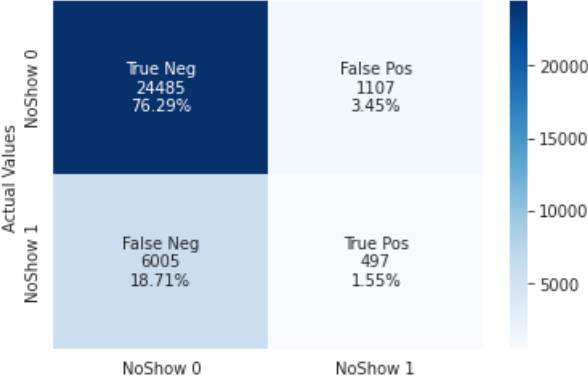
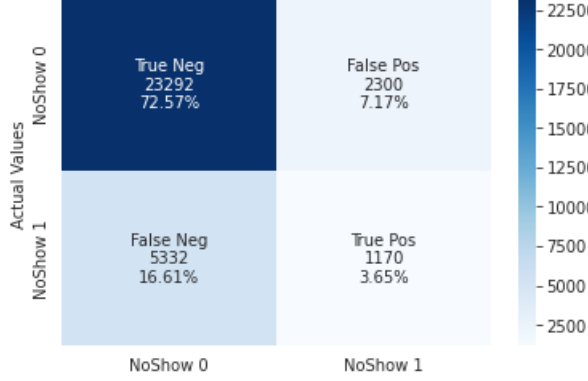
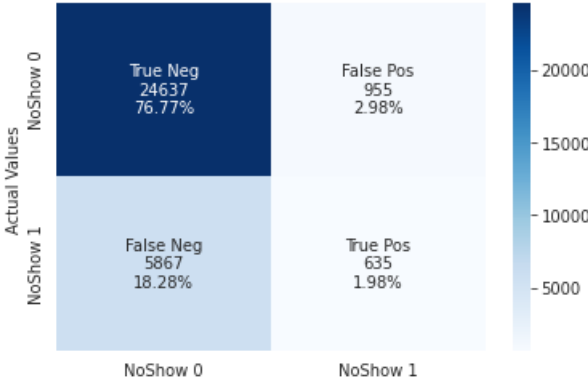
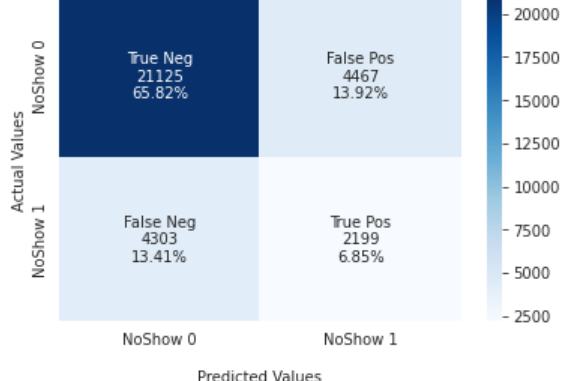
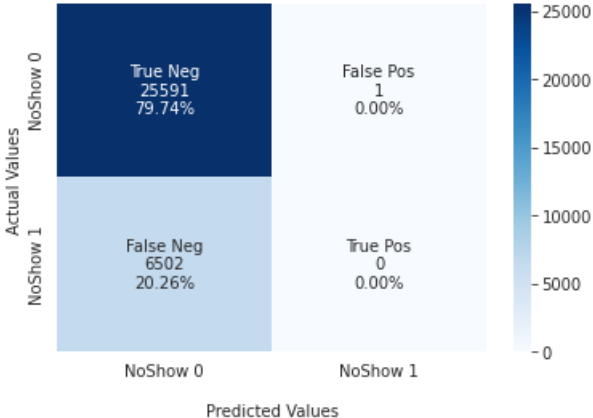
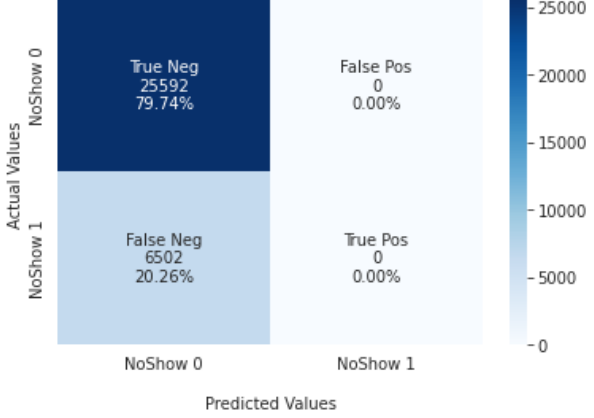


After the analysis and side by side comparison of confusion matrices, classification tables and ROC curves, it is observed that the accuracy for each classifier decreases with the presence of more variables in X which have poor correlation with Y. Better results are achieved when X has fewer variables with better correlation.

Gaussian NB with few features (having positive correlation) in X	Gaussian NB with more features in X
<p>Seaborn Confusion Matrix GaussianNB_classifier with labels</p>  <p>Predicted Values</p> <pre>&lt;&gt;-----GaussianNB_classifier Classification report: ---               precision    recall  f1-score   support       0       0.80      0.96      0.87      25592      1       0.31      0.08      0.12       6502   accuracy          0.78      32094  macro avg       0.56      0.52      0.50      32094  weighted avg    0.70      0.78      0.72      32094  Accuracy_GaussianNB: 0.7784009472175485 Specificity_GaussianNB: 0.9567442950922164 Sensitivity_GaussianNB: 0.07643801907105506</pre> <p>78% correct predictions out of 32094.</p>	<p>Seaborn Confusion Matrix GaussianNB_classifier2 with labels</p>  <p>Predicted Values</p> <pre>&lt;&gt;-----GaussianNB_classifier2 Classification report: ---               precision    recall  f1-score   support       0       0.81      0.91      0.86      25592      1       0.34      0.18      0.23       6502   accuracy          0.76      32094  macro avg       0.58      0.55      0.55      32094  weighted avg    0.72      0.76      0.73      32094  Accuracy_GaussianNB2: 0.762198541783511 Specificity_GaussianNB2: 0.9101281650515786 Sensitivity_GaussianNB2: 0.17994463242079362</pre> <p>76% correct predictions out of 32094.</p>
DecisionTree with few features (having positive correlation) in X	DecisionTree with more features in X
<p>Seaborn Confusion Matrix DecisionTree_classifier with labels</p>  <p>Predicted Values</p>	<p>Seaborn Confusion Matrix DecisionTree_classifier2 with labels</p>  <p>Predicted Values</p>

<pre> &lt;&gt;----- DecisionTree_classifier Classification report:               precision    recall  f1-score   support           0       0.81      0.96      0.88     25592          1       0.40      0.10      0.16      6502   accuracy      0.79      0.79      0.79      32094  macro avg     0.60      0.53      0.52      32094  weighted avg  0.72      0.79      0.73      32094  Accuracy_DecisionTree: 0.7874369040942232 Specificity_DecisionTree: 0.9626836511409815 Sensitivity_DecisionTree: 0.09766225776684097  79% correct predictions out of 32094. </pre>	<pre> &lt;&gt;----- DecisionTree_classifier2 Classification report: ---               precision    recall  f1-score   support           0       0.83      0.83      0.83     25592          1       0.33      0.34      0.33      6502   accuracy      0.73      0.73      0.73      32094  macro avg     0.58      0.58      0.58      32094  weighted avg  0.73      0.73      0.73      32094  Accuracy_DecisionTree2: 0.7267402006605596 Specificity_DecisionTree2: 0.8254532666458269 Sensitivity_DecisionTree2: 0.3382036296524146  73% correct predictions out of 32094. </pre>
<b>SVM with few features (having positive correlation) in X</b>	<b>SVM with more features in X</b>
<p>Seaborn Confusion Matrix SVM_classifier with labels</p>  <pre> &lt;&gt;----- SVM_classifier Classification report: ---               precision    recall  f1-score   support           0       0.80      1.00      0.89     25592          1       0.00      0.00      0.00      6502   accuracy      0.80      0.80      0.80      32094  macro avg     0.40      0.50      0.44      32094  weighted avg  0.64      0.80      0.71      32094  Accuracy_SVM: 0.7973764566585655 Specificity_SVM: 0.9999609252891528 Sensitivity_SVM: 0.0  80% correct predictions out of 32094. </pre>	<p>Seaborn Confusion Matrix SVM_classifier2 with labels</p>  <pre> &lt;&gt;----- SVM_classifier2 Classification report: --               precision    recall  f1-score   support           0       0.80      1.00      0.89     25592          1       0.00      0.00      0.00      6502   accuracy      0.80      0.80      0.80      32094  macro avg     0.40      0.50      0.44      32094  weighted avg  0.64      0.80      0.71      32094  Accuracy_SVM2: 0.797407615130554 Specificity_SVM2: 1.0 Sensitivity_SVM2: 0.0  80% correct predictions out of 32094. </pre>
<b>ROC analysis with few features (having positive correlation) in X</b>	<b>ROC analysis with more features in X</b>

