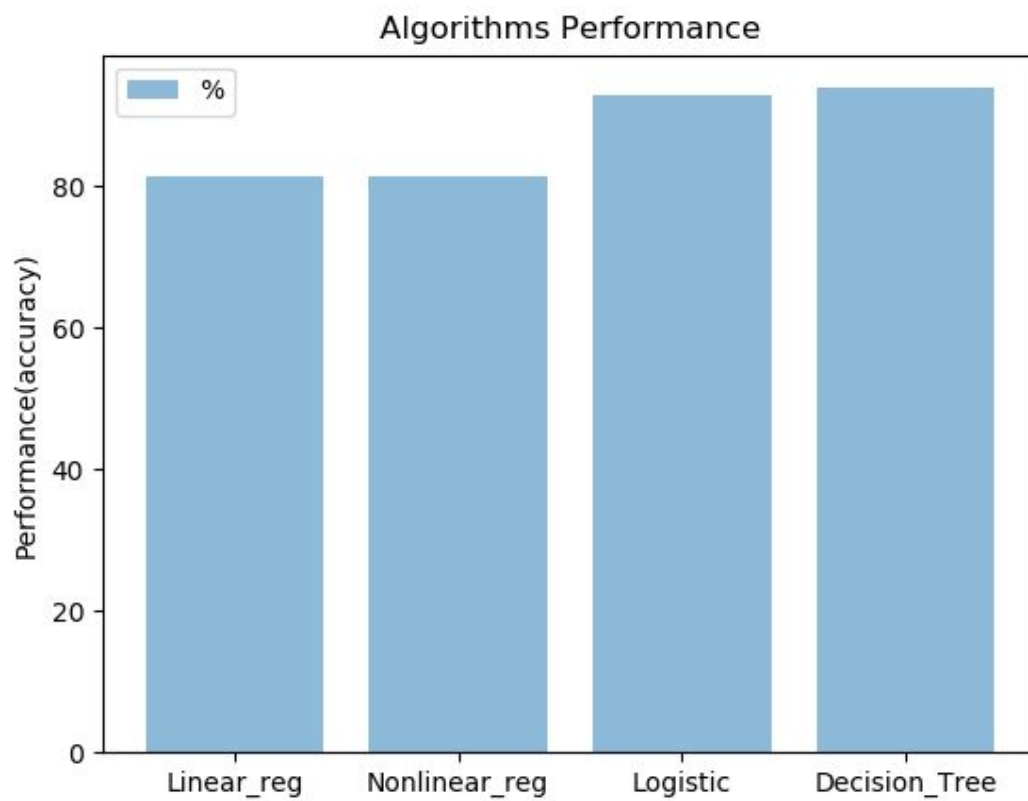


Accuracy Comparison Table :

