In [1]:
```
import pandas as pd
```

In [2]:
```
import numpy as np
```

In [3]:
```
np.arange(1,16)
```

Out[3]:
```
array([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15])
```

In [4]:
```
np.random.randint(50,350,size=15)
```

Out[4]:
```
array([250, 143, 344, 272, 236, 258, 181, 196, 261, 129,  99,  63, 105,
       255, 224])
```

In [5]:
```
np.random.randint(50,150,size=15)
```

Out[5]:
```
array([102, 139, 128,  53, 142, 127, 119, 113,  59, 146, 112, 109, 148,
        88,  86])
```

In [6]:
```
x={'days':[ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15],'customers
      231, 268],'sold':[139,  85,  69,  98,  71, 106, 134,  77,  62, 136,  92,
```

In [7]:
```
x
```

Out[7]:
```
{'days': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15],
 'customers': [50,
  58,
  309,
  310,
  135,
  69,
  223,
  255,
  337,
  145,
  342,
  270,
  105,
  231,
  268],
 'sold': [139, 85, 69, 98, 71, 106, 134, 77, 62, 136, 92, 75, 57, 135, 52]}
```

In [8]:
```
y=pd.DataFrame(x)
```

In [9]:
```
y
```

Out[9]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52

In [10]:
```
y.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 15 entries, 0 to 14
Data columns (total 3 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   days       15 non-null     int64
 1   customers  15 non-null     int64
 2   sold       15 non-null     int64
dtypes: int64(3)
memory usage: 488.0 bytes
```

In [11]:
```
y.head(2)
```

Out[11]:

	days	customers	sold
0	1	50	139
1	2	58	85

In [12]:
```
y.tail(2)
```

Out[12]:

	days	customers	sold
13	14	231	135
14	15	268	52

In [13]:
```
y.loc[3:10]
```

Out[13]:

	days	customers	sold
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92

In [14]:
```
y.iloc[3:10]
```

Out[14]:

	days	customers	sold
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136

In [15]:
```
y['sold']
```

Out[15]:
```
0     139
1      85
2      69
3      98
4      71
5     106
6     134
7      77
8      62
9     136
10     92
11     75
12     57
13    135
14     52
Name: sold, dtype: int64
```

In [16]:
```
max(y['sold'])
```

Out[16]:
```
139
```

In [17]:
```
y.loc[y['sold']==max(y['sold'])]
```

Out[17]:

	days	customers	sold
0	1	50	139

In [18]:
```
y.loc[y['sold']==min(y['sold'])]
```

Out[18]:

	days	customers	sold
14	15	268	52

In [19]:
```
y.loc[y['sold']>100]
```

Out[19]:

	days	customers	sold
0	1	50	139
5	6	69	106
6	7	223	134
9	10	145	136
13	14	231	135

In [20]:
```
y.loc[y['sold']<100]
```

Out[20]:

	days	customers	sold
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
7	8	255	77
8	9	337	62
10	11	342	92
11	12	270	75
12	13	105	57
14	15	268	52

In [21]:
```
y.loc[y['customers']>250]
```

Out[21]:

	days	customers	sold
2	3	309	69
3	4	310	98
7	8	255	77
8	9	337	62
10	11	342	92
11	12	270	75
14	15	268	52

In [22]:
```
y.loc[y['customers']>150][y['customers']<250]
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_9944\962605015.py:1: UserWarning: B
oolean Series key will be reindexed to match DataFrame index.
  y.loc[y['customers']>150][y['customers']<250]
```

Out[22]:

	days	customers	sold
6	7	223	134
13	14	231	135

In [23]:
```
y.loc[y['sold']>75][y['sold']<125]
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_9944\615988111.py:1: UserWarning: B
oolean Series key will be reindexed to match DataFrame index.
  y.loc[y['sold']>75][y['sold']<125]
```

Out[23]:

	days	customers	sold
1	2	58	85
3	4	310	98
5	6	69	106
7	8	255	77
10	11	342	92

In [24]:
```
np.random.randint(1000,3000,size=15)
```

Out[24]:
```
array([1617, 1761, 1125, 1252, 2442, 2416, 1885, 2951, 1705, 2399, 2005,
       1292, 2944, 1947, 2872])
```

In [25]:
```
np.random.randint(500,1500,size=15)
```

Out[25]:
```
array([1184,  574,  580,  731,  619, 1494, 1418, 1394,  680,  650,  642,
        862,  671,  859,  678])
```

In [26]:
```
i=[1937, 1345, 1324, 2312, 1238, 1707, 2508, 2841, 2340, 1394, 2605,
       2741, 2887, 2743, 2485]
```

