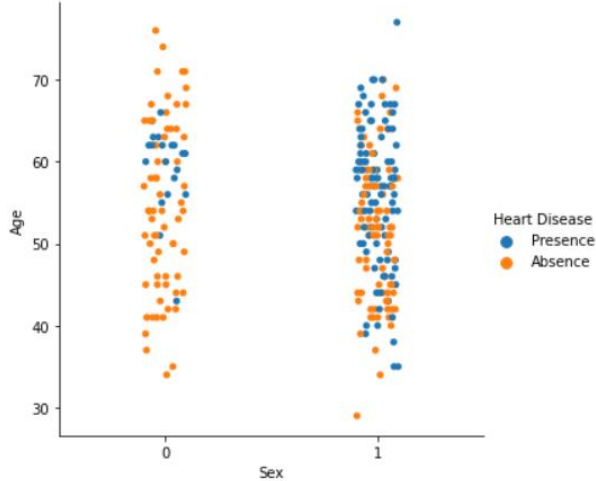


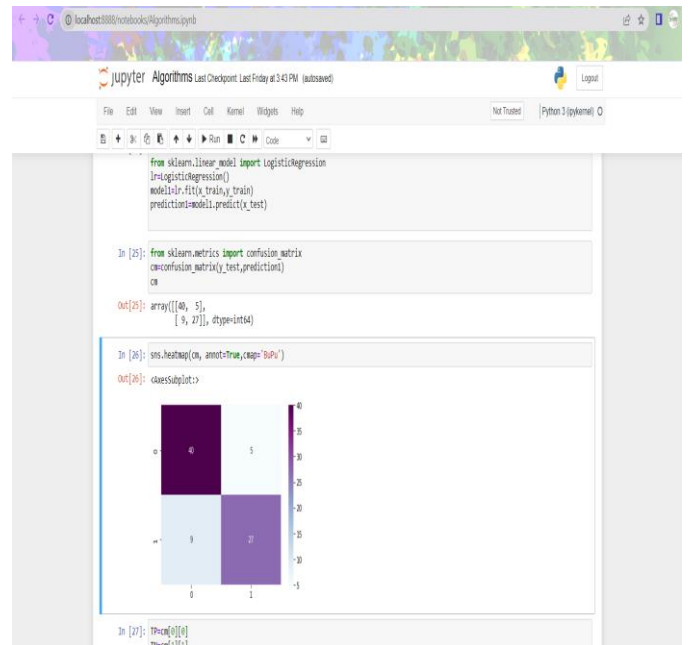
**Project Development Phase**  
**Model Performance Test**

Date	10 November 2022
Team ID	PNT2022TMID28916
Project Name	Project - Visualizing and Predicting Heart Diseases with an Interactive Dash Board
Maximum Marks	10 Marks

**Model Performance Testing:**

The project team shall fill in the following information in the model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Metrics	<p><b>Regression Model:</b> MAE - , MSE - , RMSE - , R2 score -</p> <p><b>Classification Model:</b> Confusion Matrix - , Accuray Score- &amp; Classification Report -</p>	$MAE = \frac{1}{N} \sum_{i=1}^N  y_i - \hat{y} $ $MSE = \frac{1}{N} \sum_{i=1}^N (y_i - \hat{y})^2$ $RMSE = \sqrt{MSE} = \sqrt{\frac{1}{N} \sum_{i=1}^N (y_i - \hat{y})^2}$ $R^2 = 1 - \frac{\sum (y_i - \hat{y})^2}{\sum (y_i - \bar{y})^2}$ <p>Where,  <math>\hat{y}</math> - predicted value of y  <math>\bar{y}</math> - mean value of y</p>  <p>MAE - , MSE - , RMSE - , R2 score(in graph)</p>



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#### Accuracy:

```

print('Logistic Regression : ',l)
print('KNN : ',k)
print('Naive Bayes : ',n)
print('Decision Tree : ',d)

Logistic Regression : 0.8271604938271605
KNN : 0.6111111111111112
Naive Bayes : 0.7794117647058824
Decision Tree : 0.7962962962962963

```

Comparing and finding the accuracy of Algorithms.

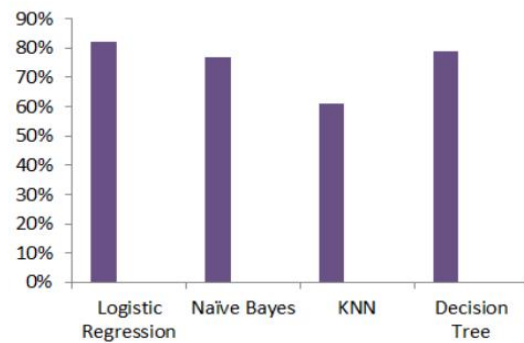
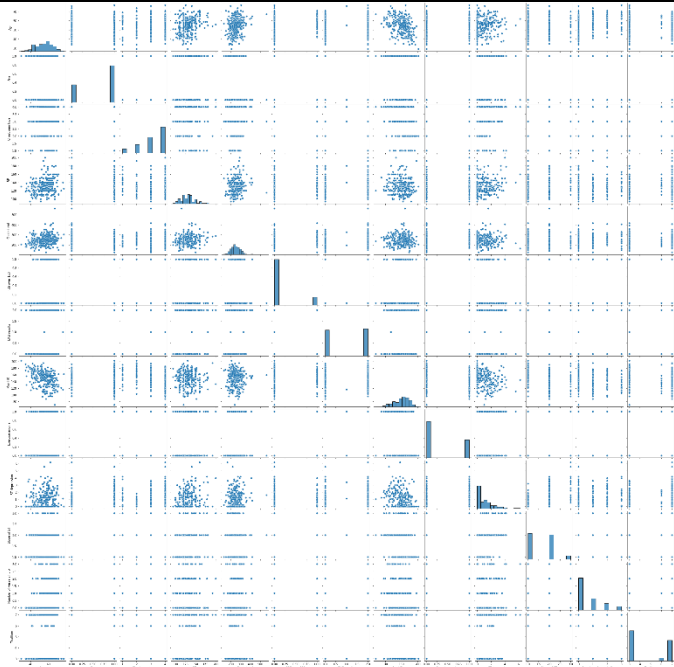


