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CS 153 Project: Galois Field Calculator

Programming language used: Python 2.7

Operating system used for development: Linux Ubuntu 16.04

Git repository link: https://github.com/abbyDC/153-gf-calculator

Reflection on development process:

Which part(s) of the project, if any, did you find easy to do? Why do you think did you find these easy to do?

First, I had to check whether the input is correct or not. I checked whether the user input is a digit then repeatedly ask for the correct input. This part is easy because you just have to check if the polynomial given consists of integers. I also found the addition and subtraction functions easy. These are straightforward operations where I just had to perform bitwise exclusive-or operation for every term in the polynomial to get the result I wanted. Since addition and subtraction are the same in Galois Field operations, I just had to copy what I did for the addition.

Which part(s) of the project, if any, did you find challenging to do? Describe how you solved these challenges.

I found doing the multiplication function and division hard to implement. It was my first time to encounter a coefficient greater than 1. I had to learn how to perform the multiplication manually first before I implemented it. I didn't know what to follow or where I should pattern my answer since I'm not sure whether the output from the online GF calculator is already reduced. I really had a hard time doing this since I don't really know what kind of output I am expecting. The coefficients of the product I get are greater than 1 and I don't know if it's accepted or not and what my next step is. I solved this by just following the online calculator since I believe that it gives the correct output.

At first, I didn't know how to divide the polynomials having coefficients greater than 1. I had to learn it by backtracking the process of the division in the online calculator.

Still, I'm not sure whether it gives the correct output since I didn't know how to check it manually. I had to figure out the process and guess if the program is already giving my the correct output because I don't know where to double check my answers. My solution was to follow the online calculator since there is some assurance that the developers of the calculator checked the output of their program before releasing it which makes it reliable.

Reference/s:

http://www.ee.unb.ca/cgi-bin/tervo/calc2.pl