MinMaxScaler:  
The MinMaxScaler is a preprocessing tool used to scale features to a specified range. It works by scaling and translating each feature individually such that it is within the given range, typically between 0 and 1. The formula for scaling is:

𝑋scaled=(𝑋−𝑋min) / (𝑋max−𝑋min)

Where:

* 𝑋is the original feature value.
* 𝑋min​ is the minimum value of the feature in the training set.
* 𝑋maxis the maximum value of the feature in the training set.

The `StandardScaler` is a preprocessing tool used to standardize features by removing the mean and scaling them to unit variance. The **StandardScaler** is particularly useful when the features in your dataset have different scales and you want to transform them such that they have a mean of 0 and a standard deviation of 1.

The formula for standardization is:

𝑋standardized=𝑋−𝜇/𝜎

Where:

* 𝑋is the original feature value.
* 𝜇 is the mean of the feature across the dataset.
* 𝜎is the standard deviation of the feature across the dataset.

The `StandardScaler` is particularly useful when the features in your dataset have different scales, and you want to ensure that they are all on a similar scale. This can be important for many machine learning algorithms, especially those based on distance measures or gradient descent optimization, where having features with similar scales can improve convergence and model performance.

Overall, the `StandardScaler` is a valuable tool for preprocessing data and is commonly used as part of the machine learning pipeline to improve the performance and stability of models.

MODELS – DEFINITIONS

1. \*\*Logistic Regression\*\*: Logistic Regression is a linear model used for binary classification that predicts the probability of an instance belonging to a particular class.

2. \*\*Gaussian Naive Bayes\*\*: Gaussian Naive Bayes is a probabilistic classifier based on Bayes' theorem with the assumption of independence between features, commonly used for classification tasks.

3. \*\*Support Vector Machine (SVM)\*\*: SVM is a supervised learning algorithm used for classification and regression tasks, which finds the hyperplane that best separates classes in the feature space.

4. \*\*K-Nearest Neighbors (KNN)\*\*: KNN is a non-parametric classification algorithm that assigns a class label to an instance based on the majority class of its nearest neighbors in the feature space.

5. \*\*Decision Tree\*\*: Decision Tree is a supervised learning algorithm used for classification and regression tasks that recursively splits the dataset into subsets based on the value of features.

6. \*\*Extra Tree Classifier\*\*: Extra Tree Classifier is an ensemble learning method based on decision trees, where random splits are made and the best split is chosen among them.

7. \*\*Random Forest\*\*: Random Forest is an ensemble learning method that fits multiple decision tree classifiers on various sub-samples of the dataset and aggregates their predictions for improved accuracy and robustness.

8. \*\*Bagging Classifier\*\*: Bagging Classifier is an ensemble learning method that combines multiple models trained on different subsets of the training data, reducing variance and improving generalization.

9. \*\*Gradient Boosting Classifier\*\*: Gradient Boosting Classifier is an ensemble learning method that builds multiple decision trees sequentially, where each tree corrects the errors of the previous one, resulting in a strong predictive model.

10. \*\*AdaBoost Classifier\*\*: AdaBoost Classifier is an ensemble learning method that combines multiple weak learners to create a strong classifier, where each subsequent model focuses on instances that were misclassified by previous models.  
  
ACCURACY SCORES

It's important to note that accuracy is just one metric for evaluating classification models. Depending on the problem and the characteristics of the dataset, other metrics such as precision, recall, F1-score, or area under the ROC curve (ROC-AUC) might also be important to consider.  
Accuracy=Total number of predictions / Number of correct predictions​