1. **Procedure**: The negative and positive sentiment files were combined and randomized. The random set of sentiments was then separated into train, dev, and test sets. All of this was done using the sentiment\_reader.py file.

**Questions**:

* + Number of examples in each set
    - Train set: 1600
    - Test set: 400
    - Dev set: 0
    - Vocabulary size: 13989

1. **Part 1:**

**Procedure:** Three models were trained for each activation function (i.e. Sigmoid, Tanh, and RelU), with one, two, and three layers using Sklearn. All layers have 100 hidden units and use the default Adam solver.

**Part 2:**

**Procedure:** Evaluated the accuracy, precision, F1 score, and recall of each of the trained Neural Networks using the Sklearn metrics library

* Models:
  + 1-layer Sigmoid:
    - Accuracy 86%
    - Precision: 86%
    - Recall: 86%
    - F1 score: 86%
  + 2-layer Sigmoid:
    - Accuracy 85%
    - Precision: 85%
    - Recall: 85%
    - F1 score: 85%
  + 3-layer Sigmoid:
    - Accuracy 84%
    - Precision: 85%
    - Recall: 84%
    - F1 score: 85%
  + 1-layer Tanh
    - Accuracy 84%
    - Precision: 85%
    - Recall: 84%
    - F1 score: 85%
  + 2-layer Tanh
    - Accuracy 85%
    - Precision: 85%
    - Recall: 85%
    - F1 score: 85%
  + 3-layer Tanh
    - Accuracy 83%
    - Precision: 83%
    - Recall: 83%
    - F1 score: 83%
  + 1-layer RelU
    - Accuracy 85%
    - Precision: 86%
    - Recall: 85%
    - F1 score: 86%
  + 2-layer RelU
    - Accuracy 84%
    - Precision: 84%
    - Recall: 84%
    - F1 score: 84%
  + 3-layer RelU
    - Accuracy 85%
    - Precision: 86%
    - Recall: 85%
    - F1 score: 85%

**Analysis:** The metrics show that one layer models perform better for positive and negative classification compared to two and three layer networks. Furthermore, the one layer Sigmoid activated network performed the best of all the trained networks and produced the highest metric scores.