**Mohamed Essam Said | 20190462**

**Fatema Hesham | 20190373**

**LogisticRegressionImplementation**

* **Heart Disease Dataset**

1. **Learning Rate = 0.0005**
   1. **Accuracy = 0.88**
   2. **Precision = 0.81**
   3. **Recall = 0.93**
   4. **F1 Score = 0.87**
2. **Learning Rate = 0.001**
   1. **Accuracy = 0.88**
   2. **Precision = 0.81**
   3. **Recall = 0.93**
   4. **F1 Score = 0.87**
3. **Learning Rate = 0.01**
   1. **Accuracy = 0.88**
   2. **Precision = 0.81**
   3. **Recall = 0.93**
   4. **F1 Score = 0.87**
4. **Learning Rate = 0.1**
   1. **Accuracy = 0.84**
   2. **Precision = 0.76**
   3. **Recall = 0.9**
   4. **F1 Score = 0.83**
5. **Learning Rate = 0.15**
   1. **Accuracy = 0.857**
   2. **Precision = 0.77**
   3. **Recall = 0.937**
   4. **F1 Score = 0.845**

**The Best model is model 3**

* **Bank Note Authentication UCI Dataset**

1. **Learning Rate = 0.0005**
   1. **Accuracy = 0.968**
   2. **Precision = 0.925**
   3. **Recall = 1.0**
   4. **F1 Score = 0.96**
2. **Learning Rate = 0.001**
   1. **Accuracy = 0.968**
   2. **Precision = 0.925**
   3. **Recall = 1.0**
   4. **F1 Score = 0.96**
3. **Learning Rate = 0.01**
   1. **Accuracy = 0.976**
   2. **Precision = 0.94**
   3. **Recall = 1.0**
   4. **F1 Score = 0.97**
4. **Learning Rate = 0.1**
   1. **Accuracy = 0.96**
   2. **Precision = 0.94**
   3. **Recall = 0.96**
   4. **F1 Score = 0.95**
5. **Learning Rate = 0.15**
   1. **Accuracy = 0.96**
   2. **Precision = 0.94**
   3. **Recall = 0.96**
   4. **F1 Score = 0.95**

**The Best model is model 3**