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CS 31 Project 3 Report

1. This programming assignment was still relatively simple. The only notable problem I ran into was not breaking out of the loop I constructed when the index counter went out of bounds of the input string, throwing an error as the program attempted to access an index outside the declared range. I solved this issue by adding in a break statement when the counter reaches the size of the input string, effectively ending the loop when the end of the input string is reached.
2. My program starts by verifying the beginning and ending characters of the string are valid, then verifying the case of an empty string input. After this, it begins a loop through the string, counting either cats or dogs first, making sure these are not mixed, and then counting humans, all while incrementing counters for each individual type accordingly, until a ‘+’ or ‘- ‘ is reached. If it is a ‘+’, the program will return to the top of the loop and repeat the process. If it is a ‘-’, the program will proceed with a similar version of the process above, but instead decrementing the counters. When the end of the input string is reached, the program breaks out of the loop and verifies that the counts of each individual type did not drop below 0. If not, the function returns true. The number of individual functions were very simple and used a very similar logic as the process above, but only taking into consideration and counting one character type each.
3. I will consider a test case for each case mentioned in the project specification. They are as follows:

""

* empty string

"ccPp+dP+cCP+dddP+dp"

"cp+CCP-cp+dDPPp-dp"

"cccP+dp+dPPpP+ccCCcP+ccP"

"ccP+dDdp-ddP"

* All of the above are varying forms of valid inputs

"asdf1ABC000:2-55"

* Characters other than those allowed

"d p + c p"

* Spaces

"cp+P-cpP"

* Person entering without pet

"cpP-P"

* Person leaving without pet

"dp-CP"

* Cat and adult human leaving before they entered

“cCcDP”

* Cats and dogs mixed in a single entry

“cP+dP-cdPP”

* Cats and dogs mixed in a single exit

“+dP+dP”

* Leading ‘+’ not allowed

My program handles all of the above test cases correctly.