

**WORKSHEET FOR EXERCISES FROM CHAPTER 23**

**RECORD YOUR DATA FOR THE 27-HIDDEN UNIT CONDITION IN TABLE 23-1**

Run	Maximum Weight	Minimum Weight	Weight Sign	Number of Hidden Units	Converged?	Sweeps To Converge
1	1	0	Both	27		
2	1	0	Both	27		
3	1	0	Both	27		
4	1	0	Both	27		
5	1	0	Both	27		
1	2	1	Both	27		
2	2	1	Both	27		
3	2	1	Both	27		
4	2	1	Both	27		
5	2	1	Both	27		
1	3	2	Both	27		
2	3	2	Both	27		
3	3	2	Both	27		
4	3	2	Both	27		
5	3	2	Both	27		

**Table 23-1. Data record for the first simulation.**

**RECORD YOUR DATA FOR THE 18-HIDDEN UNIT CONDITION IN TABLE 23-2**

Run	Maximum Weight	Minimum Weight	Weight Sign	Number of Hidden Units	Converged?	Sweeps To Converge
1	1	0	Both	18		
2	1	0	Both	18		
3	1	0	Both	18		
4	1	0	Both	18		
5	1	0	Both	18		
1	2	1	Both	18		
2	2	1	Both	18		
3	2	1	Both	18		
4	2	1	Both	18		
5	2	1	Both	18		
1	3	2	Both	18		
2	3	2	Both	18		
3	3	2	Both	18		
4	3	2	Both	18		
5	3	2	Both	18		

**Table 23-2. Data record for the second simulation.**

**RECORD YOUR DATA FOR THE 9-HIDDEN UNIT CONDITION IN TABLE 23-3**

Run	Maximum Weight	Minimum Weight	Weight Sign	Number of Hidden Units	Converged?	Sweeps To Converge
1	1	0	Both	9		
2	1	0	Both	9		
3	1	0	Both	9		
4	1	0	Both	9		
5	1	0	Both	9		
1	2	1	Both	9		
2	2	1	Both	9		
3	2	1	Both	9		
4	2	1	Both	9		
5	2	1	Both	9		
1	3	2	Both	9		
2	3	2	Both	9		
3	3	2	Both	9		
4	3	2	Both	9		
5	3	2	Both	9		

**Table 23-3. Data record for the third simulation.**

**EXERCISE 23.1**

1. Examine the results that you have in the tables above. What are your general conclusions about how the manipulations of the starting states of the weights, and the number of hidden units, affect the ability to solve this problem?
  
2. In the exercises above, structure was manipulated in a fairly coarse manner, by varying the distribution from which connection weights were randomly initialized. Can you think of other ways in which structure could be inserted into a network prior to the start of training?