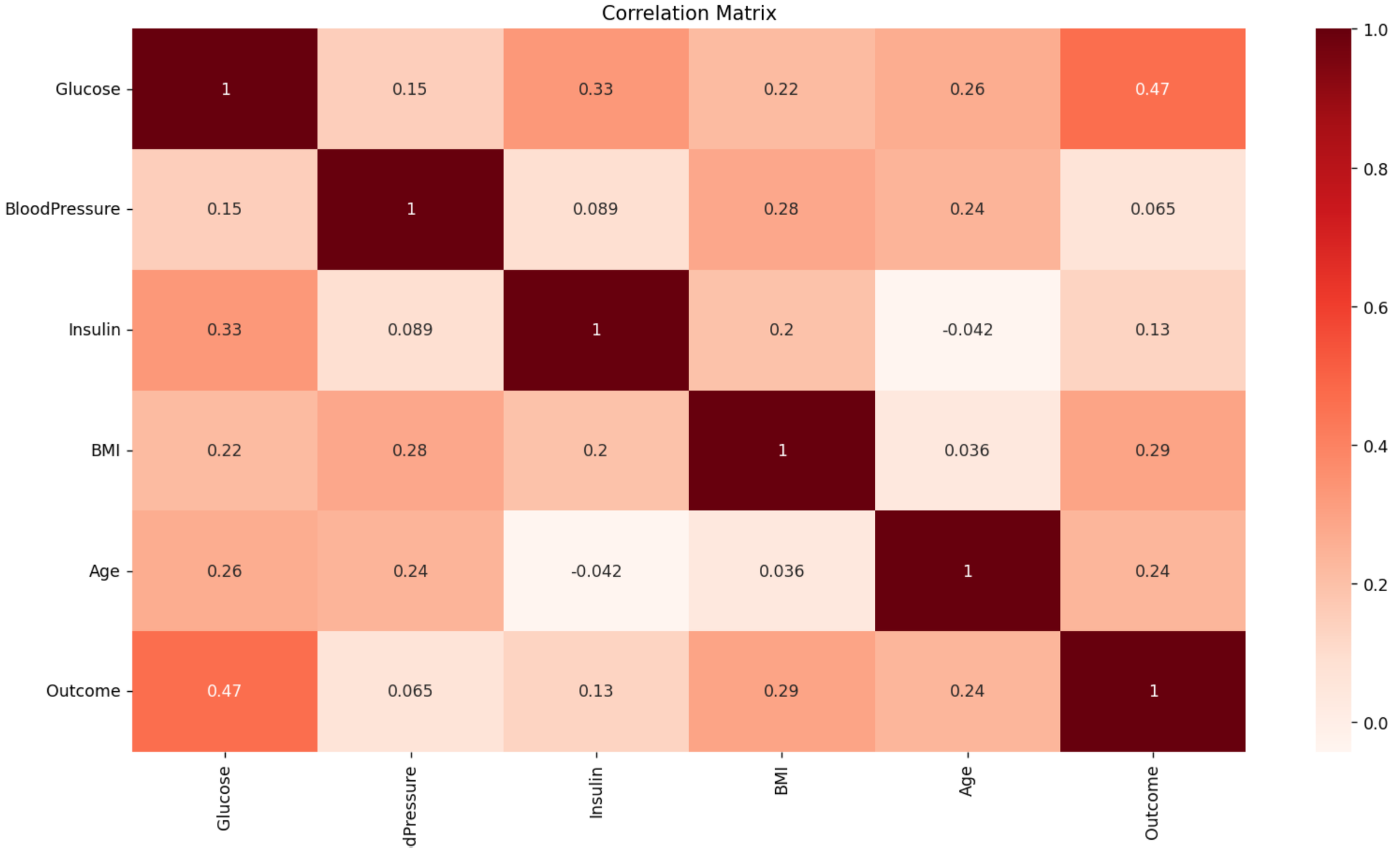
The first 10 rows of the alternated dataset are:

