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

df=pd.read_csv('iris.csv')
df
```

Out[1]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

150 rows × 5 columns

In [2]:
```
from sklearn.preprocessing import StandardScaler

x=df.drop(['species'],axis=1)

sc=StandardScaler()

x=sc.fit_transform(x)
```

In [3]:
```
x
```

Out[3]:
```
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```

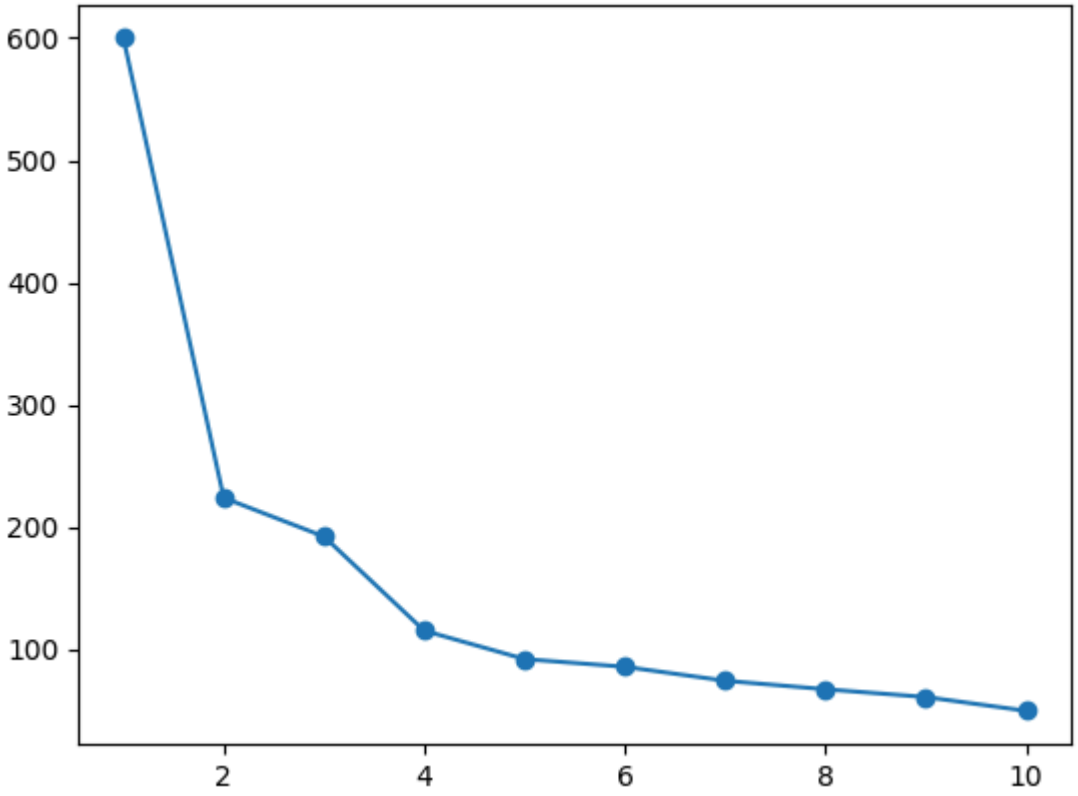
In [4]:
```
from sklearn.cluster import KMeans

SSE=[]
for i in range(1,11):
    model=KMeans(n_clusters=i,random_state=32)
    model.fit(x)
    SSE.append(model.inertia_)
```

In [5]:
```
import matplotlib.pyplot as plt

plt.plot(range(1,11),SSE,marker='o')
```

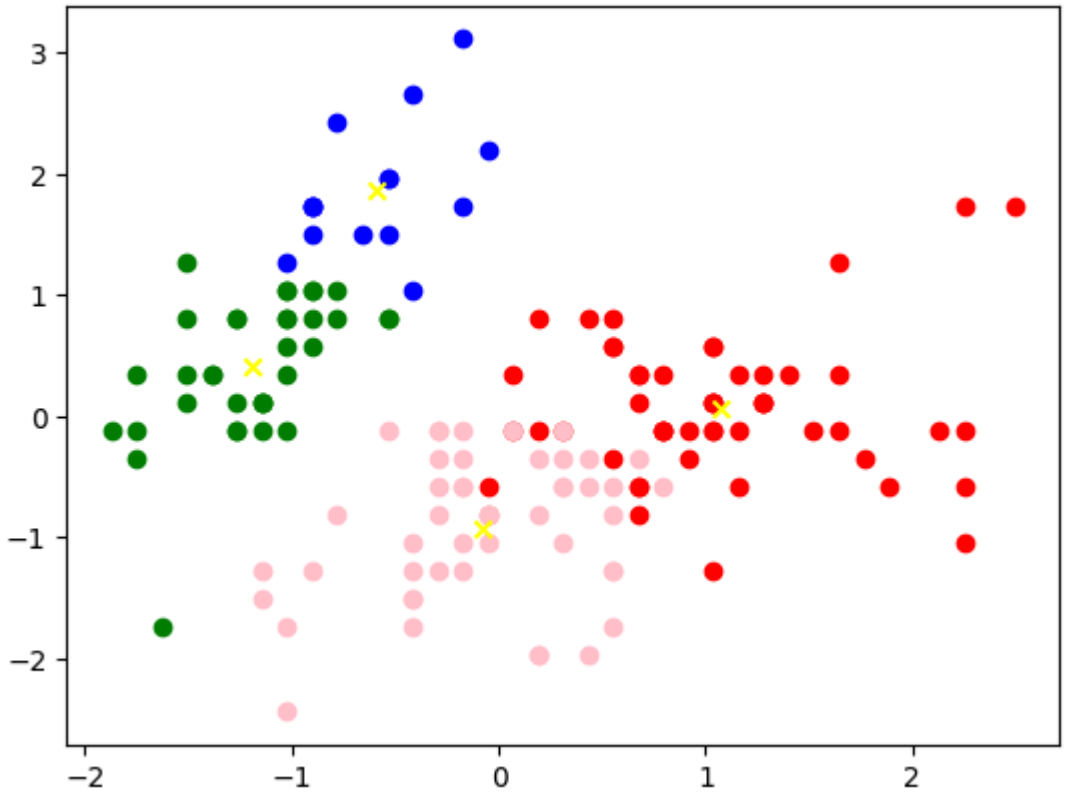
Out[5]:
```
[<matplotlib.lines.Line2D at 0x119fa0b2900>]
```



In [21]:
```
model=KMeans(n_clusters=4,random_state=32)
clusters=model.fit_predict(x)

plt.scatter(x[clusters==0,0],x[clusters==0,1],c='red')
plt.scatter(x[clusters==1,0],x[clusters==1,1],c='green')
plt.scatter(x[clusters==2,0],x[clusters==2,1],c='blue')
plt.scatter(x[clusters==3,0],x[clusters==3,1],c='pink')

plt.scatter(model.cluster_centers_[:,0],model.cluster_centers_[:,1],marke
plt.show()
```



In [ ]: