Artificial Intelligence

Assignment 4

PREPARED BY:

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(SP22004)

Faculty Guide:

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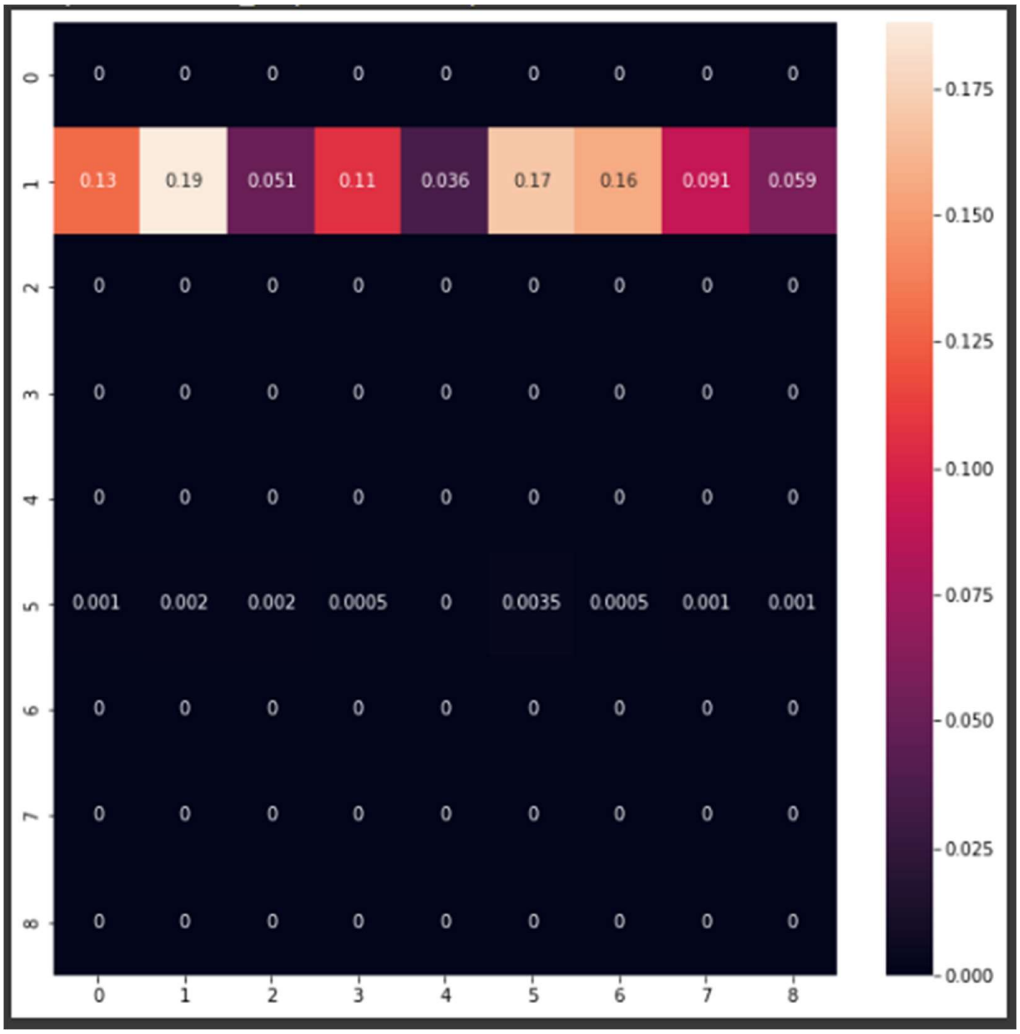
Dataset:

1. The dataset contains 20000 Rows x 39 Columns.
2. It has 38 features and 1 target variable.
3. Dataset contains 20000 instances.

