Create a new coloumn for salary category (High/Low)

```
df["Salary_Level"]=df["Salary"].apply(lambda x: "High" if x>55000 else
"Low")
print (df)
```

```
      Name  Age Department  Salary Salary_Level
0    Alice   24         HR   45000          Low
1      Bob   27    Finance   54000          Low
```

```
2  Charlie   22         IT   50000          Low
3    David   32  Marketing   61000         High
4     Emma   29      Sales   58000         High
```

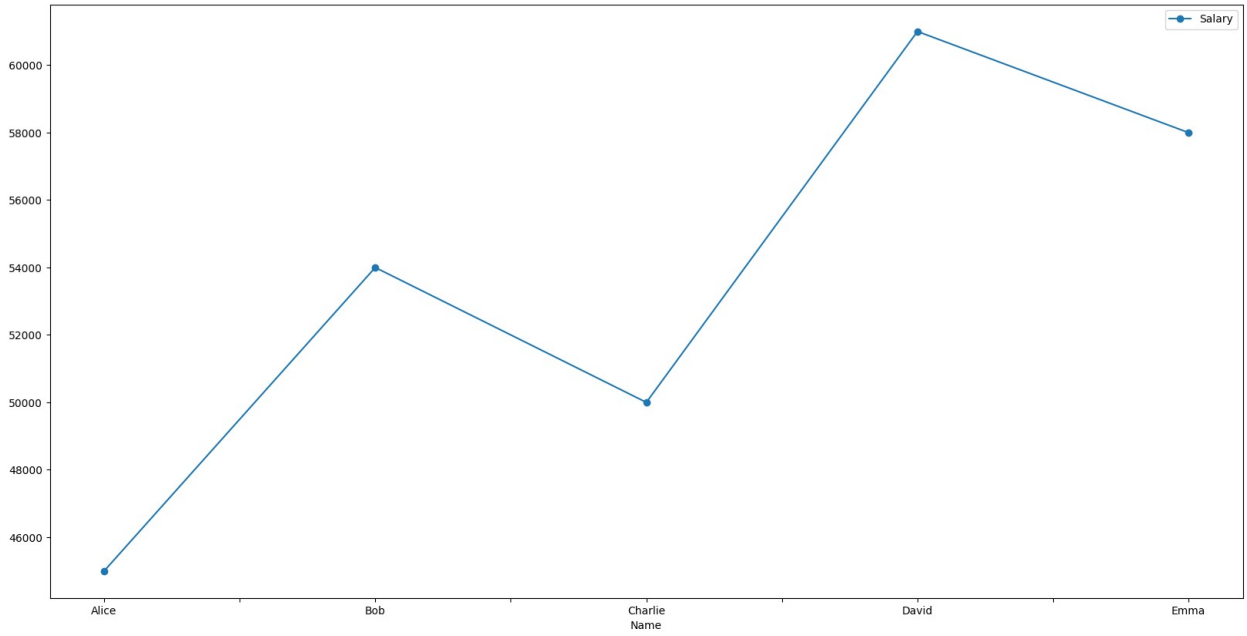
```
pip install matplotlib
```

```
Requirement already satisfied: matplotlib in c:\users\ravi v\appdata\
local\programs\python\python313\lib\site-packages (3.10.7)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\ravi v\
appdata\local\programs\python\python313\lib\site-packages (from
matplotlib) (1.3.3)
Requirement already satisfied: cycler>=0.10 in c:\users\ravi v\
appdata\local\programs\python\python313\lib\site-packages (from
matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\ravi v\
appdata\local\programs\python\python313\lib\site-packages (from
matplotlib) (4.60.1)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\ravi v\
appdata\local\programs\python\python313\lib\site-packages (from
matplotlib) (1.4.9)
Requirement already satisfied: numpy>=1.23 in c:\users\ravi v\appdata\
local\programs\python\python313\lib\site-packages (from matplotlib)
(2.3.3)
Requirement already satisfied: packaging>=20.0 in c:\users\ravi v\
appdata\roaming\python\python313\site-packages (from matplotlib)
(25.0)
Requirement already satisfied: pillow>=8 in c:\users\ravi v\appdata\
local\programs\python\python313\lib\site-packages (from matplotlib)
(12.0.0)
Requirement already satisfied: pyparsing>=3 in c:\users\ravi v\
appdata\local\programs\python\python313\lib\site-packages (from
matplotlib) (3.2.5)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\ravi
v\appdata\roaming\python\python313\site-packages (from matplotlib)
(2.9.0.post0)
Requirement already satisfied: six>=1.5 in c:\users\ravi v\appdata\
roaming\python\python313\site-packages (from python-dateutil>=2.7-
>matplotlib) (1.17.0)
Note: you may need to restart the kernel to use updated packages.
```

```
import matplotlib.pyplot as plt
```

