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

In [2]:
```
df=pd.read_csv("russia_losses_equipment.csv")
```

In [3]:
```
df.head()
```

Out[3]:

	date	day	aircraft	helicopter	tank	APC	field artillery	MRL	military auto	fuel tank	drone	naval ship	anti-aircraft warfare	special equipment	mobile SRBM system
0	2022-02-25	2	10	7	80	516	49	4	100	60	0	2	0	NaN	NaN
1	2022-02-26	3	27	26	146	706	49	4	130	60	2	2	0	NaN	NaN
2	2022-02-27	4	27	26	150	706	50	4	130	60	2	2	0	NaN	NaN
3	2022-02-28	5	29	29	150	816	74	21	291	60	3	2	5	NaN	NaN
4	2022-03-01	6	29	29	198	846	77	24	305	60	3	2	7	NaN	NaN

In [4]:
```
df.tail()
```

Out[4]:

	date	day	aircraft	helicopter	tank	APC	field artillery	MRL	military auto	fuel tank	drone	naval ship	anti-aircraft warfare	special equipment	mobile SRBM system
36	2022-04-02	38	143	134	631	1776	317	100	1236	76	87	7	54	24.0	4.0
37	2022-04-03	39	143	134	644	1830	325	105	1249	76	89	7	54	24.0	4.0
38	2022-04-04	40	147	134	647	1844	330	107	1273	76	91	7	54	25.0	4.0
39	2022-04-05	41	150	134	676	1858	332	107	1322	76	94	7	55	25.0	4.0
40	2022-04-06	42	150	135	684	1861	332	107	1324	76	96	7	55	25.0	4.0