Fig. Visual analytics of all the 4 algorithms used.

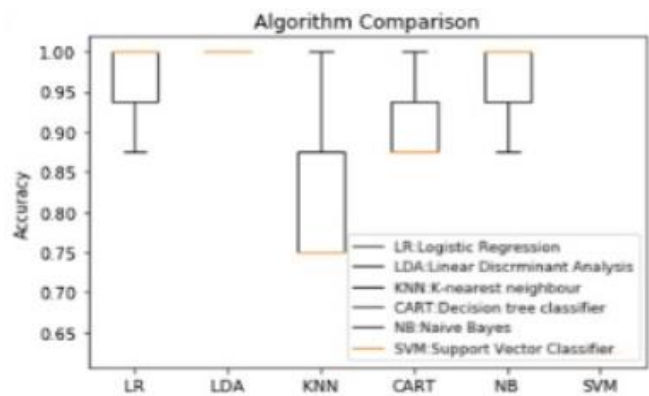
Accuracy (in percentage) and Classification Report(in a bar chart)

2. Tune the Model

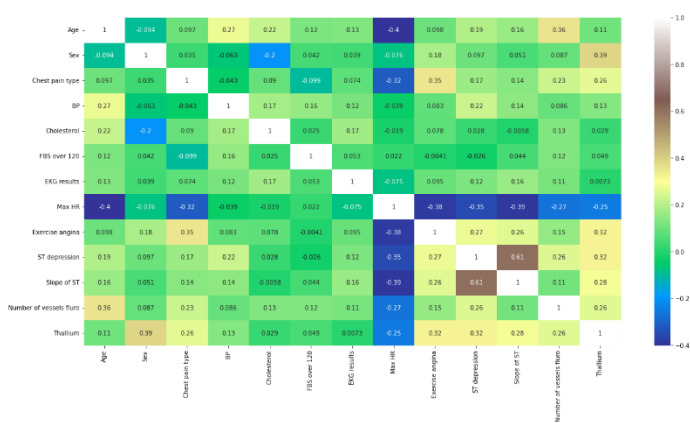
Hyperparameter Tuning -  
Validation Method -



Hyperparameter Tuning



Algorithm	Accuracy (approx.)
LR	0.95
LDA	1.00
KNN	0.75
CART	0.90
NB	0.95
SVM	0.98



	Age	Sex	Chest pain type	BP	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluor	Thallium
Age	1	-0.04	0.07	0.27	0.22	0.12	0.13	-0.4	0.08	0.19	0.16	0.36	0.11
Sex	-0.04	1	0.25	-0.02	-0.2	0.02	0.09	-0.04	0.18	0.07	0.01	0.07	0.19
Chest pain type	0.07	0.25	1	0.04	0.09	-0.09	0.04	-0.32	0.35	0.17	0.14	0.23	0.26
BP	0.27	-0.02	0.04	1	0.17	0.16	0.12	-0.04	0.03	0.22	0.14	0.06	0.11
Cholesterol	0.22	-0.2	0.09	0.17	1	0.05	0.17	-0.05	0.08	-0.03	0.13	0.09	0.09
FBS over 120	0.12	0.02	-0.09	0.16	0.05	1	0.03	0.02	-0.04	-0.04	0.04	0.12	0.04
EKG results	0.13	0.09	0.04	0.12	0.17	0.03	1	-0.05	0.05	0.12	0.16	0.11	0.07
Max HR	-0.4	-0.04	-0.32	-0.04	-0.05	0.02	-0.05	1	-0.38	-0.35	-0.35	-0.27	-0.25
Exercise angina	0.08	0.18	0.35	0.03	0.08	-0.04	0.05	-0.38	1	0.27	0.26	0.15	0.12
ST depression	0.19	0.07	0.17	0.22	0.08	-0.04	0.12	-0.35	0.27	1	0.41	0.26	0.12
Slope of ST	0.16	0.01	0.14	0.14	-0.03	0.04	0.16	-0.35	0.26	0.41	1	0.11	0.28
Number of vessels fluor	0.36	0.07	0.23	0.06	0.13	0.12	0.11	-0.27	0.15	0.26	0.11	1	0.26
Thallium	0.11	0.19	0.26	0.11	0.09	0.04	0.07	-0.25	0.12	0.12	0.28	0.26	1

Validation Method

