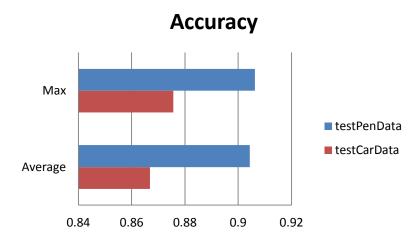
### Question 5

## testPenData Accuracy

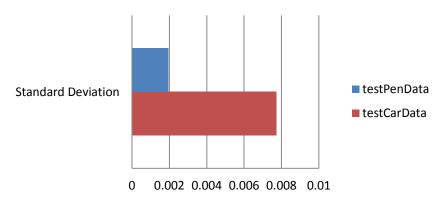
| Max                | 0.906232132647 |
|--------------------|----------------|
| Average            | 0.904345340194 |
| Standard Deviation | 0.001969030916 |

## testCarData Accuracy

| Max                | 0.875654450262 |
|--------------------|----------------|
| Average            | 0.866884816754 |
| Standard Deviation | 0.007728057288 |



# **Accuracy Standard Deviation**



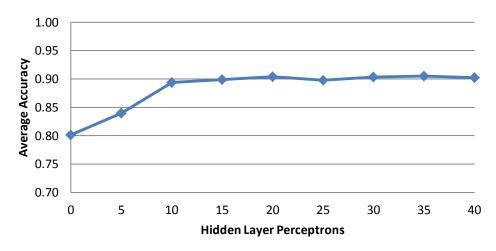
After running 5 iterations of both testPenData and testCarData with default parameters, the above results were produced. The pen data scored higher than the car data in every aspect: higher maximum and average accuracy and lower standard deviation. I originally expected the car data to perform better than pen data because there are significantly more parameters and possible values for each parameter in the pen data than in the car data. I believe this is because the default parameter for testPenData has more hidden layer perceptrons than testCarData has, so adding more perceptrons for the car data may make it perform better.

# Question 6

### testPenData

| Hidden Layer Perceptrons | Max Accuracy   | Average Accuracy | <b>Standard Deviation</b> |
|--------------------------|----------------|------------------|---------------------------|
| 0                        | 0.801600914808 | 0.801200686106   | 0.000291539137            |
| 5                        | 0.853630646083 | 0.839508290452   | 0.009441063218            |
| 10                       | 0.899085191538 | 0.894110920526   | 0.004661120806            |
| 15                       | 0.902801600915 | 0.898913664951   | 0.005413891624            |
| 20                       | 0.906518010292 | 0.904116638079   | 0.001360248971            |
| 25                       | 0.906232132647 | 0.897827329903   | 0.007394456131            |
| 30                       | 0.905946255003 | 0.903201829617   | 0.002850760632            |
| 35                       | 0.908233276158 | 0.904974271012   | 0.002913147902            |
| 40                       | 0.903945111492 | 0.902458547742   | 0.001381709088            |

# testPenData

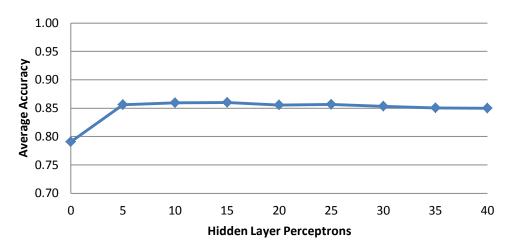


When running testPenData, I expected and noticed a very sharp increase until 10 hidden layer perceptrons were used. Afterwards, accuracy just seemed to flat line. There was some variation as more perceptrons were used, but it was consistently hovering at about 90% accuracy. I believe its accuracy had simply reached its asymptote, but I was surprised to see that happen so quickly at only 10 perceptrons.

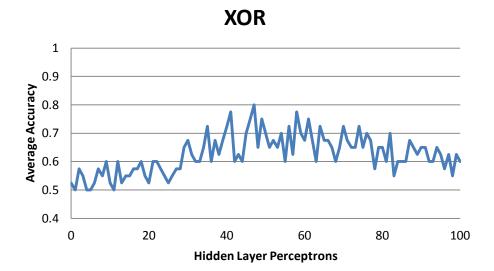
testCarData

| Hidden Layers Perceptrons | Max Accuracy   | Average Accuracy | Standard Deviation |
|---------------------------|----------------|------------------|--------------------|
| 0                         | 0.791884816754 | 0.790837696335   | 0.000523560209     |
| 5                         | 0.861910994764 | 0.856282722513   | 0.006681805769     |
| 10                        | 0.863874345550 | 0.859554973822   | 0.004333231769     |
| 15                        | 0.861910994764 | 0.859816753927   | 0.001125958805     |
| 20                        | 0.858638743455 | 0.855759162304   | 0.003274868064     |
| 25                        | 0.863874345550 | 0.856675392670   | 0.005553194617     |
| 30                        | 0.861910994764 | 0.853141361257   | 0.005608451645     |
| 35                        | 0.857329842932 | 0.850523560209   | 0.004675542173     |
| 40                        | 0.852748691099 | 0.850000000000   | 0.002282146044     |

# testCarData



Running testCarData gave slightly different results. For some reason though, 10 to 15 hidden layer perceptrons gave the best results while additional perceptrons seemed to cause accuracy to decrease. Since it's so slow of decrease, it could just be an anomaly from my test results. However, the decrease in accuracy is very consistent as more perceptrons are used. This result surprised me in that I expect most neural networks to be more reliable as more perceptrons are used.



I tested my XOR data set with 0 to 100 hidden layer perceptors, running 10 iterations each time. The graph above plots the average accuracy of the 10 iterations at each number of hidden layer perceptors. I had expected the average accuracy to steadily increase as more perceptors were used, but my results seem to show a maximum at about 45 perceptors. More surprisingly, accuracy appears to be decreasing as more perceptors are used beyond that point. Unfortunately, I expected much more consistent success than I had observed. I am unsure whether or not these results were to be expected or if something is wrong with my implementation of the XOR function.

# Full Data:

| Hidden<br>Layers<br>Perceptrons | Max<br>Accuracy | Average<br>Accuracy | Standard<br>Deviation |
|---------------------------------|-----------------|---------------------|-----------------------|
| 0                               | 0.75            | 0.525               | 0.134629              |
| 1                               | 0.75            | 0.5                 | 0.158114              |
| 2                               | 0.75            | 0.575               | 0.114564              |
| 3                               | 0.75            | 0.55                | 0.1                   |
| 4                               | 0.5             | 0.5                 | 0                     |
| 5                               | 0.5             | 0.5                 | 0                     |
| 6                               | 0.75            | 0.525               | 0.075                 |
| 7                               | 0.75            | 0.575               | 0.114564              |
| 8                               | 0.75            | 0.55                | 0.1                   |
| 9                               | 1               | 0.6                 | 0.165831              |
| 10                              | 0.75            | 0.525               | 0.075                 |
| 11                              | 0.75            | 0.5                 | 0.111803              |
| 12                              | 1               | 0.6                 | 0.165831              |
| 13                              | 0.75            | 0.525               | 0.075                 |

| 14 | 0.75 | 0.55  | 0.1      |
|----|------|-------|----------|
| 15 | 0.75 | 0.55  | 0.15     |
| 16 | 1    | 0.575 | 0.160078 |
| 17 | 0.75 | 0.575 | 0.114564 |
| 18 | 1    | 0.6   | 0.165831 |
| 19 | 0.75 | 0.55  | 0.1      |
| 20 | 0.75 | 0.525 | 0.075    |
| 21 | 1    | 0.6   | 0.2      |
| 22 | 0.75 | 0.6   | 0.122474 |
| 23 | 0.75 | 0.575 | 0.114564 |
| 24 | 0.75 | 0.55  | 0.1      |
| 25 | 0.75 | 0.525 | 0.134629 |
| 26 | 0.75 | 0.55  | 0.1      |
| 27 | 1    | 0.575 | 0.160078 |
| 28 | 0.75 | 0.575 | 0.114564 |
| 29 | 1    | 0.65  | 0.165831 |
|    |      |       |          |

| 30   1   0.675   0.195256     31   0.75   0.625   0.125     32   1   0.6   0.165831     33   0.75   0.6   0.122474     34   1   0.65   0.165831     35   1   0.725   0.207666     36   1   0.6   0.165831     37   0.75   0.675   0.114564     38   0.75   0.625   0.125     39   1   0.675   0.195256     40   1   0.725   0.134629     41   1   0.775   0.175     42   1   0.6   0.165831     43   0.75   0.625   0.125     44   0.75   0.6   0.122474     45   1   0.7   0.15     46   1   0.75   0.158114     47   1   0.8   0.15     48   0.75   0.65   0.122474     49   1   0.75   0.160078     53   1   0.65   <  |    |      |       |          |
|---|----|------|-------|----------|
| 32   1   0.6   0.165831   68     33   0.75   0.6   0.122474   70     34   1   0.65   0.165831   71     35   1   0.725   0.207666   72     36   1   0.6   0.165831   73     37   0.75   0.675   0.114564   74     38   0.75   0.625   0.125   75     39   1   0.675   0.195256   76     40   1   0.725   0.134629   77     41   1   0.75   0.134629   77     41   1   0.75   0.134629   77     41   1   0.75   0.134629   77     41   1   0.75   0.134629   77     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.158114   83   81     47   1 <t< th=""><th></th><th>1</th><th>0.675</th><th>0.195256</th></t<>  |    | 1    | 0.675 | 0.195256 |
| 33   0.75   0.6   0.122474   70     34   1   0.65   0.165831   71     35   1   0.725   0.207666   72     36   1   0.6   0.165831   73     37   0.75   0.675   0.114564   74     38   0.75   0.625   0.125   75     39   1   0.675   0.195256   76     40   1   0.725   0.134629   77     41   1   0.775   0.175   78     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.122474   81     45   1   0.7   0.158114   83     47   1   0.8   0.15   84     48   0.75   <   | 31 | 0.75 | 0.625 | 0.125    |
| 34   1   0.65   0.165831   71     35   1   0.725   0.207666   72     36   1   0.6   0.165831   73     37   0.75   0.675   0.114564   74     38   0.75   0.625   0.125   75     39   1   0.675   0.195256   76     40   1   0.725   0.134629   77     41   1   0.775   0.175   78     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80     44   0.75   0.625   0.122474   81     45   1   0.7   0.15   82     46   1   0.75   0.158114   83     47   1   0.8   0.15   84     48   0.75   0.65   0.122474   85     49   1   0.75   0.193649   86     50   0.75   0.7   0.1   87     51   1   0.65  | 32 | 1    | 0.6   | 0.165831 |
| 35   1   0.725   0.207666   72     36   1   0.6   0.165831   73     37   0.75   0.675   0.114564   74     38   0.75   0.625   0.125   75     39   1   0.675   0.195256   76     40   1   0.725   0.134629   77     41   1   0.775   0.175   78     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.625   0.158114   81     47   1   0.8   0.15   84     48   0.75   0.65   0.122474   85     49   1  | 33 | 0.75 | 0.6   | 0.122474 |
| 36   1   0.6   0.165831   73     37   0.75   0.675   0.114564   74     38   0.75   0.625   0.125   75     39   1   0.675   0.195256   76     40   1   0.725   0.134629   77     41   1   0.775   0.175   78     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80     44   0.75   0.625   0.125   80     44   0.75   0.60   0.122474   81     45   1   0.7   0.15   82     46   1   0.75   0.158114   83     47   1   0.8   0.15   84     48   0.75   0.65   0.122474   85     49   1   0.75   0.193649   86     50   0.75   0.7   0.1   87     51   1   0.65   0.165831   88     52   1   0.675  | 34 | 1    | 0.65  | 0.165831 |
| 37   0.75   0.675   0.114564   74   0.7     38   0.75   0.625   0.125   75   0.7     39   1   0.675   0.195256   76   0.7     40   1   0.725   0.134629   77   0.7     41   1   0.775   0.175   78   0.7     42   1   0.6   0.165831   79     43   0.75   0.625   0.125   80   0.7     44   0.75   0.6   0.122474   81   0.7     45   1   0.7   0.15   82   0.7     46   1   0.75   0.158114   83   0.7     47   1   0.8   0.15   84   0.7     48   0.75   0.65   0.122474   85   0.7     49   1   0.75   0.193649   86   0.7     51   1   0.65   0.122474   85   0.7     51   1   0.65   0.165831   88   0.7     52  | 35 | 1    | 0.725 | 0.207666 |
| 38     0.75     0.625     0.125     75     0.75       39     1     0.675     0.195256     76     0.75       40     1     0.725     0.134629     77     0.75       41     1     0.775     0.175     78     0.75       42     1     0.6     0.165831     79     1       43     0.75     0.625     0.125     80     0.75       44     0.75     0.60     0.122474     81     0.75       45     1     0.7     0.15     82     0.75       46     1     0.75     0.158114     83     0.75       47     1     0.8     0.15     84     0.75       48     0.75     0.65     0.122474     85     0.75       49     1     0.75     0.193649     86     0.75       50     0.75     0.7     0.1     87     1       51     1     0.65     0.160078     89     0.75 | 36 | 1    | 0.6   | 0.165831 |
| 39   1   0.675   0.195256   76   0.75     40   1   0.725   0.134629   77   0.75     41   1   0.775   0.175   78   0.75     42   1   0.6   0.165831   79   1     43   0.75   0.625   0.125   80   0.75     44   0.75   0.6   0.122474   81   0.75     45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75  | 37 | 0.75 | 0.675 | 0.114564 |
| 40   1   0.725   0.134629   77   0.75     41   1   0.775   0.175   78   0.75     42   1   0.6   0.165831   79   1     43   0.75   0.625   0.125   80   0.75     44   0.75   0.6   0.122474   81   0.75     45   1   0.75   0.158114   83   0.75     46   1   0.75   0.158114   83   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75  | 38 | 0.75 | 0.625 | 0.125    |
| 41   1   0.775   0.175   78   0.75     42   1   0.6   0.165831   79   1     43   0.75   0.625   0.125   80   0.75     44   0.75   0.6   0.122474   81   0.75     45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75   | 39 | 1    | 0.675 | 0.195256 |
| 42   1   0.6   0.165831   79   1     43   0.75   0.625   0.125   80   0.75     44   0.75   0.6   0.122474   81   0.75     45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     57   1   0.625   0.167705   94   0.75  | 40 | 1    | 0.725 | 0.134629 |
| 43   0.75   0.625   0.125   80   0.75     44   0.75   0.6   0.122474   81   0.75     45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     57   1   0.625   0.167705   94   0.75     59   1   0.7   0.187083   96   0.75 <tr< th=""><th>41</th><td>1</td><td>0.775</td><td>0.175</td></tr<>  | 41 | 1    | 0.775 | 0.175    |
| 44   0.75   0.6   0.122474   81   0.75     45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     59   1   0.7   0.187083   96   0.75 <tr< th=""><th>42</th><td>1</td><td>0.6</td><td>0.165831</td></tr<>   | 42 | 1    | 0.6   | 0.165831 |
| 45   1   0.7   0.15   82   0.75     46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     59   1   0.7   0.187083   96   0.75     59   1   0.7   0.187083   96   0.75  | 43 | 0.75 | 0.625 | 0.125    |
| 46   1   0.75   0.158114   83   0.75     47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.187083   96   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75  | 44 | 0.75 | 0.6   | 0.122474 |
| 47   1   0.8   0.15   84   0.75     48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.675   0.160078   97   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.675   0.195256   99   0.75  | 45 | 1    | 0.7   | 0.15     |
| 48   0.75   0.65   0.122474   85   0.75     49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.134629   99   0.75   | 46 | 1    | 0.75  | 0.158114 |
| 49   1   0.75   0.193649   86   0.75     50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.675   0.195256   99   0.75     62   1   0.675   0.134629   9   0.75   | 47 | 1    | 0.8   | 0.15     |
| 50   0.75   0.7   0.1   87   1     51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.675   0.134629   0.75   0.75  | 48 | 0.75 | 0.65  | 0.122474 |
| 51   1   0.65   0.165831   88   0.75     52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   | 49 | 1    | 0.75  | 0.193649 |
| 52   1   0.675   0.160078   89   0.75     53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629   65   1   0.675   0.160078  | 50 | 0.75 | 0.7   | 0.1      |
| 53   1   0.65   0.2   90   0.75     54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629   65   1   0.675   0.160078  | 51 | 1    | 0.65  | 0.165831 |
| 54   1   0.7   0.187083   91   0.75     55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629   65   1   0.675   0.160078  | 52 | 1    | 0.675 | 0.160078 |
| 55   0.75   0.6   0.122474   92   0.75     56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629   0.75   0.6   0.160078   0.6   0.160078   0.160078   0.75   | 53 | 1    | 0.65  | 0.2      |
| 56   0.75   0.725   0.075   93   0.75     57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   | 54 | 1    | 0.7   | 0.187083 |
| 57   1   0.625   0.167705   94   0.75     58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629   0.75   0.6   0.160078   0.160078  | 55 | 0.75 | 0.6   | 0.122474 |
| 58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   | 56 | 0.75 | 0.725 | 0.075    |
| 58   1   0.775   0.175   95   0.75     59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   | 57 | 1    |       | 0.167705 |
| 59   1   0.7   0.187083   96   0.75     60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078  | 58 | 1    | 0.775 | 0.175    |
| 60   1   0.675   0.160078   97   0.75     61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078  | 59 | 1    | 0.7   | 0.187083 |
| 61   1   0.75   0.223607   98   0.75     62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078  |    |      |       |          |
| 62   1   0.675   0.195256   99   0.75     63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   |    | 1    |       |          |
| 63   0.75   0.6   0.122474   100   0.75     64   1   0.725   0.134629     65   1   0.675   0.160078   |    |      |       |          |
| 64   1   0.725   0.134629     65   1   0.675   0.160078   |    |      |       |          |
| <b>65</b> 1 0.675 0.160078  |    |      |       |          |
|   |    |      |       |          |
|   | 66 | 1    | 0.675 | 0.160078 |