Assignment E reflection

E1: Understanding the logic and process from converting a CFG to Chomsky normal form was very important. I felt myself having to continuously go back to the slides to make sure I was taking the empty string out first and making sure the next steps were correct as well. It showed me that I need more practice with these types of problems in order to do well on the quiz.

E2: When creating the PDA for this part I really overthought was I was supposed to do. At least for the solution (expecting I get it correct) that I got. I tried to relate this PDA to the PDAs we did for the last assignment and I would say that kind of worked. The problem with that was all the PDAs from the previous assignment had more states than this one did. So, I think that stalled the process for me. I then went and got help from a couple classmates and they walked me through why this problem is different and how I should approach the problem. Also, I do not know if the problem is 100%. The problem does not state this, but I am assuming that the grammar can only start with a (.

E3: This was a wild one. I sort of went into this problem blindly and instead of thinking through the logic I just began to try different ways I thought the program would work. None of those ways seemed to work so I went to the Jflap book and it had a few examples that were like the one here. Using the guidance from the book and a lot of failing I was finally able to come up with a solution.

E4: Proof:

Assuming L4 is a context free language and let p be the pumping length of L4. Let S = wabw for any w greater than or equal to P. By the context free pumping Lemma, S = uvxyz such that |vxy| is less than or equal to p. |vy| is greater than 0 and u(v^i)x(y^i)z is a subset of A for all values i. vy = kabk for some k. Considering the string (a^p)(b^p)ab(a^p)(b^p). While this string may be in the language, it cannot be pumped because |vxy| <= p. Thus, L4 cannot be a context free grammar.

E5: Proof:

Assuming that LA and LB are contect free languages where LA = {a^m b^n c^n | m,n >= 0} and LB = {a^n b^n c^m | m,n >= 0}

Language A says there needs to be the same number of b’s and c’s and language b says there must be the same number of a’s and b’s. When you put the languages together and get the intersection you get LC = {a^n b^n c^n | n >=0}. That means that there must be the same number of a’s, b’s, and c’s. The problem that occurs is that PDA can’t compare three things at once. They are only built to compare at max two variables at once. Meaning that the language we created; LC, is not a context free language. Hence, the intersection of the two languages LA and LB, is not necessarily always a context free language.