

```
In [2]:
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [3]:
ds=pd.DataFrame(np.random.rand(10,4),index=pd.date_range('11/2/2020',periods=10),columns=li
#from feb 11 till 10 months
# pandas handles missing data,user-friendly,uses python objects
#numpy faster,has better performance on large datasets
```

```
In [5]:
print(ds)
```

	A	B	C	D
2020-11-02	0.732384	0.147624	0.927458	0.970276
2020-11-03	0.796453	0.678698	0.035300	0.651924
2020-11-04	0.162705	0.205940	0.033056	0.802384
2020-11-05	0.249780	0.780991	0.965741	0.421780
2020-11-06	0.559222	0.799667	0.566412	0.178450
2020-11-07	0.529982	0.622675	0.330326	0.768799
2020-11-08	0.408258	0.695481	0.547810	0.159757
2020-11-09	0.068970	0.638375	0.125206	0.490328
2020-11-10	0.488652	0.794662	0.972880	0.789605
2020-11-11	0.486992	0.602987	0.393137	0.187528

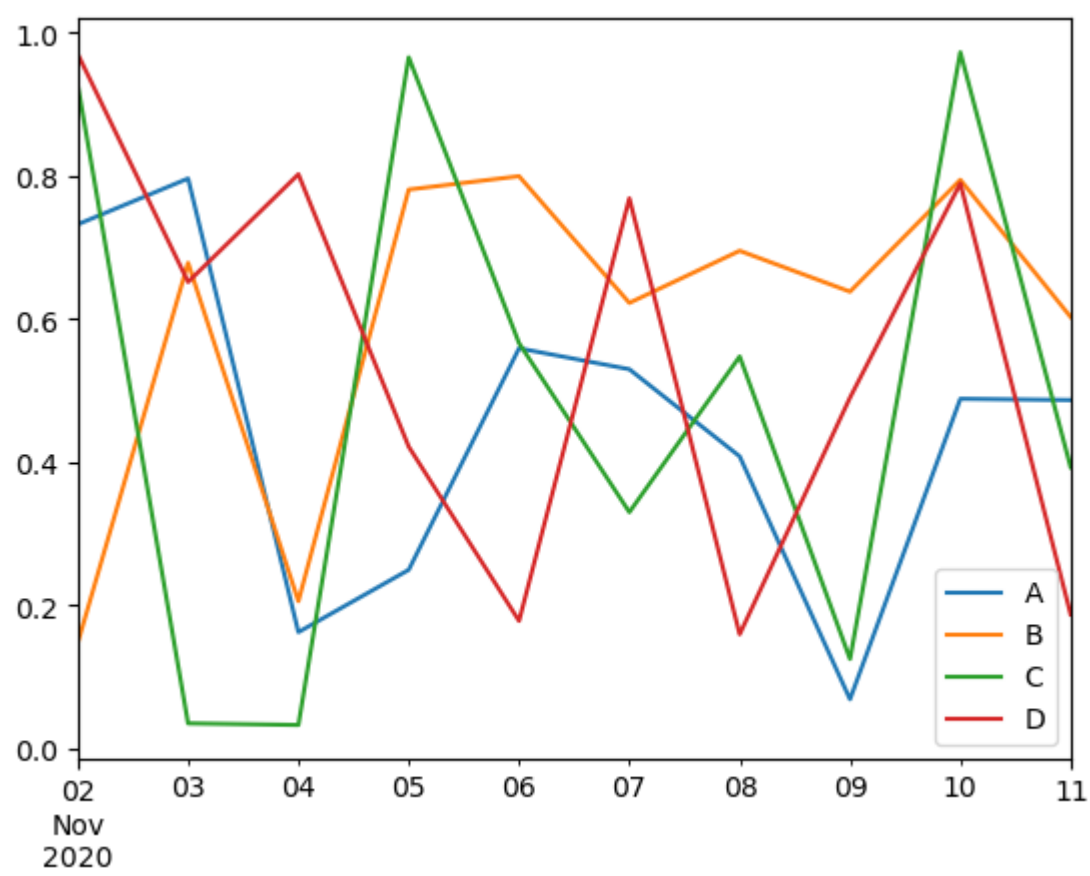
```
In [6]:
ds
```

Out[6]:

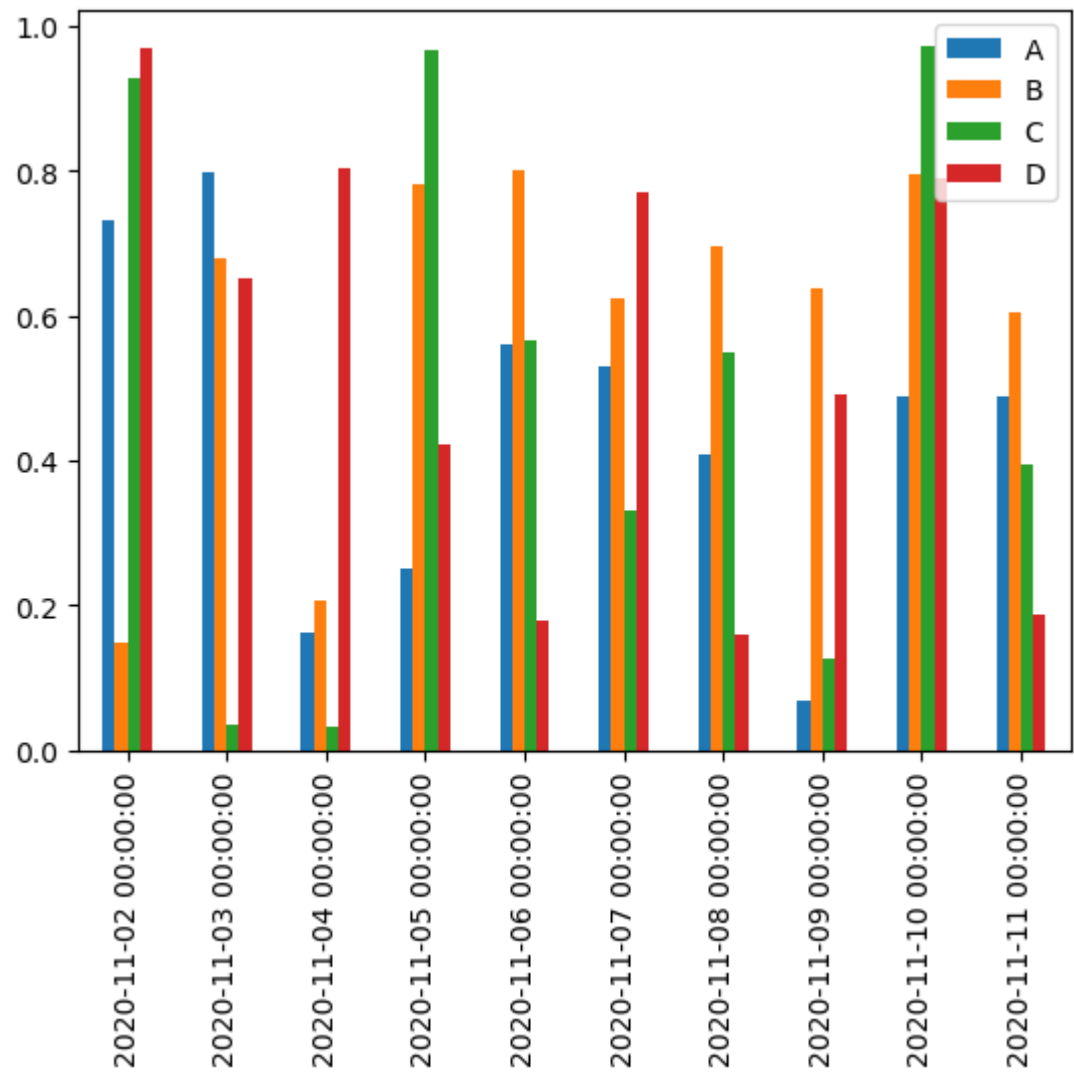
	A	B	C	D
2020-11-02	0.732384	0.147624	0.927458	0.970276
2020-11-03	0.796453	0.678698	0.035300	0.651924
2020-11-04	0.162705	0.205940	0.033056	0.802384
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2020-11-11	0.486992	0.602987	0.393137	0.187528

```
In [7]:
ds.plot()
```

```
Out[7]:
<AxesSubplot:>
```



```
In [8]:
ds.plot.bar() #for generating bar graph
Out[8]:
<AxesSubplot:>
```



```
In [13]:
```

```
ds=pd.DataFrame(np.random.rand(10,4),columns=['A','B','C','D'])
```

```
In [14]:
```

```
ds
```

Out[14]:

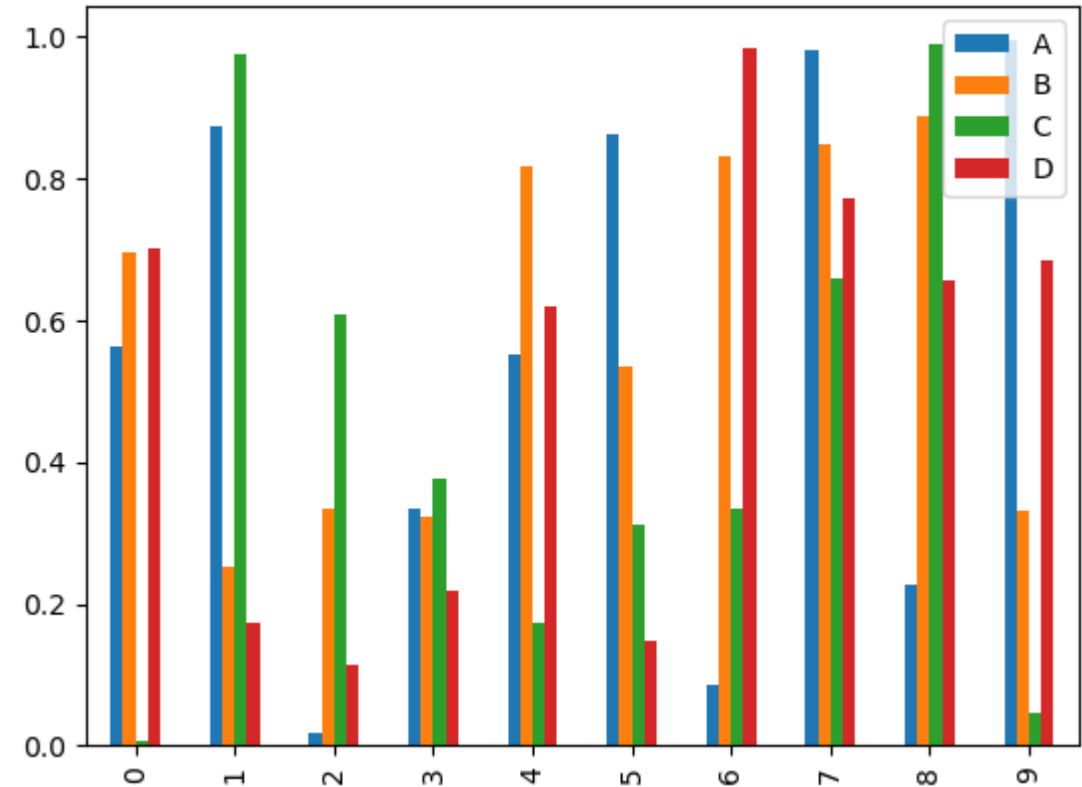
	A	B	C	D
0	0.563409	0.695576	0.006809	0.701066
1	0.874022	0.252628	0.975093	0.172196
2	0.018790	0.335326	0.607947	0.113854
3	0.335228	0.322633	0.376281	0.217399
4	0.550378	0.816176	0.173644	0.618722
5	0.860943	0.535358	0.311891	0.147026
6	0.087065	0.831551	0.334708	0.984221
7	0.980851	0.847112	0.658576	0.770326
8	0.227818	0.886552	0.989182	0.656085
9	0.993586	0.330201	0.045538	0.684002

```
In [16]:
```

```
ds.plot.bar()
```

Out[16]:

<AxesSubplot:>



```
In [17]:
```

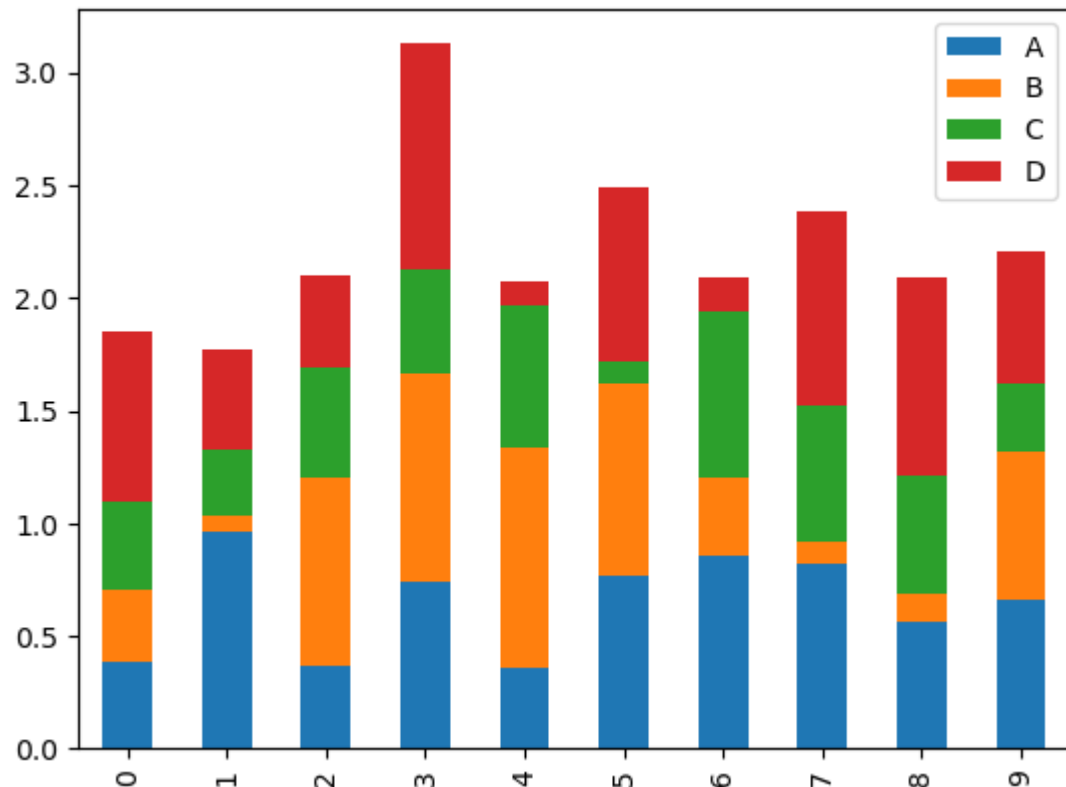
```
ds=pd.DataFrame(np.random.rand(10,4),columns=['A','B','C','D'])
```

```
In [19]:
```

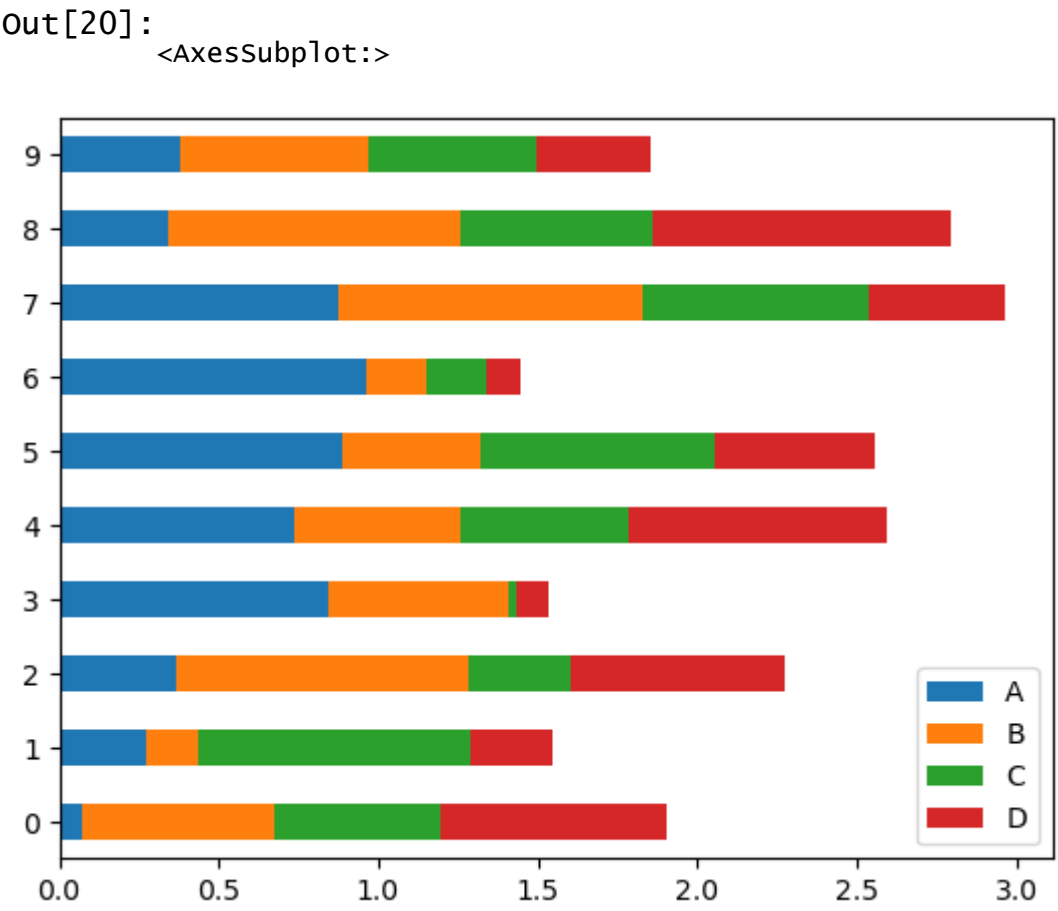
```
ds.plot.bar(stacked=True)
```

Out[19]:

<AxesSubplot:>



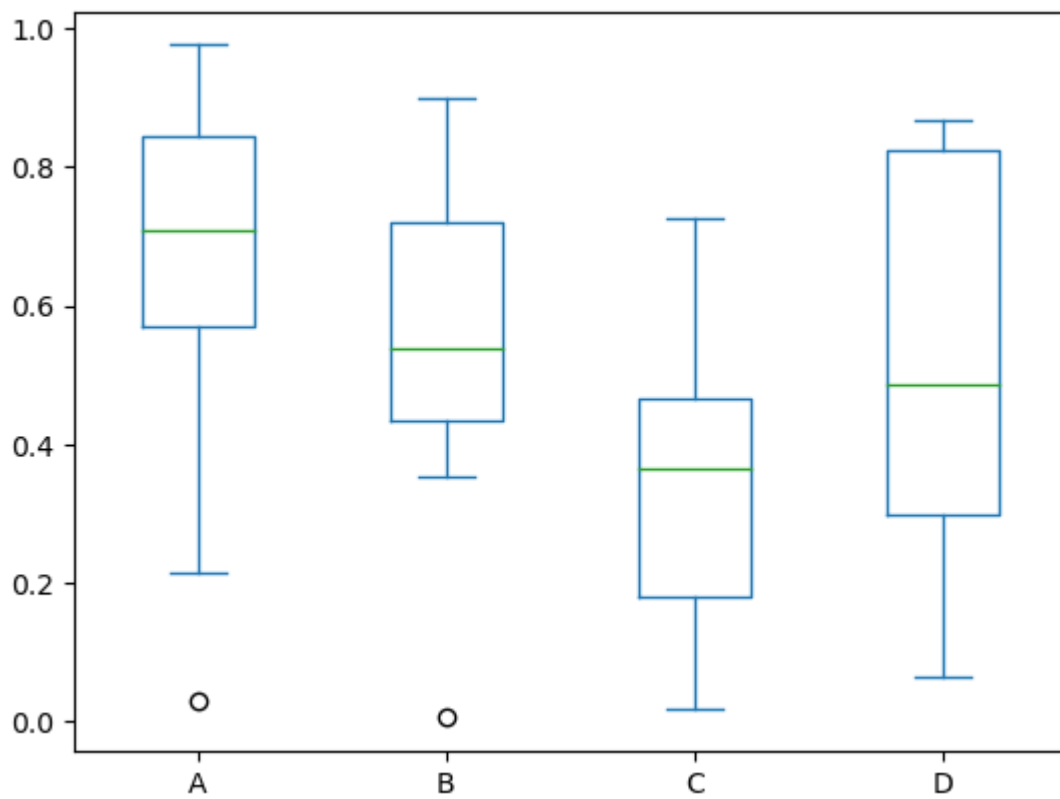
```
In [20]:  
ds=pd.DataFrame(np.random.rand(10,4),columns=['A','B','C','D'])  
ds.plot.barh(stacked=True)
```



