Lab 4 Part 2 Tips

Test Cases

- Multiplication:
  - Large (Large0,Large1,Large2) are the same test repeated multiple times and the median is taken.
  - Sparse1
  - Sparse2
  - BigSmall0
  - BigSmall1
- Modulus:
  - Modulus0
  - Modulus1
  - Modulus2
- Small:
  - Exhaustive set of tests to make sure all polynomial operations are correct.

Multiplication: types of things we look for

- Does it work for product of large polynomials?
- Does it work for product of sparse polynomials?
  - High degree but few terms?
  - E.g.,(x^100000 + x^2 + 3)
- Are the timings sensitive to the order of polynomials?
- Proper use of threads important for multiplication.

Hints for multiplication

- What is a good data structure to use?
- How to represent sparse polynomials effectively?
- What is a good number of threads to use?

Grading

- Grader will indicate correctness (are the results of each test correct or not)
  - If there's no feedback for a specific test, it means the test failed to execute.
- Grader will also show the time associated with different tests.
- The Large Multiplication test (Large0,Large1,Large2) is done three times with the same polynomial (the median is a good summary measure of timing)
- Final score will show as 0/0.
- We will assign a grade later based on the times obtained for different tests,
  - We will likely rerun everyone's code after the submission deadline for the final grade.
- Note that a correct test with high timings will not get a good score.

What timings should you aim for?

- We sent a spreadsheet on Piazza with the timings that we got for the TA implemented code to serve as a benchmark.
- You don’t need to exactly match these, but being in the ballpark will translate to the highest grade.
- The score for the timings will depend on how far you are from the thresholds that we use.
- Please put down the timings you obtain on the spread sheet for the different cases by Tue night, and update this periodically.
    - This will help you give a sense of where you stand relative to other submissions
    - Give us a sense of how the class is doing overall.

Note about timeouts on Gradescope

- Each test has a timeout (currently about 200 secs each)
- Triggering a timeout is an indication that your code has very serious inefficiency issues
  - Caveat: Finishing within the timeout is not sufficient for good grades: you should see the sheets to get a sense of the benchmarks to aim for.
- In addition, there is a global timeout of 30 minutes (all tests must complete within 30 min)
  - This is unlikely to be triggered.

How will different test cases be weighed?

- Good timings across the multiplication test cases will carry a significantly larger portion of the credit.
  - Large and the two sparse test cases are particularly critical.
- Timings for modulus will carry a smaller portion of the credit.