Exercise #2

Question 3.1

After completing the exercise, it became evident that there seems to be a great area of distinction between males, females, and their facial expressions. The clustering allows us to distinguish these things as seen in the model, the females were typically set to their own category or area which included other facial expressions or attributes that were similar as well. This same process proved true for the males. In most of the faces that were presented, the majority of them were the same however, a couple of cells had been put in a different place which illustrated the uniqueness from face to face. The females typically had long hair while the men typically had shorter hair. In the tree that was provided we are able to see that most of the overlap is caused by faces that share similar emotion regardless of male or female.

Question 3.2

In this demonstration it became evident that the items that were most similar to each other come from the emotion categorization. This demonstration allowed us to see that regardless of being female or male, the emotions remained the same. For example the sad emotion was the same sad face used for males and females which is what allows the items to be similar. Compared to the first cluster plot we were able to see that it was based on emotion and gender

Question 3.3

It seems as though the grouping in this exercise is based on the emotion as well because although the emotion is not blatantly shown or illustrated, we are still able to see or determine or infer what the emotion is going to be. Gender is also taken into account here and it is noticed by the alternation between happy and sad between male and female.

Question 3.4

I was able to see that the cat weight was activated when the weight under socks was set to 1. Cat neurons or traits can be activated through specific traits that might be seen.

Question 3.5

Settling the behavior of the noise to 0 does not do much. There is no activation, it is illustrated that the two panels want to make an effort to fire but are unable to and as a result stay red. When it was increased to 0.1 and trials were initiated it started off slowly with no real pattern on which side was going to be active. However, as trials went on, the right side seemed to be more active in this case. Bringing the level to .01 allowed either side to activate which increased randomness which held true for any amount of trials. When the level was brought to .001, I noticed that after many trials the left side began to activate more. Going through this process illustrates the

influence that noise has on the decision making of the program as different noise levels activate different sides.

Question 3.6

Decreasing the value will cause rise to the excitation of the inhibitory units and the hidden units, this can be seen in the graph as we decrease the value from 0.5 to 0.3 the activation increases.

Question 3.7

Yes there is a clear difference, when we run the program while including the feed-forward inhibition we see that the program seems to be stable overall as we are able to see that the inhibition levels stay roughly the same. However, when feed-forward inhibition is removed we can see that the activation average spikes up to one which causes the inhibition levels to increase as well. These levels then come back down to zero, only for the process to continue which indicates instability and strips the inhibition levels from their averages.

Question 3.8

When the InputPct levels are altered the hidden average activity also alters. When the InputPct level is set to 10, the hidden average activity begins to reach 15 percent. When it is changed to 20 it only increases by about 5 percent for a total of 20, and finally when it is brought to 30 percent it hardly increases to about 22 percent with a buffer of plus or minus 1. This reveals that the FFFB inhibition mechanism is able to function without any extraneous learning tools and allows this to be a new form of default. Comparing it to the air conditioner, it's as if there were a super smart a/c unit which knew exactly what to do from the start. It knows when to turn on/off in order to keep the room at the exact temperature without someone having to tell it what to do and without requiring any extra learning.