**More Than 50 Sentences: false**

**Thoughts about the essay in general:**

1. At first as I was reading through the essay by Kent A. Bessey I was wanting to contradict what he said.
2. I couldn’t help feeling like it was wrong; but as I continued to read through the essay and reason through it in my mind I realized that what Kent was saying was correct.
3. Thoughts about the certainty-not-chance feature of the pigeonhole principle:
4. It amazes me how not knowing so much information, you can still know many things.
5. I find it very interesting that without knowing any information about a group of people, except for how many people there are, you can then be certain about minimum groupings of people.
6. An example: if I have two apples and three friends then I can be sure that at least two of my friends will have to share an apple.
7. For this problem we can easily enumerate all the possibilities.
8. The possibilities are as follows: one friend gets one apple and the other two share the other apple, and three share one apple and there is one left over.
9. From this we can see that surely at least two people will have to share.
10. You can have more than that many share, but it is guaranteed that at least that many will.
11. Also, the pigeonhole principle simply guarantees existence, it does not tell us who will be part of which group.
12. So, while I know that at least two friends will have to share an apple; the pigeonhole principle will not provide answers to the following questions: which friends will share an apple, will a friend have an apple to him/herself, and will an apple be left uneaten?

**Thoughts about the philosophical aspect of the pigeonhole principle per page 41:**

1. I like the clarification that Kent provides about the philosophical aspect of the pigeonhole principle. Without the statement of the philosophical aspect the explanation of the pigeonhole principle would be lacking.
2. In Kent’s thoughts on page 41 of the essay he states, “[The Pigeonhole Principle] neither specifies a particular hole nor identifies which pigeons are in the group of ‘two or more.’
3. In theory, there is no way to know either of these things, since the pigeonhole principle is an assertion of existence not of explicit solution.”
4. This is very well said, it brings to light the understanding that the Pigeonhole Principle can only state the existence of a certain group, but beyond stating what every element in the group has in common, and stating the minimum size of the group, the Pigeonhole Principle can tell you nothing.

**My discussion with a non-STEM non-classmate went:**

1. My discussion with my wife was very interesting.
2. We had much trouble determining in what way the Pigeonhole Principle could be useful.
3. We discussed how the Pigeonhole Principle allows us to verify the existence of something, but that’s all.
4. Even more interesting we discussed how you don’t even know what that something is that exists.
5. For example: you know there exists a group having at least 2 pigeons in it, but you don’t really even know anything about those pigeons.
6. You only know that they both either are or aren’t something.
7. Both might be dead or both might be alive.
8. The Pigeonhole Principle is very limited in its usefulness.

**How I grappled with the problem at the bottom of page 40:**

1. In order to solve the problem at the bottom of page 40 I worked on it with a friend.
2. At first I was confused at what our functions needed to accomplish.
3. After looking through the “What Is True?” section of the assignment document it became a little clearer to me and once I read through the essay by Kent A. Bessey it became clearer to me what we were supposed to do.
4. The first problem encountered in the writing the functions was determine how to split the string passed by the user.
5. I used the Elisp user-error function in order to display format errors to the user about what they need to correct in their input string.
6. I checked many aspects of the input string.
7. I ensured that they passed in the string as “name:attributes.”
8. I also ensured that they had provided sufficient information by checking that they provided a first and last name, as well as the 6 expected attributes.

**The connection I found between the pigeonhole principle and lossless data compression:**

1. From reading about the Pigeonhole Principle and lossless data compression I have learned that creating a “perfect” compression algorithm is impossible.
2. The reason it is impossible is simple; while the number of bit-strings (strings containing only ones and zeros) may seem quite infinite, it is not.
3. Creating a one-to-one mapping of all things to be compressed and producing a unique string of ones and zeros for every thing to be compressed is impossible when we try to guarantee a file compression ratio.

\*\*\* Thoughts in General

The Pigeonhole Principle is very weird. I kind of feel like it is a bit useless, leastwise, I don't know of much use for it. From what I can tell all it can do is assert whether or not a group of size n exists and I don't know how useful that really is.

\*\*\* Thoughts About the Philosophical Aspect

I am glad that Kent A. Bessey has included information about the philosophical aspect of the Pigeonhole Principle. Without that section, it would seem that the Pigeonhole Principle can do much more than it actually does.

\*\*\* My Discussion with a Non-STEM Non-Classmate

My wife and I talked about what the Pigeonhole Principle might be useful for. After talking for a while we were unable to come up with anything, but we both found it interesting that you could guarantee a minimum group size for at least one group.

\*\*\* How I Grappled

I started solving the problem by first splitting the input string into the appropriate parts. After that, I created a loop with that used a conditional statement to apply the appropriate traits from the user's input string. After ensuring that I could correctly parse a correct string I added error handling for incorrect user input.

\*\*\* The Pigeonhole Principle and Lossless Data Compression

I learned that the Pigeonhole Principle proves that there cannot be a perfect compression algorithm (an algorithm that can always compress a file). If any algorithm could compress data with a constant ratio, then that algorithm would not compress data uniquely.