WORKSHEET FOR EXERCISES FROM CHAPTER 15

RECORD YOUR DATA IN THE TABLES BELOW

"Subject"	First Training File	Sweeps To Converge
1	9maj.net	
2	9maj.net	
3	9maj.net	
4	9maj.net	
5	9maj.net	
6	9maj.net	
7	9maj.net	
8	9maj.net	
9	9maj.net	
10	9maj.net	

"Subject"	First File	Sweeps To Converge	Second File	SSE Before Training	Sweeps To Converge	Total Sweeps
1	9maj25.net		9maj.net			
2	9maj25.net		9maj.net			
3	9maj25.net		9maj.net			
4	9maj25.net		9maj.net			
5	9maj25.net		9maj.net			
6	9maj25.net		9maj.net			
7	9maj25.net		9maj.net			
8	9maj25.net		9maj.net			
9	9maj25.net		9maj.net			
10	9maj25.net		9maj.net			

"Subject"	First File	Sweeps To Converge	Second File	SSE Before Training	Sweeps To Converge	Total Sweeps
1	9maj50.net		9maj.net			
2	9maj50.net		9maj.net			
3	9maj50.net		9maj.net			
4	9maj50.net		9maj.net			
5	9maj50.net		9maj.net			
6	9maj50.net		9maj.net			
7	9maj50.net		9maj.net			
8	9maj50.net		9maj.net			
9	9maj50.net		9maj.net			
10	9maj50.net		9maj.net			

"Subject"	First File	Sweeps To Converge	Second File	SSE Before Training	Sweeps To Converge	Total Sweeps
1	9maj75.net		9maj.net			
2	9maj75.net		9maj.net			
3	9maj75.net		9maj.net			
4	9maj75.net		9maj.net			
5	9maj75.net		9maj.net			
6	9maj75.net		9maj.net			
7	9maj75.net		9maj.net			
8	9maj75.net		9maj.net			
9	9maj75.net		9maj.net			
10	9maj75.net		9maj.net			

EXERCISE 15.1

1. **For each of the three experimental conditions, what is the average of the "SSE Before Training" column? In general, what does this tell us about the ability of a perceptron to generalize what it has learned to new instances of the 9-majority problem?**

2. **Does the amount of experience that a perceptron has affect its ability to generalize? (To answer this question, you need to compare the three "SSE Before Training" columns. Appropriate statistical tests are the best option for this question. You can compute independent t-tests between each pair of columns, or you can compute a one-way ANOVA using all three columns as the values to be tested.)**

3. **If you found that some of the networks in the three experimental conditions had errors before their second round of training, then answer this question. (Otherwise, answer it by simply saying N/A.) Examine the three "Total Sweeps" columns for the experimental conditions, and compare them to the "Sweeps To Converge" column obtained in the control condition. (This is best done with appropriate statistical tests, like a one-way ANOVA or a set of independent t-tests on all possible pairs of columns.) Is there any advantage to training a perceptron on some of the problems before training it on the complete set?**