Preprocessing:

1. Reclassification Of Variables
2. Label Encoding
3. EDA Report

   Confusion matrics:



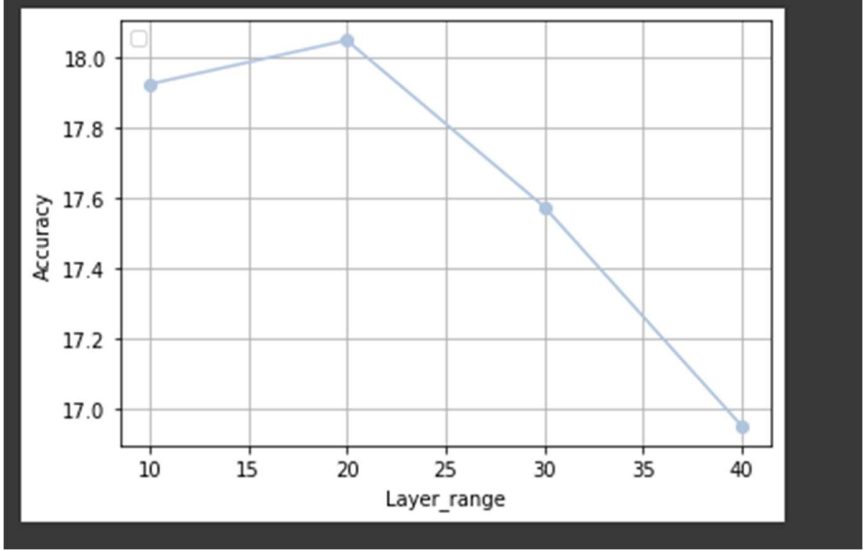
Model:

Artificial Neural Network (MLP Classifier):

1. **Parameter: Activation = tanh, Solver = sgd**

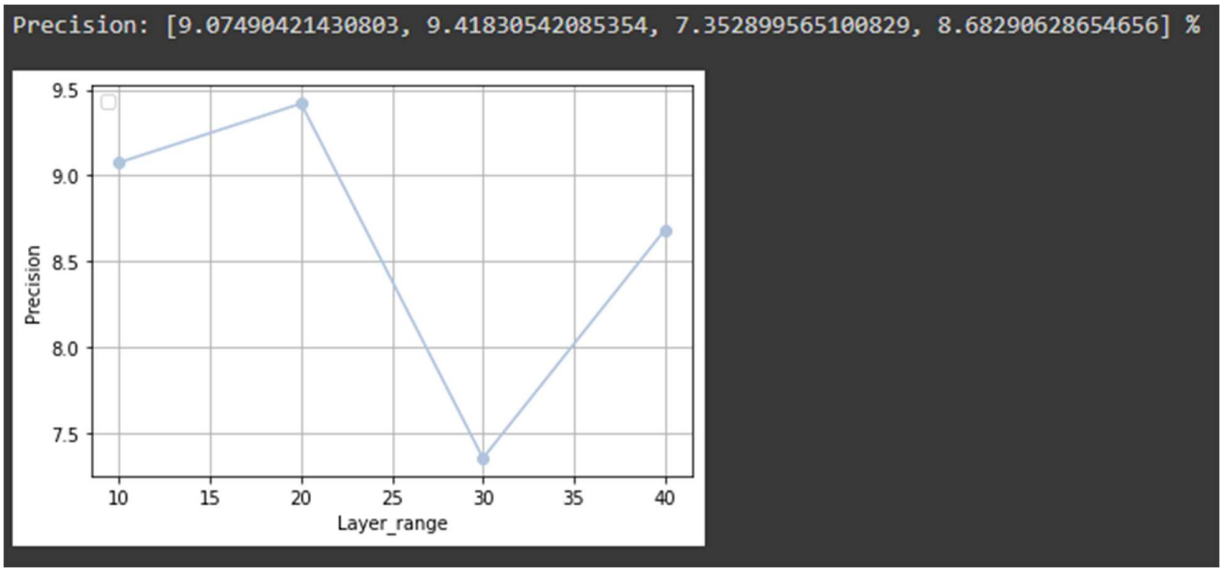
For Accuracy:

```
Accuracy: [17.925, 18.05, 17.575, 16.950000000000003] %
```



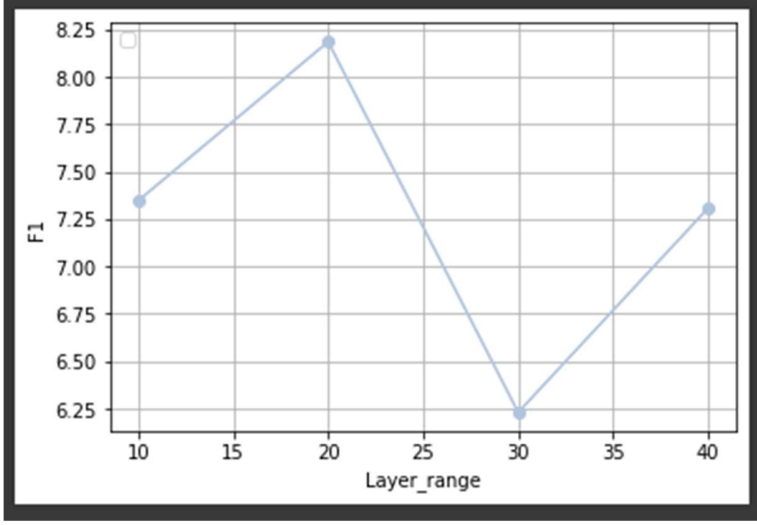
For Precision:

```
Precision: [9.07490421430803, 9.41830542085354, 7.352899565100829, 8.68290628654656] %
```



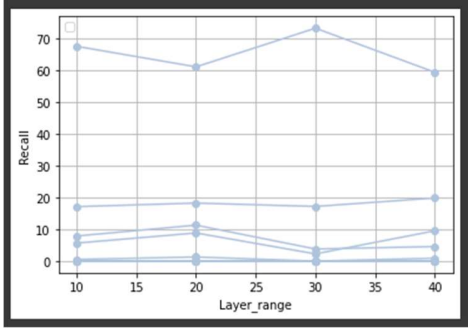
For F1:

```
F1: [7.345482843571011, 8.183416499788688, 6.2310167149219335, 7.30787873293883] %
```



For Recall:

```
Recall: [array([ 7.91628753, 67.64514025,  0.        ,  0.53648069,  0.        ,
        17.16363636,  5.67901235,  0.        ,  0.        ]), array([11.33250311, 61.17342537,  0.        ,  1.30624093,  0.        ,
        18.28571429,  8.87445887,  0.        ,  0.        ]), array([ 3.82513661, 73.3512786 ,  0.        ,  0.        ,  0.        ,
        17.22689076,  2.28013029,  0.        ,  0.        ]), array([ 4.59770115, 59.47368421,  0.        ,  0.93023256,  0.        ,
        19.88472622,  9.55414013,  0.        ,  0.        ])] %
```

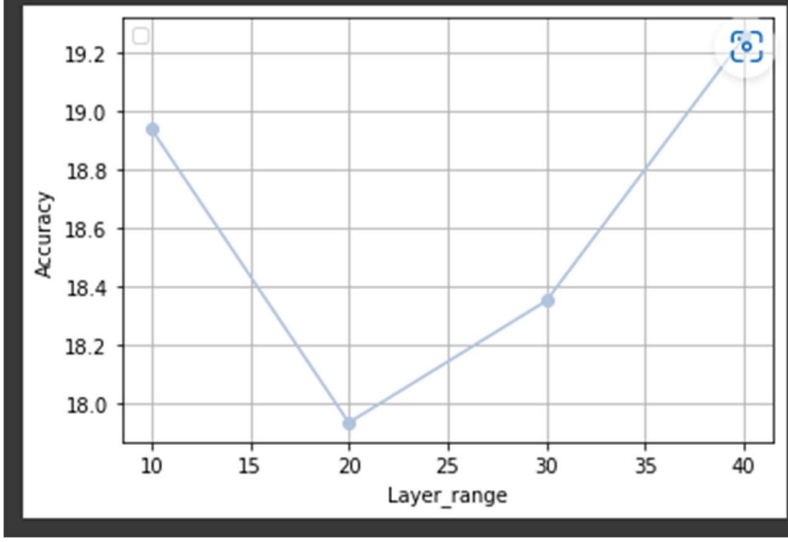


:- Conclusion: With a split of 70:30, models give the best accuracy with 18.05.