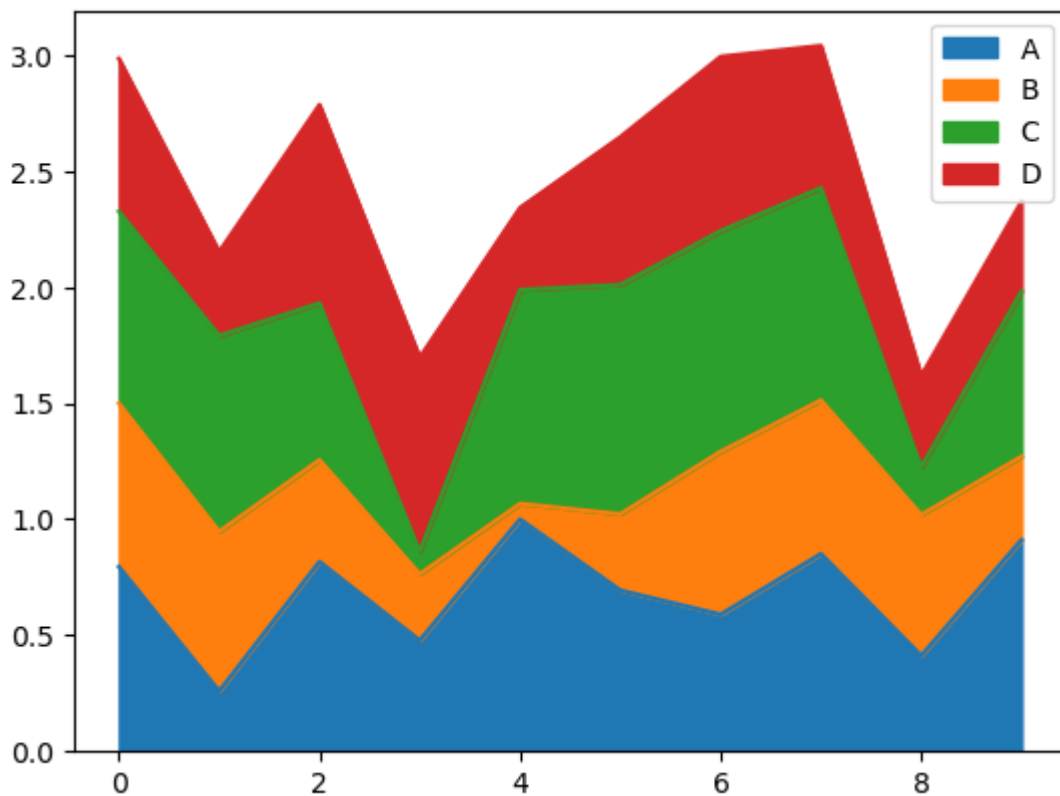
```
In [21]:  
ds=pd.DataFrame(np.random.rand(10,4),columns=['A','B','C','D'])  
ds.plot.box()
```

Out[21]:

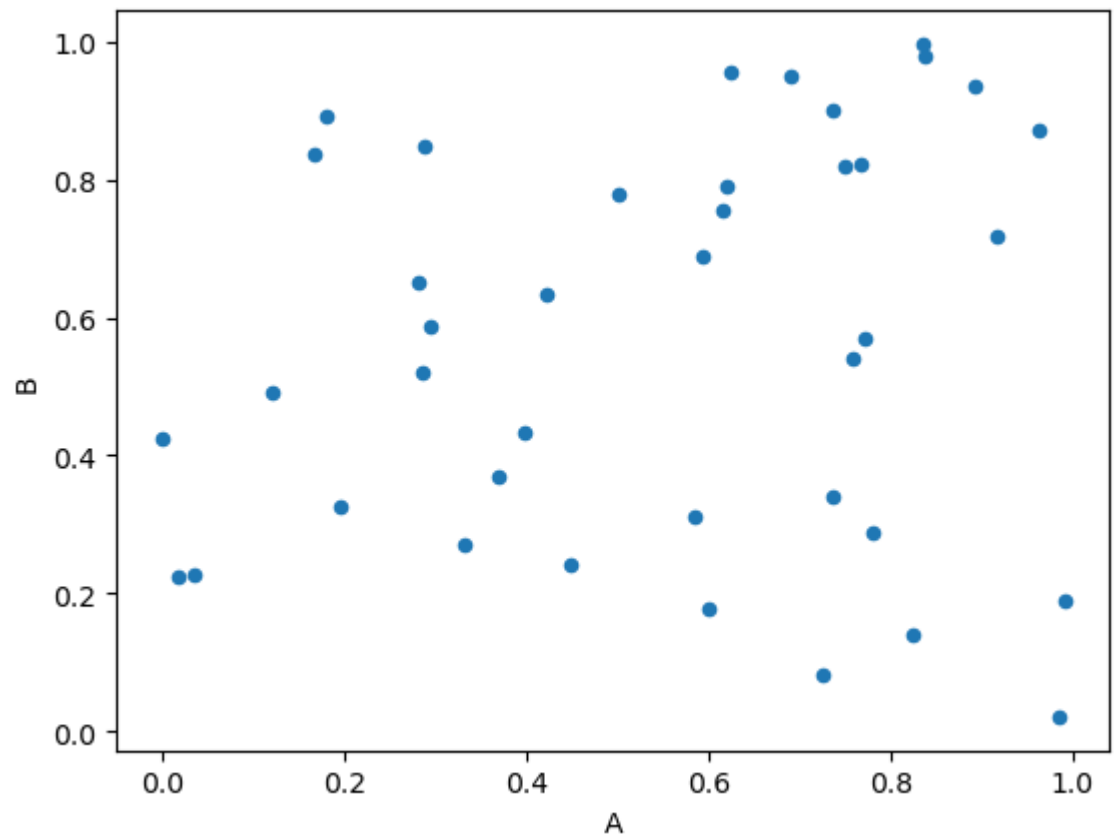
<AxesSubplot:>



```
In [22]:
ds=pd.DataFrame(np.random.rand(10,4),columns=['A','B','C','D'])
ds.plot.area()
Out[22]:
<AxesSubplot:>
```



```
In [25]:
ds=pd.DataFrame(np.random.rand(40,4),columns=['A','B','C','D'])
ds.plot.scatter(x='A',y='B')
Out[25]:
<AxesSubplot:xlabel='A', ylabel='B'>
```



```
In [26]:  
ds
```

