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Math128B: Numerical Analysis

Programming Assignment #2, Due April 26

There are two separate but related components of this project:

1. Develop a matlab program to perform "mixed radix" fft. Assume that the given problem size n is the product of prime numbers not to exceed 7 (for example, $n = 490 = 2 * 5 * 7 * 7$. This can be computed using the matlab `factor` command.) Your program should be able to do the fft whose stages use those factors as radices. Compare the amount of CPU time required by your program and the built-in matlab fft for $n = 1000, 5000, 10000$.

2. Develop a matlab program to multiply two given polynomials using the matlab built-in fft and inverse fft. Compare the amount of CPU time required by these programs for $n = 1000, 5000$.

You should turn in two matlab programs of the form

```
function [c,info] = fftxxx(y)
```

and

```
function [c,info] = convolutionxxx(a,b)
```

where in both cases xxx is your student id, c is the result and info is your output message.

Your programs will be tested and graded according to its accuracy and efficiency. Do not use the `fft`, `ifft` functions in matlab for Part 1 and `conv` and `deconv` for Part 2.

Email your .m files to Darsh by 11:59PM, April 26, 2012.