In [5]:
```
len(df)
```

Out[5]:
```
41
```

In [6]:
```
df.describe
```

Out[6]:
```
<bound method NDFrame.describe of          date  day  aircraft  helicopter  tank  APC  field artillery  MRL  \
0  2022-02-25    2        10           7    80  516               49    4   
1  2022-02-26    3        27          26   146  706               49    4   
2  2022-02-27    4        27          26   150  706               50    4   
3  2022-02-28    5        29          29   150  816               74   21   
4  2022-03-01    6        29          29   198  846               77   24   
5  2022-03-02    7        30          31   211  862               85   40   
6  2022-03-03    8        30          31   217  900               90   42   
7  2022-03-04    9        33          37   251  939              105   50   
8  2022-03-05   10        39          40   269  945              105   50   
9  2022-03-06   11        44          48   285  985              109   50   
10 2022-03-07   12        46          68   290  999              117   50   
11 2022-03-08   13        48          80   303 1036              120   56   
12 2022-03-09   14        49          81   317 1070              120   56   
13 2022-03-10   15        49          81   335 1105              123   56   
14 2022-03-11   16        57          83   353 1165              125   59   
15 2022-03-12   17        58          83   362 1205              135   62   
16 2022-03-13   18        74          86   374 1226              140   62   
17 2022-03-14   19        77          90   389 1249              150   64   
18 2022-03-15   20        81          95   404 1279              150   64   
19 2022-03-16   21        84         108   430 1375              190   70   
20 2022-03-17   22        86         108   444 1435              201   72   
21 2022-03-18   23        93         112   450 1448              205   72   
22 2022-03-19   24        95         115   466 1470              213   72   
23 2022-03-20   25        96         118   476 1487              230   74   
24 2022-03-21   26        97         121   498 1535              240   80   
25 2022-03-22   27        99         123   509 1556              252   80   
26 2022-03-23   28       101         124   517 1578              267   80   
27 2022-03-24   29       108         124   530 1597              280   82   
28 2022-03-25   30       115         125   561 1625              291   90   
29 2022-03-26   31       117         127   575 1640              293   91   
30 2022-03-27   32       121         127   582 1664              294   93   
31 2022-03-28   33       123         127   586 1694              302   95   
32 2022-03-29   34       127         129   597 1710              303   96   
33 2022-03-30   35       131         131   605 1723              305   96   
34 2022-03-31   36       135         131   614 1735              311   96   
35 2022-04-01   37       143         131   625 1751              316   96   
36 2022-04-02   38       143         134   631 1776              317  100   
37 2022-04-03   39       143         134   644 1830              325  105   
38 2022-04-04   40       147         134   647 1844              330  107   
39 2022-04-05   41       150         134   676 1858              332  107   
40 2022-04-06   42       150         135   684 1861              332  107   

    military auto  fuel tank  drone  naval ship  anti-aircraft warfare  \
0             100         60      0           2                      0   
1             130         60      2           2                      0   
2             130         60      2           2                      0   
3             291         60      3           2                      5   
4             305         60      3           2                      7   
5             355         60      3           2                      9   
6             374         60      3           2                     11   
7             404         60      3           2                     18   
8             409         60      3           2                     19   
9             447         60      4           2                     21   
10            454         60      7           3                     23   
11            474         60      7           3                     27   
12            482         60      7           3                     28   
13            526         60      7           3                     29   
14            558         60      7           3                     31   
15            585         60      7           3                     33   
16            600         60      7           3                     34   
17            617         60      8           3                     34   
18            640         60      9           3                     36   
19            819         60     11           3                     43   
20            864         60     11           3                     43   
21            879         60     12           3                     43   
22            914         60     17           3                     44   
23            947         60     21           3                     44   
24            969         60     24           3                     45   
25           1000         70     35           3                     45   
26           1008         70     42           4                     47   
27           1033         72     50           4                     47   
28           1089         72     53           5                     49   
29           1131         73     56           7                     51   
30           1144         73     56           7                     52   
31           1150         73     66           7                     54   
32           1178         73     71           7                     54   
33           1184         75     81           7                     54   
34           1201         75     83           7                     54   
35           1220         76     85           7                     54   
36           1236         76     87           7                     54   
37           1249         76     89           7                     54   
38           1273         76     91           7                     54   
39           1322         76     94           7                     55   
40           1324         76     96           7                     55   

    special equipment  mobile SRBM system  
0                 NaN                 NaN  
1                 NaN                 NaN  
2                 NaN                 NaN  
3                 NaN                 NaN  
4                 NaN                 NaN  
5                 NaN                 NaN  
6                 NaN                 NaN  
7                 NaN                 NaN  
8                 NaN                 NaN  
9                 NaN                 NaN  
10                NaN                 NaN  
11                NaN                 NaN  
12                NaN                 NaN  
13                NaN                 NaN  
14                NaN                 NaN  
15                NaN                 NaN  
16                NaN                 NaN  
17                NaN                 NaN  
18                NaN                 NaN  
19               10.0                 NaN  
20               10.0                 NaN  
21               11.0                 NaN  
22               11.0                 NaN  
23               12.0                 NaN  
24               13.0                 NaN  
25               15.0                 NaN  
26               15.0                 NaN  
27               16.0                 NaN  
28               18.0                 NaN  
29               19.0                 2.0  
30               21.0                 4.0  
31               21.0                 4.0  
32               21.0                 4.0  
33               21.0                 4.0  
34               22.0                 4.0  
35               24.0                 4.0  
36               24.0                 4.0  
37               24.0                 4.0  
38               25.0                 4.0  
39               25.0                 4.0  
40               25.0                 4.0  >
```

In [7]:
```
df.describe()
```

Out[7]:

	day	aircraft	helicopter	tank	APC	field artillery	MRL	military auto	fuel tank	drone	naval ship	anti-aircraft warfare	special equipment	mobile SRBM system
count	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	41.000000	22.000000	12.000000
mean	22.000000	83.926829	92.756098	425.146341	1335.292683	197.609756	67.756098	780.853659	65.414634	32.268293	4.024390	35.609756	18.318182	3.833333
std	11.979149	42.768791	40.527633	170.695718	380.066523	96.905593	28.721752	378.553666	6.978451	33.923461	2.030859	17.974813	5.410628	0.577350
min	2.000000	10.000000	7.000000	80.000000	516.000000	49.000000	4.000000	100.000000	60.000000	0.000000	2.000000	0.000000	10.000000	2.000000
25%	12.000000	46.000000	68.000000	290.000000	999.000000	117.000000	50.000000	454.000000	60.000000	7.000000	3.000000	23.000000	13.500000	4.000000
50%	22.000000	86.000000	108.000000	444.000000	1435.000000	201.000000	72.000000	864.000000	60.000000	11.000000	3.000000	43.000000	20.000000	4.000000
75%	32.000000	121.000000	127.000000	582.000000	1664.000000	294.000000	93.000000	1144.000000	73.000000	56.000000	7.000000	52.000000	23.500000	4.000000
max	42.000000	150.000000	135.000000	684.000000	1861.000000	332.000000	107.000000	1324.000000	76.000000	96.000000	7.000000	55.000000	25.000000	4.000000

In [8]:
```
df.isnull()# if there is True it is improper data or nulldata
```

Out[8]:

	date	day	aircraft	helicopter	tank	APC	field artillery	MRL	military auto	fuel tank	drone	naval ship	anti-aircraft warfare	special equipment	mobile SRBM system
0	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
1	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
2	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
3	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
4	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
5	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
6	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
7	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
8	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
9	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
10	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
11	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
12	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
13	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
14	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
15	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
16	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
17	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
18	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
19	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
20	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
21	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
22	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
23	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
24	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
25	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
26	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
27	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
28	False	False	False	False	False	False	False	False	False	False	False	False	False	True	True
29	False	False	False	False	False	False	False	False	False	False	False	False	False	True	False
30	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
31	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
32	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
33	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
34	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
35	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
36	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
37	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
38	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
39	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
40	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False

In [9]:
```
df.isna().sum()#isna means-is there any empty cells/null values,sum how many are there for every column
```

Out[9]:
```
date                      0
day                       0
aircraft                  0
helicopter                0
tank                      0
APC                       0
field artillery           0
MRL                       0
military auto             0
fuel tank                 0
drone                     0
naval ship                0
anti-aircraft warfare     0
special equipment        19
mobile SRBM system       29
dtype: int64
```

In [10]:
```
#how will you handle empty cells/NaN values is dropna and fillna
```

In [11]:
```
df.fillna({'special equipment':0, 'mobile SRBM system':1},inplace=True)
df.head()
```

Out[11]:

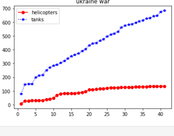
	date	day	aircraft	helicopter	tank	APC	field artillery	MRL	military auto	fuel tank	drone	naval ship	anti-aircraft warfare	special equipment	mobile SRBM system
0	2022-02-25	2	10	7	80	516	49	4	100	60	0	2	0	0.0	1.0
1	2022-02-26	3	27	26	146	706	49	4	130	60	2	2	0	0.0	1.0
2	2022-02-27	4	27	26	150	706	50	4	130	60	2	2	0	0.0	1.0
3	2022-02-28	5	29	29	150	816	74	21	291	60	3	2	5	0.0	1.0
4	2022-03-01	6	29	29	198	846	77	24	305	60	3	2	7	0.0	1.0

In [12]:
```
# matplotlib is a mathematical plotting library using this s/w we can perform EDA with the help of pictures,graphs,pie charts,plots etc
# pyplot is one of the module
```

In [13]:
```
import matplotlib.pyplot as plt
```

In [14]:
```
x = [i for i in range(1,42)]
y = df['helicopters']
y2 = df['tank']

plt.title("ukraine war")
plt.plot(x,y,"o-r",label="helicopters")
plt.plot(x,y2,"*:b",label="tanks")
plt.legend(loc='best')
plt.plot()
plt.show()
```



In [ ]:
```
```