Out [26]:

	A	B	C	D
0	0.447848	0.241237	0.513870	0.532678
1	0.985787	0.021160	0.862531	0.078111
2	0.288184	0.849465	0.924284	0.108075
3	0.281105	0.649996	0.805113	0.144503
4	0.601518	0.177962	0.718901	0.730666
5	0.624735	0.955895	0.008546	0.376862
6	0.332605	0.269639	0.676941	0.168624
7	0.836159	0.997118	0.366985	0.207634
8	0.750210	0.819766	0.579226	0.348303
9	0.180005	0.893009	0.692779	0.364247
10	0.726598	0.082845	0.321654	0.924786
11	0.780509	0.287314	0.227674	0.407072
12	0.502252	0.779236	0.403926	0.999752
13	0.991545	0.189305	0.502453	0.845884
14	0.586205	0.310417	0.191136	0.365743
15	0.825003	0.140559	0.327293	0.002102
16	0.736242	0.340553	0.086538	0.129333
17	0.758065	0.541250	0.006361	0.307197
18	0.892845	0.934996	0.545738	0.017270
19	0.691668	0.951079	0.752575	0.604244
20	0.121335	0.491758	0.940812	0.501608
21	0.917143	0.716600	0.824081	0.268449
22	0.422422	0.633886	0.325518	0.055883
23	0.615287	0.754412	0.302542	0.892903
24	0.036591	0.226659	0.649496	0.572410
25	0.368851	0.368904	0.037851	0.587473
26	0.286513	0.519175	0.000602	0.857282
27	0.771573	0.570116	0.107390	0.242443
28	0.168163	0.837975	0.335517	0.888551
29	0.838728	0.979608	0.307547	0.796878
30	0.000202	0.425115	0.184275	0.904878
31	0.593077	0.688316	0.819444	0.264664
32	0.737515	0.900275	0.895628	0.642663
33	0.295173	0.586846	0.997042	0.717466
34	0.194904	0.324641	0.041560	0.100827
35	0.017229	0.223599	0.915856	0.724919
36	0.398776	0.433075	0.405007	0.352523
37	0.619594	0.790910	0.313766	0.247108
38	0.767904	0.822500	0.397735	0.238869
39	0.964102	0.872267	0.406968	0.190401

In [27]:

```
ds=pd.read_csv('D:\president_heights.csv')
```

In [28]:

```
ds
```

Out[28]:

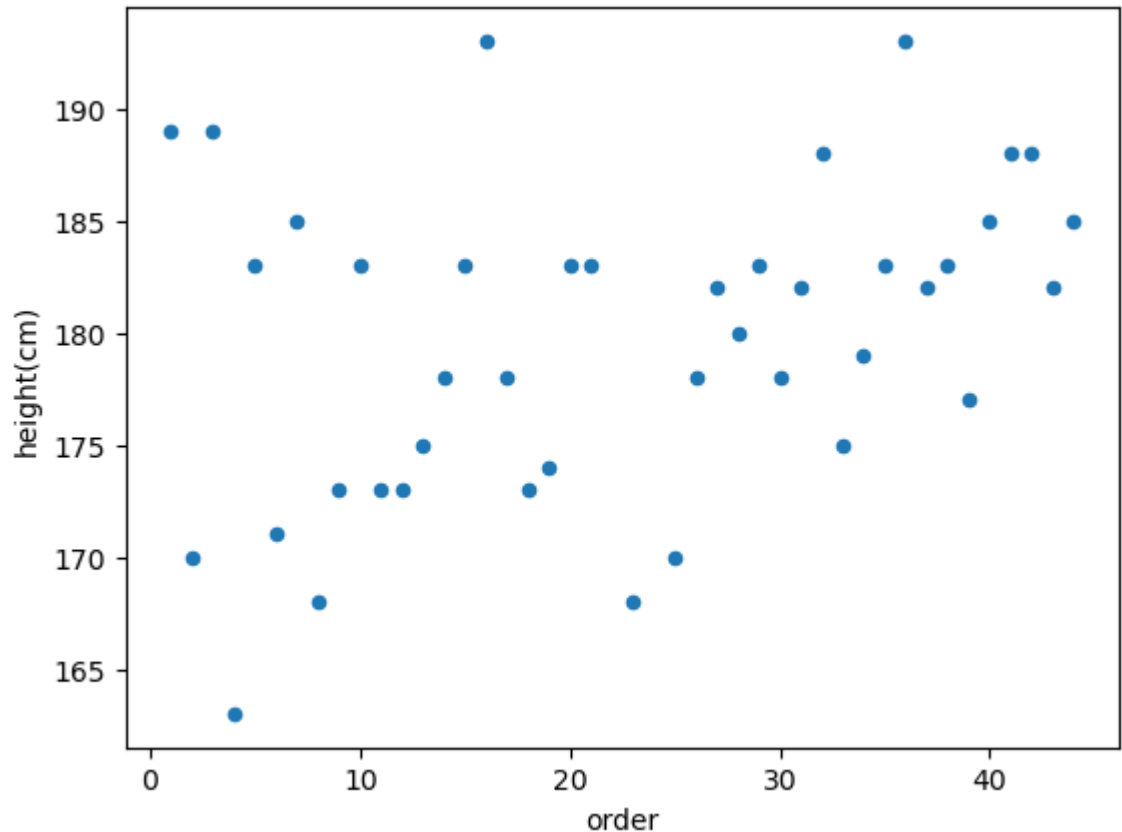
	order	name	height(cm)
0	1	George Washington	189
1	2	John Adams	170
2	3	Thomas Jefferson	189
3	4	James Madison	163
4	5	James Monroe	183
5	6	John Quincy Adams	171
6	7	Andrew Jackson	185
7	8	Martin Van Buren	168
8	9	William Henry Harrison	173
9	10	John Tyler	183
10	11	James K. Polk	173
11	12	Zachary Taylor	173
12	13	Millard Fillmore	175
13	14	Franklin Pierce	178
14	15	James Buchanan	183
15	16	Abraham Lincoln	193
16	17	Andrew Johnson	178
17	18	Ulysses S. Grant	173
18	19	Rutherford B. Hayes	174
19	20	James A. Garfield	183
20	21	Chester A. Arthur	183
21	23	Benjamin Harrison	168
22	25	William McKinley	170
23	26	Theodore Roosevelt	178
24	27	William Howard Taft	182
25	28	Woodrow Wilson	180
26	29	Warren G. Harding	183
27	30	Calvin Coolidge	178
28	31	Herbert Hoover	182
29	32	Franklin D. Roosevelt	188
30	33	Harry S. Truman	175
31	34	Dwight D. Eisenhower	179
32	35	John F. Kennedy	183
33	36	Lyndon B. Johnson	193
34	37	Richard Nixon	182
35	38	Gerald Ford	183
36	39	Jimmy Carter	177
37	40	Ronald Reagan	185
38	41	George H. W. Bush	188
39	42	Bill Clinton	188
40	43	George W. Bush	182
41	44	Barack Obama	185