2. Parameter: Activation = relu, Solver = adam

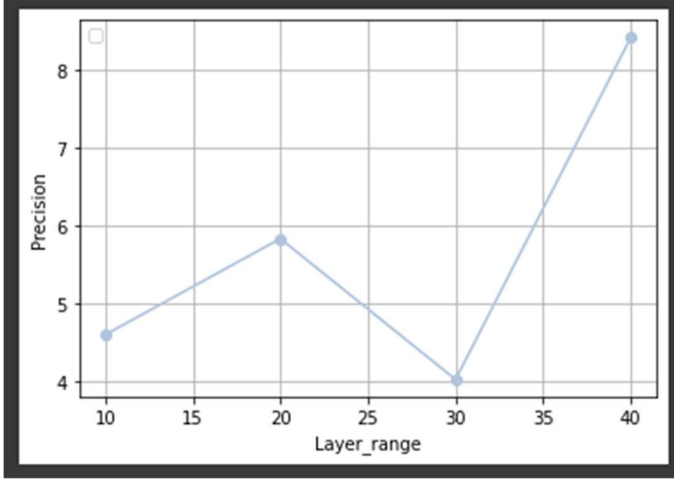
For Accuracy:

```
Accuracy: [18.9375, 17.933333333333334, 18.35, 19.25] %
```



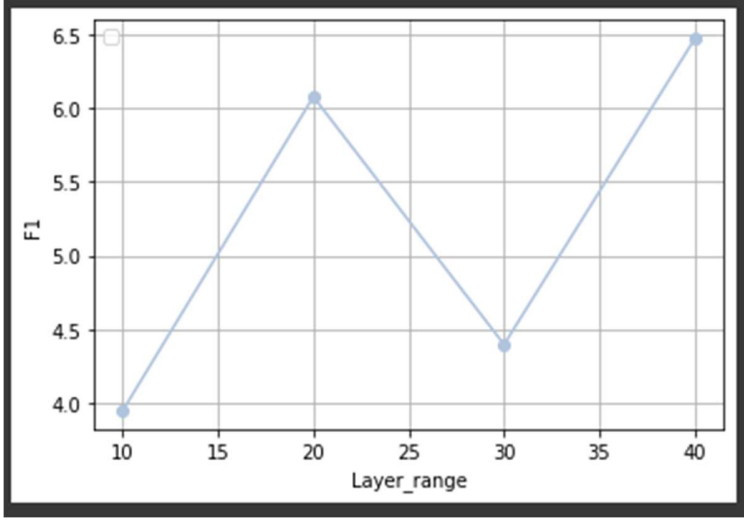
For Precision:

```
Precision: [4.604186920949476, 5.837053515764086, 4.029645716842432, 8.420104887496192] %
```



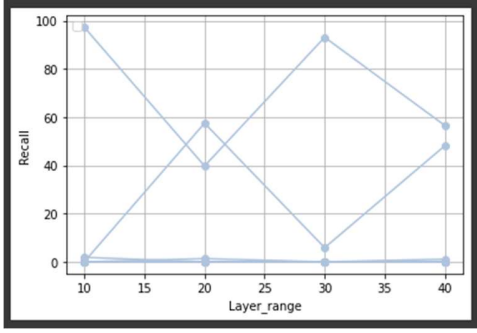
For F1:

```
F1: [3.9484820372361993, 6.079352043728525, 4.396982577086875, 6.472306547135902] %
```



For Recall:

```
Recall: [array([ 0.        , 97.1950424 ,  0.        ,  0.        ,  0.        ,
        0.14545455,  1.89300412,  0.        ,  0.        ]), array([ 1.36986301, 39.77566868,  0.        ,  0.        ,  0.        ,
       57.52380952,  0.        ,  0.        ,  0.        ]), array([ 0.        , 93.1359354 ,  0.        ,  0.        ,  0.        ,
        5.88235294,  0.        ,  0.        ,  0.        ]), array([ 1.14942529, 56.57894737,  0.        ,  0.        ,  0.        ,
       48.12680115,  0.        ,  0.        ,  0.        ])] %
```



:- Conclusion: With a split of 90:10, models give the best accuracy with 19.25.

Thank You