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ECE-4930: Project Progress Report

So far we have been working on script(s) that will allow us to parse the given data in order to make analysis easier. It took a while for us to become familiar with the file structure and to develop an approach to parse the data, so we are a little bit behind schedule according to our original timeline. However, we currently have a functioning script called 'bitflips.py' which calculates the total number of single and double bit-flip errors for each phase represented in the files. Instead of writing one big script to parse the data and then perform calculations on that data later, we decided to write smaller custom scripts for each problem addressed in the project prompt. We initially thought we would be using C or C++ to create the scripts, but decided to go with Python for this one. We may use C/C++ for future scripts. We used the aggregate error count, so the script returns the total number of bit-flip errors over the lifetime of each phase. A snippet of output from running this script can be seen below.

```
Running 'bitflips.py'...

Collecting dates and phases...

Calculating single & double bit-flip errors...


====RESULTS====

phase09:
        Total Single Bit-flip Errors = 763
        Total Double Bit-flip Errors = 13298

phase18a:
        Total Single Bit-flip Errors = 0
        Total Double Bit-flip Errors = 0

phase17:
        Total Single Bit-flip Errors = 14
        Total Double Bit-flip Errors = 106

phase18b:
        Total Single Bit-flip Errors = 1109
        Total Double Bit-flip Errors = 0

phase14:
        Total Single Bit-flip Errors = 918702
        Total Double Bit-flip Errors = 0

phase13:
        Total Single Bit-flip Errors = 2745725
        Total Double Bit-flip Errors = 0

phase10:
        Total Single Bit-flip Errors = 1308
        Total Double Bit-flip Errors = 327
```

From now until the project presentations, we will continue to create scripts to calculate the following:

- Number of bit-flips per GB of memory for each memory type
- Mean time between bit-flips for each phase and memory type
- Mean time between bit-flips for each phase and memory type scaled per GB

This is more or less along the lines of our initial proposal. Once we have all of this data, we would like to create some charts and other visualizations to make analysis easier.