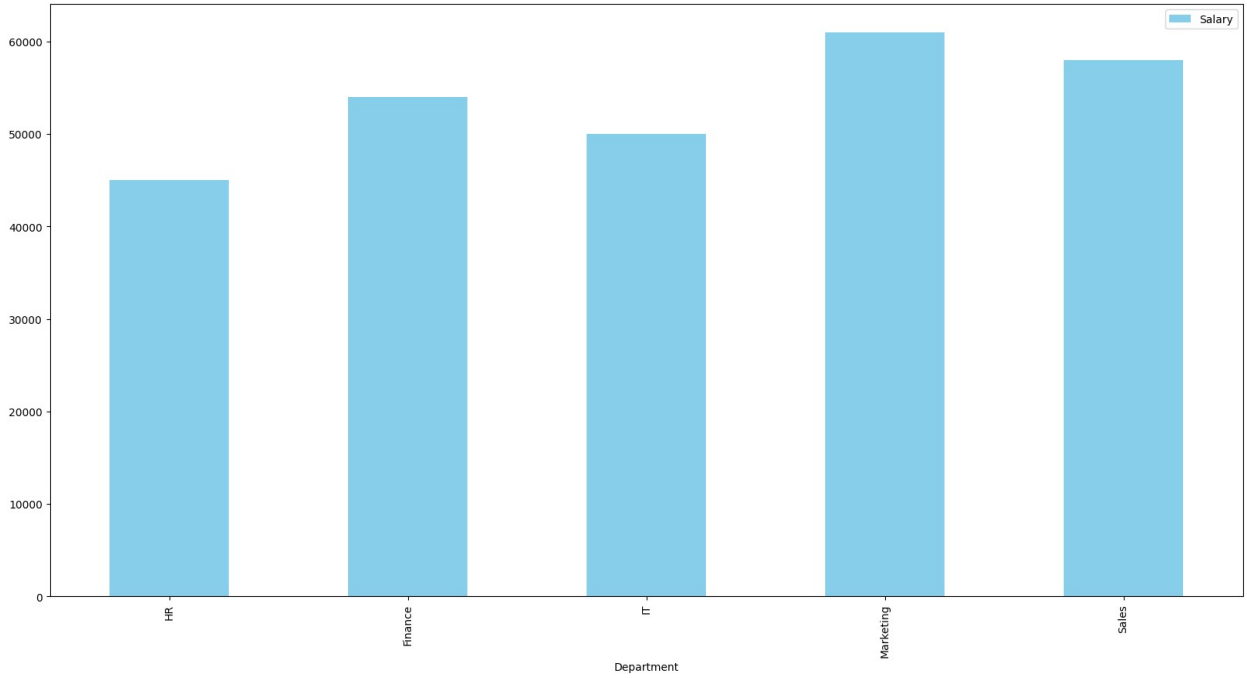
```
df.plot(x='Name' , y='Salary' , kind='line', marker='o',
figsize=(20,10))
```

```
<Axes: xlabel='Name'>
```



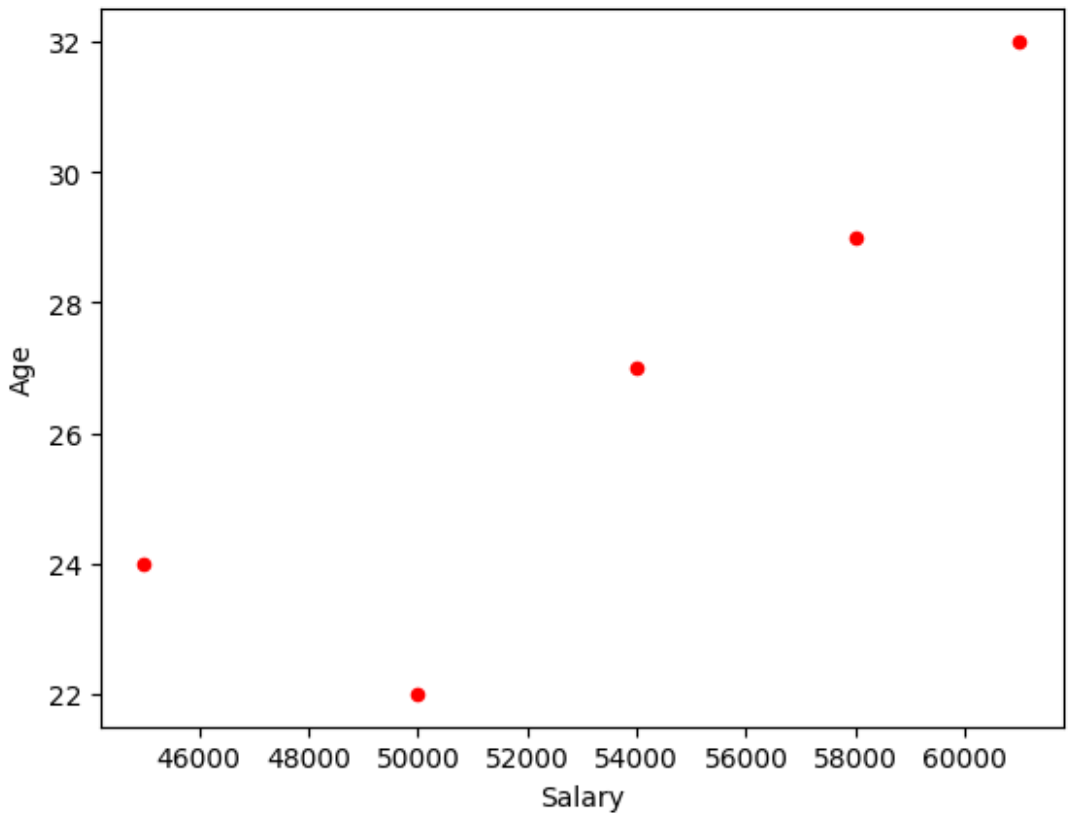

```
df.plot(x='Department', y='Salary', kind='bar', color='skyblue',
figsize=(20,10))
```

```
<Axes: xlabel='Department'>
```




```
df.plot(x='Salary', y='Age', kind='scatter', color='red')
```

```
<Axes: xlabel='Salary', ylabel='Age'>
```


32
30
28
26
24
22
Age
46000
48000
50000
52000
54000
56000
58000
60000
Salary