In [10]:
```
#task-1
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv("iris.csv")
df.head(5)
```

Out[10]:

	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

In [4]:
```
df.tail(3)
```

Out[4]:

	sepal_length	sepal_width	petal_length	petal_width	species
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

In [9]:
```
#task-2
df.sort_values(by=['petal_length'])
```

Out[9]:

	sepal_length	sepal_width	petal_length	petal_width	species
22	4.6	3.6	1.0	0.2	setosa
13	4.3	3.0	1.1	0.1	setosa
14	5.8	4.0	1.2	0.2	setosa
35	5.0	3.2	1.2	0.2	setosa
36	5.5	3.5	1.3	0.2	setosa
40	5.0	3.5	1.3	0.3	setosa
38	4.4	3.0	1.3	0.2	setosa
42	4.4	3.2	1.3	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
41	4.5	2.3	1.3	0.3	setosa
16	5.4	3.9	1.3	0.4	setosa
17	5.1	3.5	1.4	0.3	setosa
45	4.8	3.0	1.4	0.3	setosa
33	5.5	4.2	1.4	0.2	setosa
28	5.2	3.4	1.4	0.2	setosa
47	4.6	3.2	1.4	0.2	setosa
49	5.0	3.3	1.4	0.2	setosa
0	5.1	3.5	1.4	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
12	4.8	3.0	1.4	0.1	setosa
6	4.6	3.4	1.4	0.3	setosa
8	4.4	2.9	1.4	0.2	setosa
34	4.9	3.1	1.5	0.1	setosa
10	5.4	3.7	1.5	0.2	setosa
32	5.2	4.1	1.5	0.1	setosa
31	5.4	3.4	1.5	0.4	setosa
15	5.7	4.4	1.5	0.4	setosa
27	5.2	3.5	1.5	0.2	setosa
9	4.9	3.1	1.5	0.1	setosa
...	...	...	...	...	...
139	6.9	3.1	5.4	2.1	virginica
148	6.2	3.4	5.4	2.3	virginica

	sepal_length	sepal_width	petal_length	petal_width	species
137	6.4	3.1	5.5	1.8	virginica
112	6.8	3.0	5.5	2.1	virginica
116	6.5	3.0	5.5	1.8	virginica
136	6.3	3.4	5.6	2.4	virginica
140	6.7	3.1	5.6	2.4	virginica
128	6.4	2.8	5.6	2.1	virginica
134	6.1	2.6	5.6	1.4	virginica
103	6.3	2.9	5.6	1.8	virginica
132	6.4	2.8	5.6	2.2	virginica
144	6.7	3.3	5.7	2.5	virginica
120	6.9	3.2	5.7	2.3	virginica
124	6.7	3.3	5.7	2.1	virginica
108	6.7	2.5	5.8	1.8	virginica
129	7.2	3.0	5.8	1.6	virginica
104	6.5	3.0	5.8	2.2	virginica
102	7.1	3.0	5.9	2.1	virginica
143	6.8	3.2	5.9	2.3	virginica
100	6.3	3.3	6.0	2.5	virginica
125	7.2	3.2	6.0	1.8	virginica
130	7.4	2.8	6.1	1.9	virginica
135	7.7	3.0	6.1	2.3	virginica
109	7.2	3.6	6.1	2.5	virginica
107	7.3	2.9	6.3	1.8	virginica
131	7.9	3.8	6.4	2.0	virginica
105	7.6	3.0	6.6	2.1	virginica
117	7.7	3.8	6.7	2.2	virginica
122	7.7	2.8	6.7	2.0	virginica
118	7.7	2.6	6.9	2.3	virginica

150 rows × 5 columns

In [12]:
```
#task-3
df.groupby("species")["sepal_length", "sepal_width", "petal_length", "petal_width
```

Out[12]:

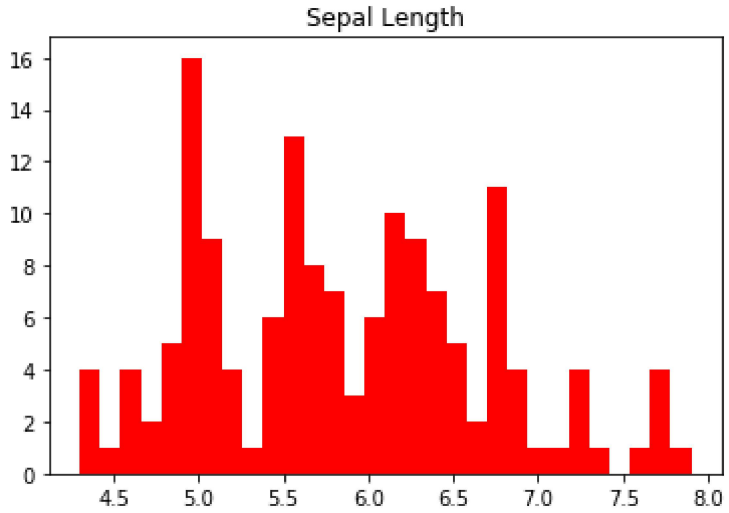
species	sepal_length	sepal_width	petal_length	petal_width
setosa	5.006	3.418	1.464	0.244
versicolor	5.936	2.770	4.260	1.326
virginica	6.588	2.974	5.552	2.026

In [19]:
```
#task 5
df['Calyx Width'] = np.where(df['sepal_length'] <5, 0, 1)
df.head(10)
```

Out[19]:

	sepal_length	sepal_width	petal_length	petal_width	species	Calyx Width
0	5.1	3.5	1.4	0.2	setosa	1
1	4.9	3.0	1.4	0.2	setosa	0
2	4.7	3.2	1.3	0.2	setosa	0
3	4.6	3.1	1.5	0.2	setosa	0
4	5.0	3.6	1.4	0.2	setosa	1
5	5.4	3.9	1.7	0.4	setosa	1
6	4.6	3.4	1.4	0.3	setosa	0
7	5.0	3.4	1.5	0.2	setosa	1
8	4.4	2.9	1.4	0.2	setosa	0
9	4.9	3.1	1.5	0.1	setosa	0

In [22]:
```
sepal_length = df['sepal_length']
plt.hist(sepal_length, bins = 30, color = 'red')
plt.title("Sepal Length")
plt.show()
```



In [ ]: