```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import sys
```

```python
data=pd.read_csv('fetal_health.csv')
data.head()
```

```
   baseline value  accelerations  fetal_movement  uterine_contractions
\
0           120.0          0.000             0.0                 0.000

1           132.0          0.006             0.0                 0.006

2           133.0          0.003             0.0                 0.008

3           134.0          0.003             0.0                 0.008

4           132.0          0.007             0.0                 0.008


   light_decelerations  severe_decelerations  prolongued_decelerations
\
0                0.000                   0.0                       0.0

1                0.003                   0.0                       0.0

2                0.003                   0.0                       0.0

3                0.003                   0.0                       0.0

4                0.000                   0.0                       0.0


   abnormal_short_term_variability
mean_value_of_short_term_variability  \
0                             73.0
0.5
1                             17.0
2.1
2                             16.0
2.1
3                             16.0
2.4
4                             16.0
2.4

   percentage_of_time_with_abnormal_long_term_variability  ...
```

```
histogram_min  \
0                                               43.0       ...
62.0
1                                                0.0       ...
68.0
2                                                0.0       ...
68.0
3                                                0.0       ...
53.0
4                                                0.0       ...
53.0

   histogram_max  histogram_number_of_peaks
histogram_number_of_zeroes  \
0          126.0                        2.0
0.0
1          198.0                        6.0
1.0
2          198.0                        5.0
1.0
3          170.0                       11.0
0.0
4          170.0                        9.0
0.0

   histogram_mode  histogram_mean  histogram_median
histogram_variance  \
0           120.0           137.0             121.0
73.0
1           141.0           136.0             140.0
12.0
2           141.0           135.0             138.0
13.0
3           137.0           134.0             137.0
13.0
4           137.0           136.0             138.0
11.0

   histogram_tendency  fetal_health
0                 1.0           2.0
1                 0.0           1.0
2                 0.0           1.0
3                 1.0           1.0
4                 1.0           1.0

[5 rows x 22 columns]
```

```python
data['fetal_health'] = data['fetal_health'].replace(1.0,0)
data['fetal_health'] = data['fetal_health'].replace(2.0,0)
data['fetal_health'] = data['fetal_health'].replace(3.0,1)
```

```
X = data.drop('fetal_health', axis = 1)
```

```
y = data['fetal_health']
```

```
from sklearn.model_selection import train_test_split
```

```
x_train,x_test,y_train,y_test = train_test_split(X,y,test_size=0.2,
random_state=142)
```

```
from sklearn.preprocessing import scale
from sklearn import model_selection
from sklearn.model_selection import RepeatedKFold
from sklearn.model_selection import train_test_split
from sklearn.cross_decomposition import PLSRegression
from sklearn.metrics import accuracy_score
```

```
plsr = PLSRegression(n_components=2)
plsr.fit(x_train, y_train)

ypred = plsr.predict(x_test)
ypred_binary = (ypred > 0.5).astype('uint8')
ypred_binary
```

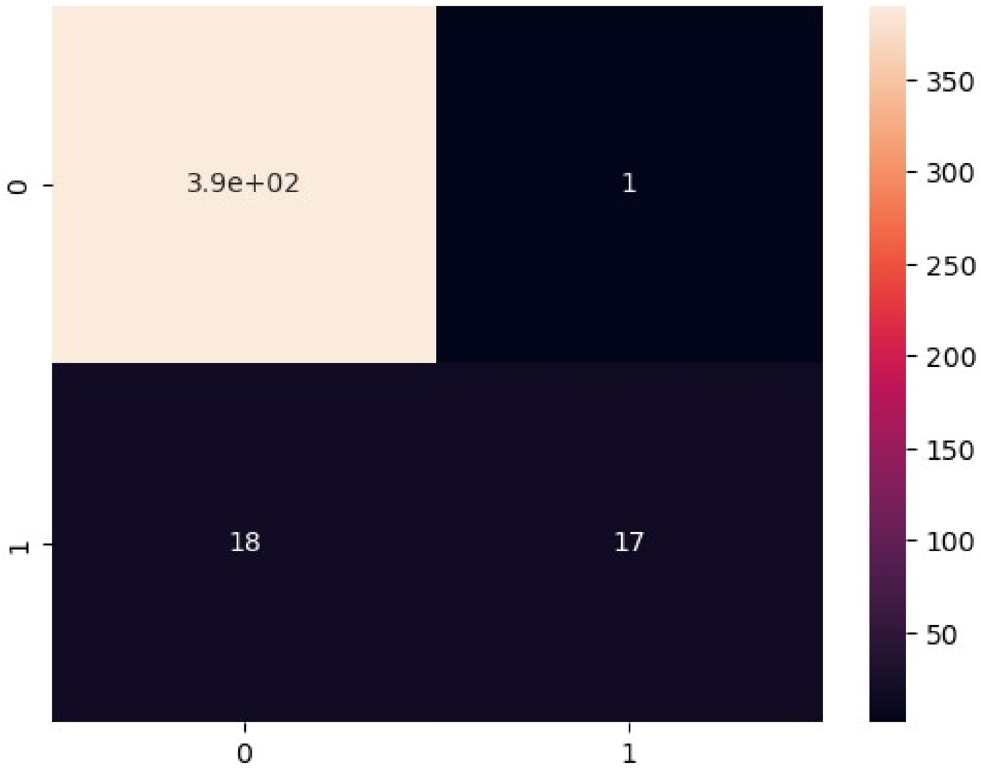
```
print(accuracy_score(y_test, ypred_binary))
```

```
0.9553990610328639
```

```
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test, ypred_binary)
```

```
sns.heatmap(cm, annot=True)
```

```
<AxesSubplot:>
```



```
from sklearn.metrics import  roc_auc_score
uc_roc = roc_auc_score(y_test, ypred_binary, multi_class='ovr')
uc_roc
```

```
0.7415783704786263
```

```
from sklearn.metrics import classification_report
print(classification_report(y_test, ypred_binary))
```

```
              precision    recall  f1-score   support

         0.0       0.95      1.00      0.97       391
         1.0       0.93      0.37      0.53        35

    accuracy                           0.95       426
   macro avg       0.94      0.68      0.75       426
weighted avg       0.95      0.95      0.94       426
```