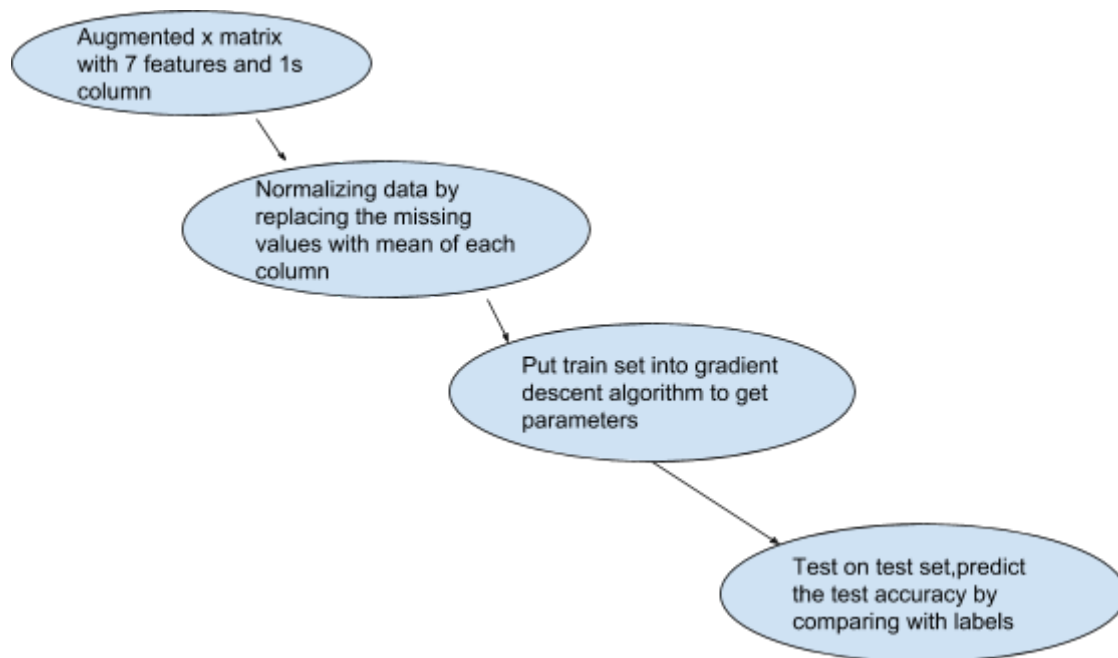
Data set	Algorithms	Accuracy
Breast Cancer (699 instances , 10 features)	Linear regression	81.43%
	Nonlinear Regression	81.43%
	Logistic Regression	92.86%
	Decision Tree	93.81%

Accuracy Comparison Bar :

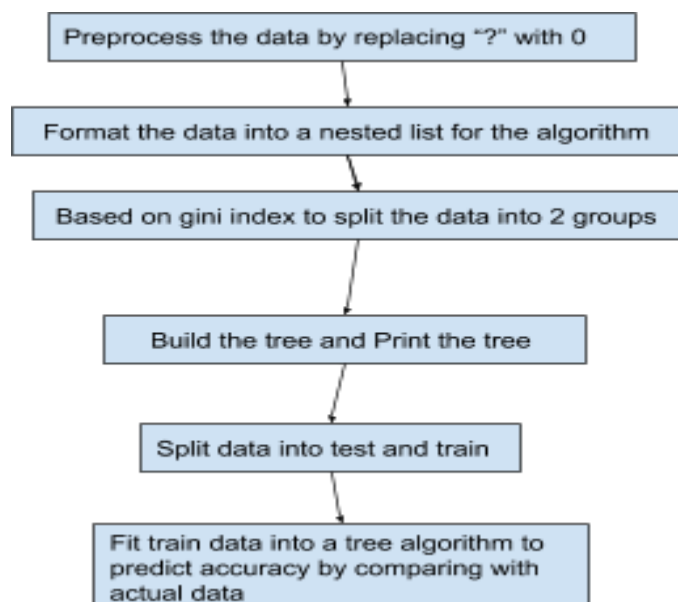


Workflow of Each Algorithm:

1.Linear regression , Nonlinear Regression and Logistic Regression have very similar general workflow as follows:



2.Decision Tree



Summary

Linear regression , Nonlinear Regression and Logistic Regression have very similar general workflow. But these three algorithms do have difference.

1) Nonlinear regression compared to linear regression, the biggest difference is the preprocess of data before putting into the algorithm.

```
x1 = cancer(:,1).^2; % first column is x1
```

```
x2 = 2.*cancer(:,1).* cancer(:,2); % second column is x2
```

```
x3 = cancer(:,2).^2;
```

After preprocessing, X_1, x_2, x_3 will no longer be linear. They turn to be quadratic. But the accuracy does not seem to be affected.

2) The result for logistic regression is much better than linear and nonlinear regressions for this particular data set because logistic regression is suitable for response variable is categorical in nature (discrete) while linear and nonlinear regression are more suitable when the response variable is continuous .

Decision tree gets the best result due to the following advantages :

- Dealing with noisy or incomplete data
- Handling both continuous and discrete data (you have to choose proper algorithm)
- Ability of selecting the most discriminatory features.