In [27]:
```
o=[ 762,  925, 1030,  752, 1211,  558,  545, 1302, 1357, 1316,  570,
        703,  774,  570, 1487]
```

In [28]:
```
a={'income':[1937, 1345, 1324, 2312, 1238, 1707, 2508, 2841, 2340, 1394, 2605,
       2741, 2887, 2743, 2485],'outcome':[ 762,  925, 1030,  752, 1211,  558,  54
        703,  774,  570, 1487]}
```

In [29]:
```
b=pd.DataFrame(a)
```

In [30]:
```
b
```

Out[30]:

	income	outcome
0	1937	762
1	1345	925
2	1324	1030
3	2312	752
4	1238	1211
5	1707	558
6	2508	545
7	2841	1302
8	2340	1357
9	1394	1316
10	2605	570
11	2741	703
12	2887	774
13	2743	570
14	2485	1487

In [31]:
```
join_data=y.join(b)
```

In [32]:
```
join_data
```

Out[32]:

	days	customers	sold	income	outcome
0	1	50	139	1937	762
1	2	58	85	1345	925
2	3	309	69	1324	1030
3	4	310	98	2312	752
4	5	135	71	1238	1211
5	6	69	106	1707	558
6	7	223	134	2508	545
7	8	255	77	2841	1302
8	9	337	62	2340	1357
9	10	145	136	1394	1316
10	11	342	92	2605	570
11	12	270	75	2741	703
12	13	105	57	2887	774
13	14	231	135	2743	570
14	15	268	52	2485	1487

In [33]:
```
max(b['income'])
```

Out[33]: 2887

In [34]:
```
b.loc[b['income']==max(b['income'])]
```

Out[34]:

	income	outcome
12	2887	774

In [35]:
```
join_data.loc[join_data['income']==max(join_data['income'])]
```

Out[35]:

	days	customers	sold	income	outcome
12	13	105	57	2887	774

In [36]:
```
join_data.loc[join_data['income']==min(join_data['income'])]
```

Out[36]:

	days	customers	sold	income	outcome
4	5	135	71	1238	1211

In [37]:
```
join_data.loc[join_data['outcome']==max(join_data['outcome'])]
```

Out[37]:

	days	customers	sold	income	outcome
14	15	268	52	2485	1487

In [38]:
```
join_data.loc[join_data['outcome']==min(join_data['outcome'])]
```

Out[38]:

	days	customers	sold	income	outcome
6	7	223	134	2508	545

In [39]:
```
y
```

Out[39]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52

In [40]:
```
np.arange(16,21)
```

Out[40]:
```
array([16, 17, 18, 19, 20])
```

In [41]:
```
np.random.randint(50,350,size=5)
```

Out[41]:
```
array([114, 164, 194, 270,  98])
```

In [42]:
```
np.random.randint(50,150,size=5)
```

Out[42]:
```
array([ 73,  55,  61, 111,  60])
```

In [43]:
```
c={'days':[16, 17, 18, 19, 20],'customers':[ 64, 125, 343,  90, 154],'sold':[149,
```

In [44]:
```
d=pd.DataFrame(c)
```

In [45]:
```
d
```

Out[45]:

	days	customers	sold
0	16	64	149
1	17	125	96
2	18	343	79
3	19	90	138
4	20	154	79

In [46]:
```
np.arange(21,26)
```

Out[46]:
```
array([21, 22, 23, 24, 25])
```

In [47]:
```
np.random.randint(50,350,size=5)
```

Out[47]:
```
array([213,  79, 282, 290, 204])
```

In [48]:
```
np.random.randint(50,150,size=5)
```

Out[48]:
```
array([ 57, 121, 114, 137,  80])
```

In [49]:
```
e={'days':[21, 22, 23, 24, 25],'customers':[257,  57, 235, 150, 341],'sold':[ 69,
```

In [50]:
```
f=pd.DataFrame(e)
```

In [51]:
```
f
```

Out[51]:

	days	customers	sold
0	21	257	69
1	22	57	125
2	23	235	118
3	24	150	114
4	25	341	92

In [52]:
```
concat_data=pd.concat([y,d,f])
```

In [53]:
```
concat_data
```

Out[53]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
0	16	64	149
1	17	125	96
2	18	343	79
3	19	90	138
4	20	154	79
0	21	257	69
1	22	57	125
2	23	235	118
3	24	150	114
4	25	341	92

In [54]:
```
concat_data.reset_index()
```

Out[54]:

	index	days	customers	sold
0	0	1	50	139
1	1	2	58	85
2	2	3	309	69
3	3	4	310	98
4	4	5	135	71
5	5	6	69	106
6	6	7	223	134
7	7	8	255	77
8	8	9	337	62
9	9	10	145	136
10	10	11	342	92
11	11	12	270	75
12	12	13	105	57
13	13	14	231	135
14	14	15	268	52
15	0	16	64	149
16	1	17	125	96
17	2	18	343	79
18	3	19	90	138
19	4	20	154	79
20	0	21	257	69
21	1	22	57	125
22	2	23	235	118
23	3	24	150	114
24	4	25	341	92

In [55]:
```
concat_data
```

Out[55]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
0	16	64	149
1	17	125	96
2	18	343	79
3	19	90	138
4	20	154	79
0	21	257	69
1	22	57	125
2	23	235	118
3	24	150	114
4	25	341	92

In [56]:
```
concat_data.reset_index(inplace=True)
```

In [57]:
```
concat_data
```

Out[57]:

	index	days	customers	sold
0	0	1	50	139
1	1	2	58	85
2	2	3	309	69
3	3	4	310	98
4	4	5	135	71
5	5	6	69	106
6	6	7	223	134
7	7	8	255	77
8	8	9	337	62
9	9	10	145	136
10	10	11	342	92
11	11	12	270	75
12	12	13	105	57
13	13	14	231	135
14	14	15	268	52
15	0	16	64	149
16	1	17	125	96
17	2	18	343	79
18	3	19	90	138
19	4	20	154	79
20	0	21	257	69
21	1	22	57	125
22	2	23	235	118
23	3	24	150	114
24	4	25	341	92

In [58]:
```
concat_data.drop(columns=['index'],inplace=True)
```

In [59]:
```
concat_data
```

Out[59]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [60]:
```
concat_data
```

Out[60]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [61]:
```
concat_data.rename(columns={'customers':'visitors'})
```

Out[61]:

	days	visitors	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [62]:
```
concat_data
```

Out[62]:

	days	customers	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [63]:
```
concat_data.rename(columns={'customers':'visitors'},inplace=True)
```

In [64]:
```
concat_data
```

Out[64]:

	days	visitors	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [65]:
```
concat_data.set_index('days')
```

Out[65]:

days	visitors	sold
1	50	139
2	58	85
3	309	69
4	310	98
5	135	71
6	69	106
7	223	134
8	255	77
9	337	62
10	145	136
11	342	92
12	270	75
13	105	57
14	231	135
15	268	52
16	64	149
17	125	96
18	343	79
19	90	138
20	154	79
21	257	69
22	57	125
23	235	118
24	150	114
25	341	92

In [66]:
```
concat_data
```

Out[66]:

	days	visitors	sold
0	1	50	139
1	2	58	85
2	3	309	69
3	4	310	98
4	5	135	71
5	6	69	106
6	7	223	134
7	8	255	77
8	9	337	62
9	10	145	136
10	11	342	92
11	12	270	75
12	13	105	57
13	14	231	135
14	15	268	52
15	16	64	149
16	17	125	96
17	18	343	79
18	19	90	138
19	20	154	79
20	21	257	69
21	22	57	125
22	23	235	118
23	24	150	114
24	25	341	92

In [67]:
```
concat_data.set_index('days',inplace=True)
```

In [68]:
```
concat_data
```

Out[68]:

days	visitors	sold
1	50	139
2	58	85
3	309	69
4	310	98
5	135	71
6	69	106
7	223	134
8	255	77
9	337	62
10	145	136
11	342	92
12	270	75
13	105	57
14	231	135
15	268	52
16	64	149
17	125	96
18	343	79
19	90	138
20	154	79
21	257	69
22	57	125
23	235	118
24	150	114
25	341	92

In [69]:
```
join_data
```

Out[69]:

	days	customers	sold	income	outcome
0	1	50	139	1937	762
1	2	58	85	1345	925
2	3	309	69	1324	1030
3	4	310	98	2312	752
4	5	135	71	1238	1211
5	6	69	106	1707	558
6	7	223	134	2508	545
7	8	255	77	2841	1302
8	9	337	62	2340	1357
9	10	145	136	1394	1316
10	11	342	92	2605	570
11	12	270	75	2741	703
12	13	105	57	2887	774
13	14	231	135	2743	570
14	15	268	52	2485	1487

In [70]:
```
join_data.to_csv('SS Briyani.csv')
```

In [71]:
```
join_data.to_csv('SS Briyani.csv',index=False)
```

In [ ]:
```

```