In [29]:

```
ds.plot.scatter(x='order',y='height(cm)')
```

Out[29]:

```
<AxesSubplot:xlabel='order', ylabel='height(cm)'>
```

```
In [1]: data=[1,2,3,4]
In [2]: data
Out[2]: [1, 2, 3, 4]

In [4]: df=pd.DataFrame(data);
In [5]: df
Out[5]:
  0  1
0  1  2
1  2  3
2  3  4
3  4

In [6]: df[0]
Out[6]:
0    1
1    2
2    3
3    4
Name: 0, dtype: int64

In [7]: df[0][2]
Out[7]:
3

In [8]: data1=['A',24],['B',27],['X',45],['Y',14],['Z',56]
In [9]: data1
```

```
Out[9]: ([ 'A', 24], [ 'B', 27], [ 'X', 45], [ 'Y', 14], [ 'Z', 56])
```

```
In [10]:  
df=pd.DataFrame(data1)
```

```
In [11]:  
df
```

```
Out[11]:
```

	0	1
0	A	24
1	B	27
2	X	45
3	Y	14
4	Z	56

```
In [12]:  
df.iloc[2]
```

```
Out[12]:  
0      X  
1     45  
Name: 2, dtype: object
```

```
In [14]:  
df[0:][2:3]
```

```
Out[14]:
```

	0	1
2	X	45

```
In [16]:  
data1=[ 'A',24], [ 'B',27], [ 'X',45], [ 'Y',14], [ 'Z',56]  
df=pd.DataFrame(data1,columns=[ 'Name', 'Age'])
```

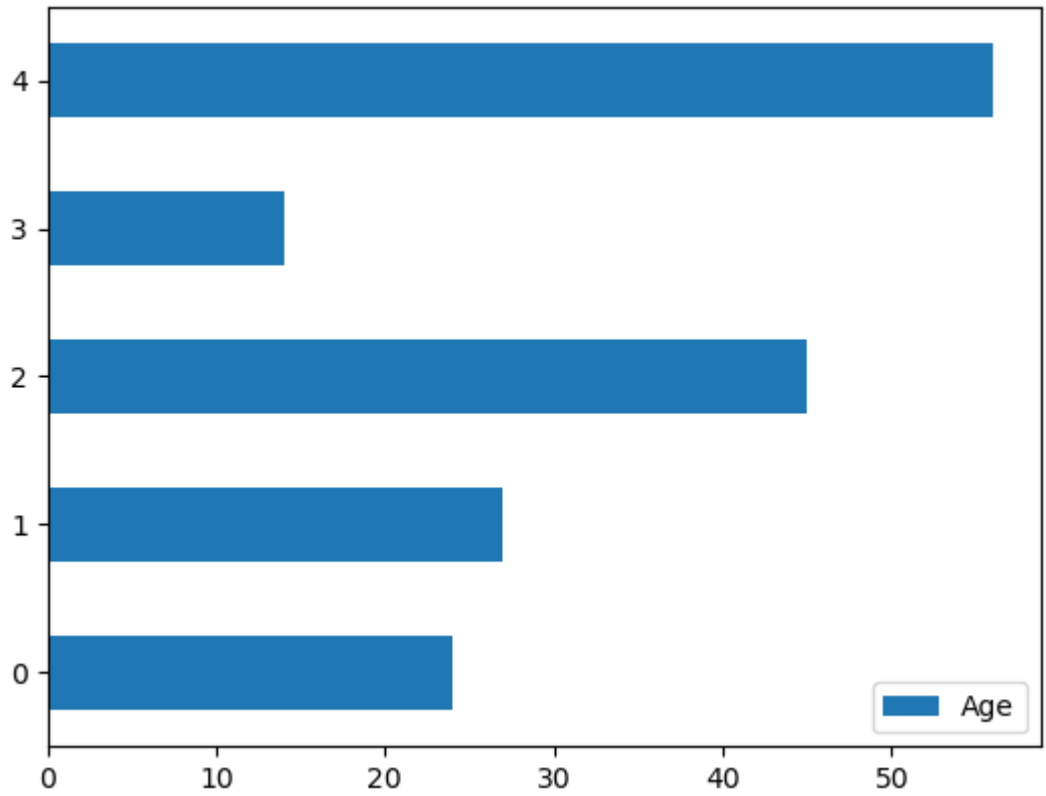
```
In [17]:  
df
```

```
Out[17]:
```

	Name	Age
0	A	24
1	B	27
2	X	45
3	Y	14
4	Z	56

```
In [18]:  
df.plot.barh()
```

```
Out[18]:  
<AxesSubplot:>
```



```
In [22]: data2={'Name': ['A', 'B', 'C', 'D', 'E'], 'Age': [21, 32, 13, 24, 15], 'Department': ['CSE', 'IT', 'ECE', 'E
```

```
In [23]: data2
```

```
Out[23]: {'Name': ['A', 'B', 'C', 'D', 'E'],
           'Age': [21, 32, 13, 24, 15],
           'Department': ['CSE', 'IT', 'ECE', 'EEE', 'MECH']}
```

```
In [24]: df=pd.DataFrame(data2,columns=['Name', 'Age', 'Department'])
```

```
In [25]: df
```

Out[25]:

	Name	Age	Department
0	A	21	CSE
1	B	32	IT
2	C	13	ECE
3	D	24	EEE
4	E	15	MECH

```
In [26]: df=pd.DataFrame(data2,columns=['Name', 'Age', 'Department'],index=['row1', 'row2', 'row3', 'row4']
```

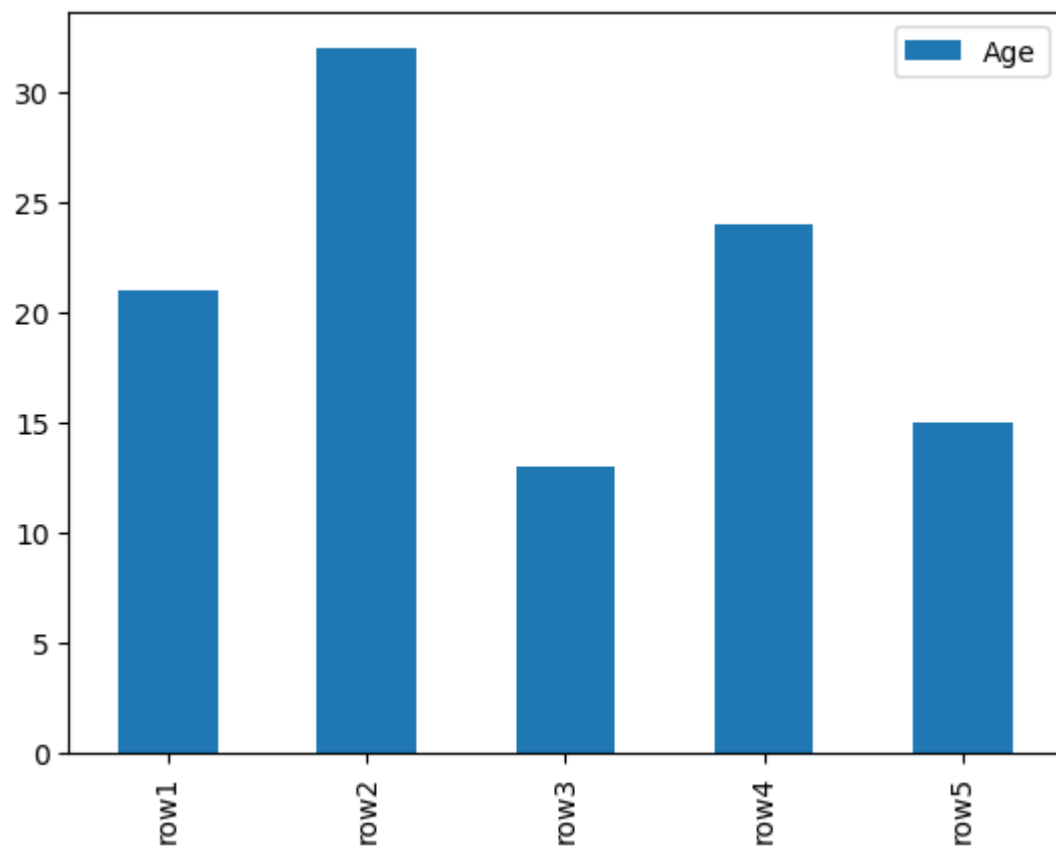
```
In [27]: df
```

Out[27]:

	Name	Age	Department
row1	A	21	CSE
row2	B	32	IT
row3	C	13	ECE
row4	D	24	EEE
row5	E	15	MECH

```
In [31]: df.plot.bar()
```

Out[31]:
<AxesSubplot:>



In []: