In [6]:
```
from pandas import DataFrame
import random
x = []
y = []
for i in range(30):
    x.append(random.randint(30, 80))
for i in range(30):
    y.append(random.randint(60, 100))

Data = {'x': x,
        'y': y
       }
df = DataFrame(Data,columns=['x','y'])
print(df)
```

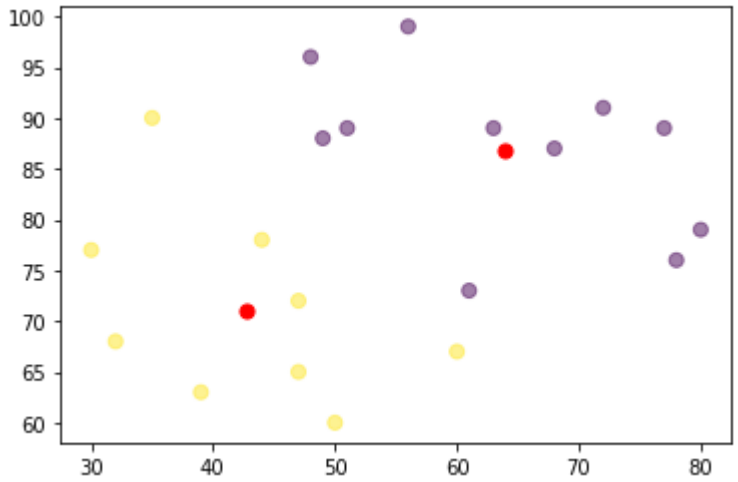
```
     x   y
0   55  72
1   44  83
2   40  98
3   68  70
4   50  83
5   34  60
6   48  89
7   40  66
8   67  62
9   75  61
10  79  73
11  45  74
12  66  75
13  44  62
14  42  96
15  71  99
16  54  67
17  37  65
18  39  88
19  31  92
20  30  97
21  35  71
22  75  94
23  52  93
24  45  76
25  50  65
26  80  77
27  51  67
28  80  74
29  31  62
```

In [2]:
```
import matplotlib.pyplot as plt
from sklearn.cluster import KMeans

kmeans = KMeans(n_clusters=2).fit(df)
centroids = kmeans.cluster_centers_
print(centroids)

plt.scatter(df['x'], df['y'], c= kmeans.labels_.astype(float), s=50, alpha=0.5)
plt.scatter(centroids[:, 0], centroids[:, 1], c='red', s=50)
plt.show()
```

```
[[63.90909091 86.90909091]
 [42.66666667 71.11111111]]
```



In [3]:
```
import tkinter as tk
```

In [4]:
```
from matplotlib.backends.backend_tkagg import FigureCanvasTkAgg
```

In [5]:
```
root= tk.Tk()
canvas1 = tk.Canvas(root, width = 100, height = 100)
canvas1.pack()
label1 = tk.Label(root, text=centroids, justify = 'center')
canvas1.create_window(70, 50, window=label1)
figure1 = plt.Figure(figsize=(5,4), dpi=100)
ax1 = figure1.add_subplot(111)
ax1.scatter(df['x'], df['y'], c= kmeans.labels_.astype(float), s=50, alpha=0.5)
ax1.scatter(centroids[:, 0], centroids[:, 1], c='red', s=50)
scatter1 = FigureCanvasTkAgg(figure1, root)
scatter1.get_tk_widget().pack(side=tk.LEFT, fill=tk.BOTH)
root.mainloop()
```

In [ ]:
```

```