In [1]:
```
import pandas as pd
import numpy as np
import random
import csv
from sklearn.metrics import confusion_matrix
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.metrics import accuracy_score
from sklearn.metrics import precision_score
from sklearn.metrics import recall_score
from sklearn.metrics import f1_score
```

In [8]:
```
list = [0,1]
with open("Covid.csv","w",newline='') as file:
    writer =csv.writer(file)
    writer.writerow(['SN','Y_Predicted','Y_Actual'])
    for i in range(1,501):
        if i<=105 :
            if i<=50:
                if i<=5:
                    writer.writerow([i,0,1])
                else:
                    writer.writerow([i,1,1])
            else:
                writer.writerow([i,1,0])
        else:
            writer.writerow([i,0,0])
```

In [17]:
```
df=pd.read_csv(r'C:\Users\DELL\Desktop\Covid (2).csv')
print(df)
print("\n\n")
```

```
      SN  Y_Predicted  Y_Actual
0      1            0         1
1      2            0         1
2      3            0         1
3      4            0         1
4      5            0         1
..   ...          ...       ...
495  496            0         0
496  497            0         0
497  498            0         0
498  499            0         0
499  500            0         0

[500 rows x 3 columns]
```

In [18]:
```
actualValue=df['Y_Actual']
predictedValue=df['Y_Predicted']

actualValue1=actualValue.values
predictedValue1=predictedValue.values

cmt = pd.crosstab(df['Y_Actual'], df['Y_Predicted'], rownames=['Actual'], colnames=['predicted'])


print(cmt)
```

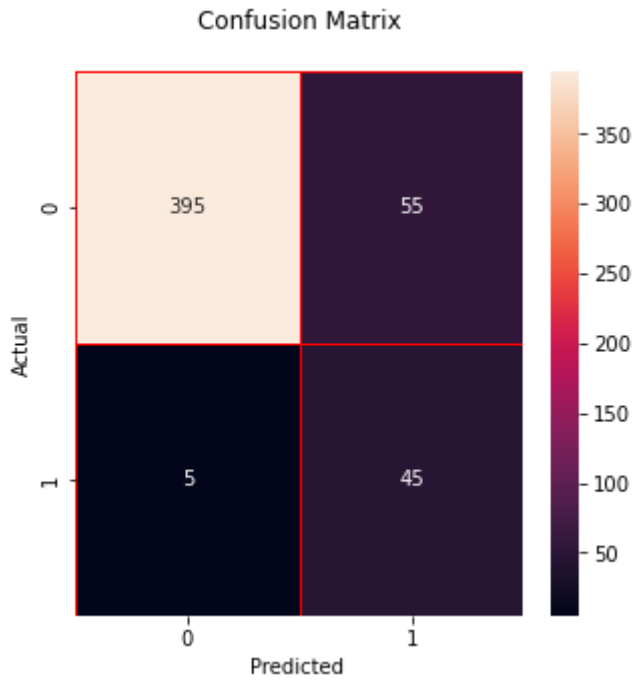
```
predicted    0   1
Actual
0          395  55
1            5  45
```

In [19]:
```
print("\n\nAccuracy Score : ",accuracy_score(actualValue1,predictedValue1))


print("\n\nPrecision      : ",precision_score(actualValue1,predictedValue1))


print("\n\nRecall         : ",recall_score(actualValue1,predictedValue1))


print("\n\nF-1  Score     : ",f1_score(actualValue1,predictedValue1))
```

```
Accuracy Score :  0.88

Precision      :  0.45

Recall         :  0.9

F-1  Score     :  0.6
```

In [20]:
```
f, ax=plt.subplots(figsize=(5,5))
sns.heatmap(cmt,annot=True,linewidths=0.5,linecolor="red",fmt=".0f",ax=ax)
plt.xlabel("Y_Predicted")
plt.ylabel("Y_Actual")
ax.set_title('Confusion Matrix\n');
ax.set_xlabel('Predicted ');
ax.set_ylabel('Actual');
print("\n\n")
print("Confusion Matrix in a Color Format \n")
plt.show()
```

```
Confusion Matrix in a Color Format
```


Confusion Matrix
395
55
5
45
0
1
Actual
0
1
Predicted
350
300
250
200
150
100
50

In [ ]: