AMS209 HW3, Part3

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I am providing a summary of results for Part 3 of Homework 3: Approximating Pi using modular Fortran programming.

Note the following information about the files found in this subdirectory:

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The following files have been provided to approximate pi in a modular fashion.

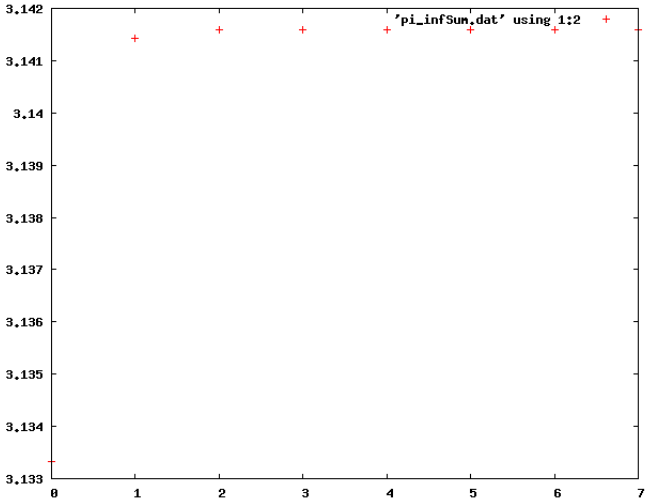
* definition.h -Provides global definitions
* pi_driver.F90 -Driver program for approximating pi
* pi_writeOutput.F90 -Generates output file for history arrays
* setup_module.F90 -Gathers input information and sets up variables
* makefile -Compilation: executable, debug, clean
* pi_module.F90 -Provides subroutines needed for algorithm
* plotInstructions.txt -Instructions for generating GNUplot
* pi_approx.init -Input file with runtime parameters
* piPlot.png -One of the plots showing pi convergence
* read_initFile_module.F90 -Dongwook's file for reading init file
```

We redid the pi approximation solution from Homework 2 using a modular programming approach. The code is exactly the same and it yields the exact same results - the only difference being in the organization of the code. We also now have the liberty to provide our own inputs through an init file.

Note the formula used to approximate pi with a partial sum modeled after the following infinite sum:

$$\pi = \sum_{n=0}^{\infty} 16^{-n} \left(\frac{4}{8n+1} - \frac{2}{8n+4} - \frac{1}{8n+5} - \frac{1}{8n+6} \right).$$

The following plot was obtained using a threshold of e.-12 - it shows the convergence of pi after each iteration.



Try running my code (instructions provided within subdirectory) using different parameters in the init file to test the effectiveness of my approximations.