In [80]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import KFold
from sklearn.model_selection import cross_val_score
from sklearn.linear_model import LogisticRegression
from sklearn import datasets
from sklearn.metrics import confusion_matrix
from sklearn.metrics import classification_report
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
import seaborn as sns
from sklearn import metrics
```

In [81]:
```
dataset = pd.read_csv('C:\\Users\\Eric\\Desktop\\4105\\HW2\\diabetes.csv')
x = dataset.values[:,6]
y = dataset.values[:,8]

x = x.reshape(-1,1)
```

In [82]:
```
kfold = KFold(n_splits=10, random_state=0, shuffle=True)
model = LogisticRegression(solver='liblinear')
results = cross_val_score(model, x, y, cv=kfold)
print("Accuracy: %.3f%% (%.3f%%)" % (results.mean()*100.0, results.std()*100.0))
```

```
Accuracy: 66.025% (4.372%)
```

In [83]:
```
xTrain, xTest, yTrain, yTest = train_test_split(x, y, test_size = 0.2, random_state=0)

model = LogisticRegression(solver='liblinear')
model.fit(xTrain, yTrain)
predicted = model.predict(xTest)
matrix = confusion_matrix(yTest, predicted)
```

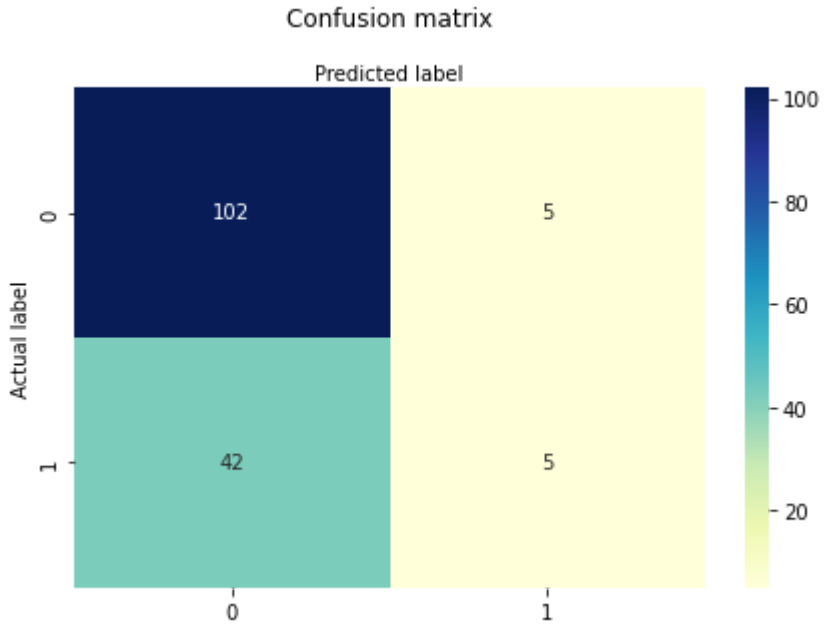
In [84]:
```
report = classification_report(yTest, predicted)
print(report)
```

```
              precision    recall  f1-score   support

         0.0       0.71      0.95      0.81       107
         1.0       0.50      0.11      0.18        47

    accuracy                           0.69       154
   macro avg       0.60      0.53      0.49       154
weighted avg       0.64      0.69      0.62       154
```

In [85]:
```
class_names=[0,1] # name  of classes
fig, ax = plt.subplots()
tick_marks = np.arange(len(class_names))
plt.xticks(tick_marks, class_names)
plt.yticks(tick_marks, class_names)
# create heatmap
sns.heatmap(pd.DataFrame(matrix), annot=True, cmap="YlGnBu" ,fmt='g')
ax.xaxis.set_label_position("top")
plt.tight_layout()
plt.title('Confusion matrix', y=1.1)
```

```
plt.ylabel('Actual label')
plt.xlabel('Predicted label')
```

Out[85]:
```
Text(0.5, 257.44, 'Predicted label')
```



In [ ]: