**Result**

C:\Users\Sreevatsa H V\Desktop\Assign3\DATA\adult>python network.py adult\_preprocessed.csv 80 10 3 8 4 2

Layer 0:

Neuron0 weights : [ 0.12229237 0.57722966 0.47937395 0.16510133 0.57695722 0.1293968

0.32417126 0.23971013]

Neuron1 weights : [ 0.86436491 0.4489405 0.52240282 0.78015294 0.5374873 0.84106399

0.85753918 0.97552094]

Neuron2 weights : [ 0.63967117 0.33109909 0.28405583 0.52946653 0.68397692 0.90259344

0.09308013 0.86333892]

Neuron3 weights : [ 0.71520074 0.54179674 0.62538509 0.71108079 0.97433237 0.43098048

0.25635745 0.95038933]

Neuron4 weights : [ 0.34716779 0.73922788 0.73451421 0.35302515 0.55094218 0.45113235

0.34392101 0.13612082]

Neuron5 weights : [ 0.40089523 0.37050112 0.1213485 0.08870417 0.57652491 0.03957619

0.93850753 0.94671956]

Neuron6 weights : [ 0.83797094 0.27687826 0.67148997 0.31246093 0.92546465 0.51435223

0.67257263 0.78891009]

Neuron7 weights : [ 0.33820882 0.7932763 0.79364202 0.82430661 0.06189912 0.60668261

0.47759 0.13161903]

Neuron8 weights : [ 0.41013011 0.74920611 0.65707704 0.72472987 0.26402308 0.44943613

0.01606689 0.32948082]

Neuron9 weights : [ 0.76704556 0.54817291 0.49517742 0.18892918 0.94032539 0.46116775

0.89767708 0.47465246]

Neuron10 weights : [ 0.41328075 0.06968042 0.37227717 0.90511757 0.12870778 0.50929493

0.42655457 0.77332707]

Neuron11 weights : [ 0.01864369 0.57494953 0.21721623 0.43194176 0.56947544 0.89833565

-0.00108871 0.65736222]

Neuron12 weights : [ 0.49351759 0.23985472 0.22330065 0.39373795 0.42568998 0.61239871

0.8840006 0.49925579]

Neuron13 weights : [ 0.59563515 0.55226346 0.52916693 0.83107962 0.36848005 0.04375199

0.02974761 0.20966052]

Neuron14 weights : [ 0.23113906 0.17670976 0.66217521 0.46049042 0.20916782 0.03865426

0.39794764 0.97027107]

Layer 1:

Neuron0 weights : [ 0.35171468 0.05124315 1.02430281 0.10922782]

Neuron1 weights : [ 0.24296604 0.76140759 0.14576886 0.2623468 ]

Neuron2 weights : [ 0.25223507 0.36155472 0.69682473 0.89743613]

Neuron3 weights : [ 0.51962786 0.29655364 0.23147573 0.85539336]

Neuron4 weights : [ 0.84530766 0.91922993 0.1390997 0.14523709]

Neuron5 weights : [ 0.21705754 0.09755529 0.49693237 0.13289239]

Neuron6 weights : [ 0.37451467 0.17322383 0.39252998 0.08920434]

Neuron7 weights : [ 0.11832926 0.62521993 0.94688337 0.42077462]

Neuron8 weights : [ 0.4296599 0.88756171 0.30039056 0.18333473]

Layer 2:

Neuron0 weights : [ 0.36358708 0.97207738]

Neuron1 weights : [ 0.35946127 1.00562655]

Neuron2 weights : [ 0.46201184 0.78292781]

Neuron3 weights : [ 0.10102891 0.89955153]

Neuron4 weights : [ 0.28594225 0.28266896]

Layer 3:

Neuron0 weights : [-0.90304057]

Neuron1 weights : [ 0.24989805]

Neuron2 weights : [-0.41099042]

Total training error = 0.187349717874

Total test error = 0.185400772252

**Analysis**

The pre-processing included removal of any data row that contained one or more null values or empty values. Any value other than numeric values are converted to numerical values within a particular range.

The experiment was conducted by changing the parameters like number of iterations, number of hidden layers, nodes in the hidden layers and split of data into training and test data sets.

The best result was obtained as seen above. We observed that as the number of iterations increased, there was a small improvement in accuracy. As the number of hidden layers increased above 3, there was not any significant improvement to accuracy. The optimum was obtained for 3 hidden layers as shown above.