Plotting Numerical Data from Fortran

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Program PlottingFromFortran demonstrates a simple method to assign values from a computation to an array, then writing that array data to a file in a format appropriate for plotting in a general plotting utility, e.g., MATLAB or matplotlib.

```
program PlottingFromFortran
  implicit none
  integer, parameter :: RP = selected_real_kind(15)
  real(kind=RP), parameter :: PI = 4.0_RP*atan(1.0_RP)
  real(kind=RP), parameter :: a = -2.0_RP*PI, b = 6.0_RP*PI  ! endpoints
  integer, parameter :: n = 1000  ! number of points to plot (actually, 1 less)
  real(kind=RP) :: dx = (b-a)/n  ! spacing, uniform grid
  real, dimension(n+1):: x, y  ! arrys to hold each point value
  integer :: i  ! loop index

  ! fill x-values
  do i=0,n
     x(i+1) = a + i*dx;
  enddo

  ! fill y-values
  do i=1,n+1
     y(i) = sin(x(i))
  enddo

  ! open file to store points for plotting
  open(12, file="functionData.txt")

  ! write to file
  do i=1,n
     write(12,*) x(i), y(i)
  enddo

  ! close file
  close(12)
end program PlottingFromFortran
```

For MATLAB, navigate to the path where the file "functionData.txt" is located. You must also add this directory to the search path if it isn't already in it. For example, if "functionData.txt" is located in /home/Documents/FCM, the commands are

```
>> path(path, '/home/Documents/FCM')
>> load(functionData.txt)
>> plot(functionData(:,1), functionData(:,2))
```