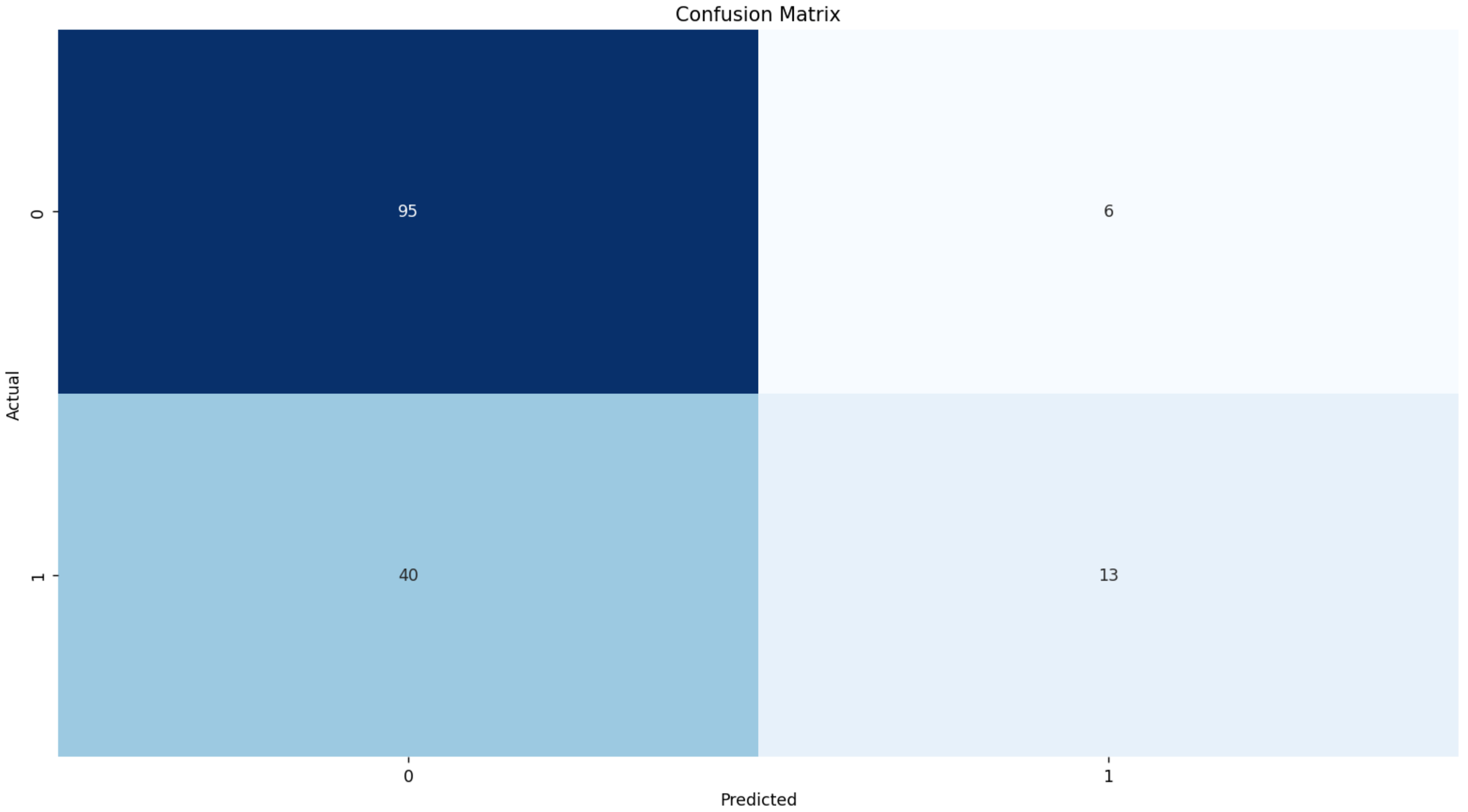
	Glucose	BloodPressure	Insulin	BMI	Age	Outcome
0	148	72	0	33.6	50	1
1	85	66	0	26.6	31	0
2	183	64	0	23.3	32	1
3	89	66	94	28.1	21	0
4	137	40	168	43.1	33	1
5	116	74	0	25.6	30	0
6	78	50	88	31.0	26	1
7	115	0	0	35.3	29	0
8	197	70	543	30.5	53	1
9	125	96	0	0.0	54	1

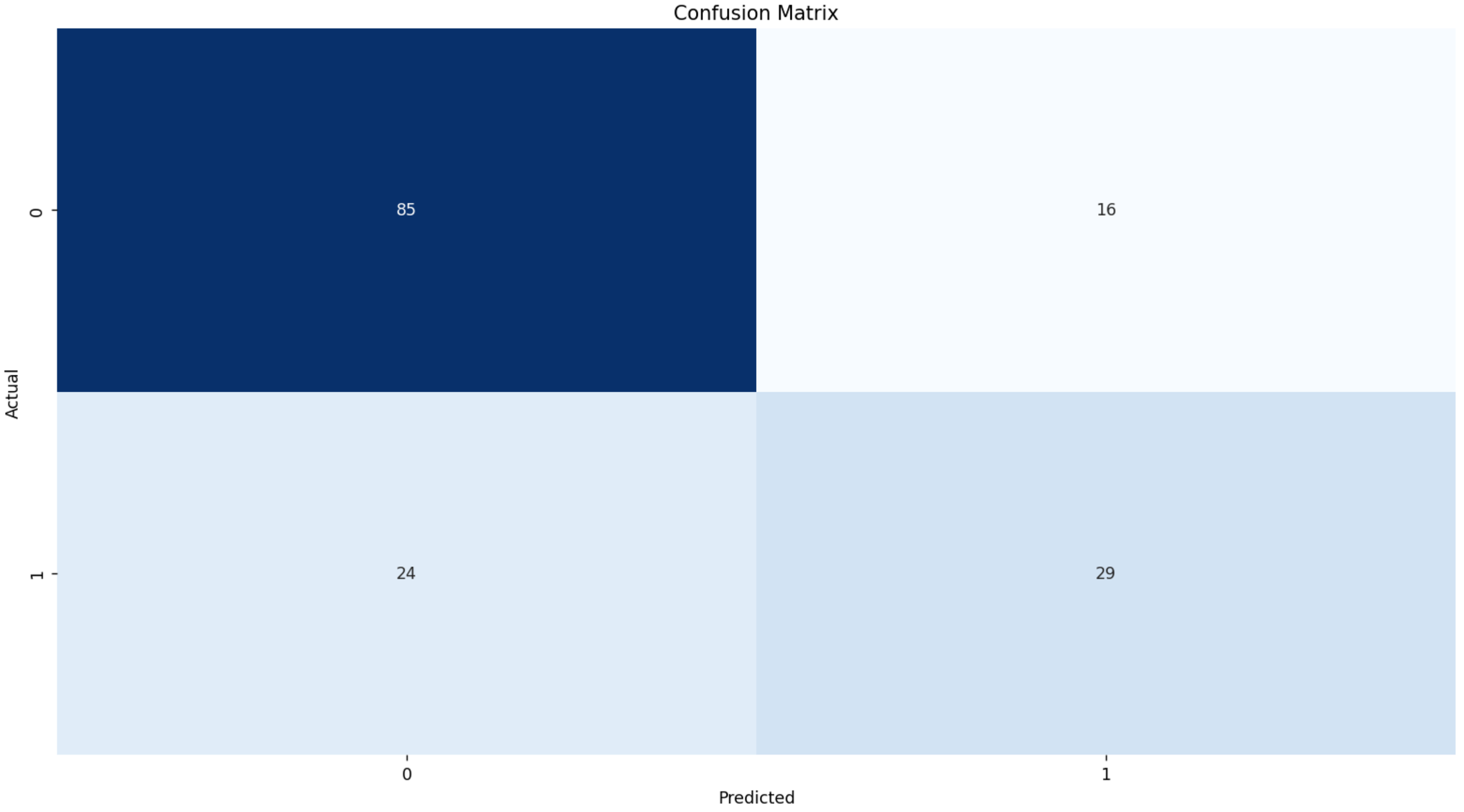
	Glucose	BloodPressure	Insulin	BMI	Age	Outcome
Glucose	1.000000	0.152590	0.331357	0.221071	0.263514	0.466581
BloodPressure	0.152590	1.000000	0.088933	0.281805	0.239528	0.065068
Insulin	0.331357	0.088933	1.000000	0.197859	-0.042163	0.130548
BMI	0.221071	0.281805	0.197859	1.000000	0.036242	0.292695
Age	0.263514	0.239528	-0.042163	0.036242	1.000000	0.238356
Outcome	0.466581	0.065068	0.130548	0.292695	0.238356	1.000000

From the correlation matrix heatmap we can say that 'Glucose' and 'Outcome' are strongly correlated


Correlation Matrix
Glucose
BloodPressure
Insulin
BMI
Age
Outcome
1
0.15
0.33
0.22
0.26
0.47
0.15
1
0.089
0.28
0.24
0.065
0.33
0.089
1
0.2
-0.042
0.13
0.22
0.28
0.2
1
0.036
0.29
0.26
0.24
-0.042
0.036
1
0.24
0.47
0.065
0.13
0.29
0.24
1
1.0
0.8
0.6
0.4
0.2
0.0

```
The Percentage accuracy on training data :
78.33876221498372
The Percentage accuracy on testing data :
74.02597402597402
Accuracy for different learning rates :
LR = 0.00001
70.12987012987013
LR = 0.001
65.5844155844156
LR = 0.05
65.5844155844156
LR = 0.1
65.5844155844156
Hence the optimal learning rate is 0.00001
The Percentage accuracy on training data :
72.80130293159608
The Percentage accuracy on testing data :
70.12987012987013
```


Confusion Matrix
95
6
40
13
0
1
Actual
0
1
Predicted


Confusion Matrix
85
16
24
29
0
1
Actual
0
1
Predicted