In [5]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

In [6]:

```
data = np.array([[1.,1.,'OR'],[1.,2.,'OR'],[1.,2.5,'OR'],[3.,3.,'GF'],[3.5,2.5,'GF'],[4.
,3.,'GF'],[3.,2.5,'NN']])
query = [3.0,2.0,'NN']
```

In [7]:

```
df = pd.DataFrame(data)
df.columns = ['x','y','cat']
df
```

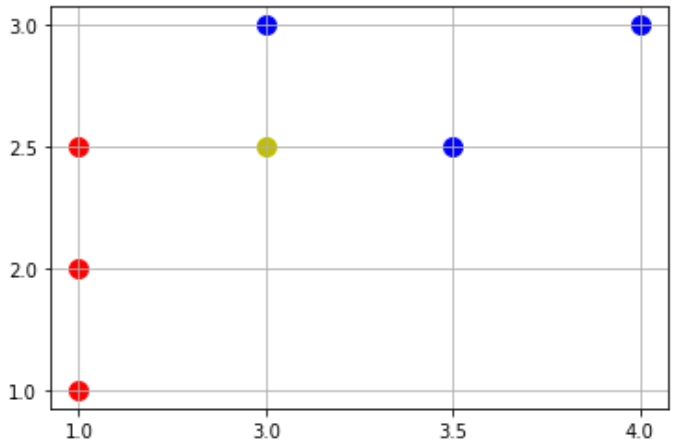
Out[7]:

	x	y	cat
0	**1.0**	**1.0**	**OR**
1	**1.0**	**2.0**	**OR**
2	**1.0**	**2.5**	**OR**
3	**3.0**	**3.0**	**GF**
4	**3.5**	**2.5**	**GF**
5	**4.0**	**3.0**	**GF**
6	**3.0**	**2.5**	**NN**

In [9]:

```
for i in range(7):
    if(df.iloc[i]['cat']=='GF'):
        plt.scatter(df.iloc[i]['x'],df.iloc[i]['y'], s=100, c='b')
    elif(df.iloc[i]['cat']=='OR'):
        plt.scatter(df.iloc[i]['x'],df.iloc[i]['y'], s=100, c='r')
    else:
        plt.scatter(df.iloc[i]['x'],df.iloc[i]['y'], s=100, c='y')


plt.grid()
plt.show()
```



In [10]:

```
import math
```

```
dis = []
for i in range(7):
    dis.append (math.sqrt((float(df.iloc[i]['x']) - query[0]) **2 + (float(df.iloc[i]['y
']) - query[1]) **2))
```

In [11]:

```
df['dis'] = dis
df
```

Out[11]:

	x	y	cat	dis
0	**1.0**	**1.0**	**OR**	**2.236068**
1	**1.0**	**2.0**	**OR**	**2.000000**
2	**1.0**	**2.5**	**OR**	**2.061553**
3	**3.0**	**3.0**	**GF**	**1.000000**
4	**3.5**	**2.5**	**GF**	**0.707107**
5	**4.0**	**3.0**	**GF**	**1.414214**
6	**3.0**	**2.5**	**NN**	**0.500000**

In [13]:

```
df.to_excel('D:/sistem cerdas/output_KNN01.xls')
```

```
<ipython-input-13-32f99304c40c>:1: FutureWarning: As the xlwt package is no longer mainta
ined, the xlwt engine will be removed in a future version of pandas. This is the only eng
ine in pandas that supports writing in the xls format. Install openpyxl and write to an xl
sx file instead. You can set the option io.excel.xls.writer to 'xlwt' to silence this war
ning. While this option is deprecated and will also raise a warning, it can be globally s
et and the warning suppressed.
  df.to_excel('D:/sistem cerdas/output_KNN01.xls')
```

In [ ]:

```
```