Some Notes for Guidance in your Execution of Assignment 2 – Extra Notes 1

a. You were provided with the PyBrain Simulator (Assignment2012Part2.py). A new version (Revision 1 - Assignment2012Part2R1.py) has been created. The intention is that this will give you one or two more facilities to play with. That is, the option to add or remove the bias term (unit) and the ability to try and investigate the effect of changing the activation squashing function. The new GUI is as shown below

HIDDEN1	2
HIDDEN0	3
SPLIT_DATA	0.1
LEARNING_RATE	0.05
EPOCHS	120
BIAS	True
LOWER_LIMIT	0.4
HIDDEN_S/T	T
OUTPUT_S/L	S
INPUT	4
UPPER_LIMIT	0.6
OUTPUT	3
WEIGHT_DECAY	0.0
MOMENTUM	0.0
RUN	END

- The bias unit is included by default, but you may disable all bias units by changing the option to 'False'.
- The squashing function options are for the hidden layer (HIDDEN_S/T) option to be either
    a. Softmax(S) - with a range 0-1, or
    b. Tanh(T) - with a range from -0.5 to + 0.5
- The output layer (OUTPUT_S/L) may be either
    a. Softmax(S) – with a range 0-1, or
    b. Linear(L) – with a range from 0 to some larger value depending upon the summation term output

- You were also provided with some basic data files, Iris, Mushroom, Steel Faults and Blood. These were obtained from the machine learning database, http://archive.ics.uci.edu/ml/
- The object of the exercise is to try and achieve good recognition rates with the Blood data. This is a difficult problem and I'm not sure how well it will go. The factors at your disposal for conducting experiments to improve the performance are
    a. the learning rate
    b. the differently normalised versions of the data
    c. the momentum term
    d. the weight decay term
    e. the network architecture (number of hidden neurons/layers)
    f. the number of Epochs run
    g. the thresholds for determining what is a 1 and what is a 0
    h. the bias unit
    i. the activation functions
- Try differing architectures first to establish a reasonably good consistently performing network and then try varying parameters like the learning rate, number of epochs, etc.
- Always run a particular configuration at least three times to get a feel for the reliability of the outcome. Always pick the best result. Remember that we cannot exactly repeat any experiment and so you should try to keep good screen shots and percent correct information for every run you make.
- Your report should summarise the experiments that you performed and the results that you achieved (about 6 to 10 pages). This should be presented as a conventional engineering report.