powerSIF

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The POWER function in implemented in CUTEst differs from the one found in literature and the SIF data file.

The power function in literature is included below. This is also the function the SIF file seems to agree with:

$$\sum_{i=1}^{N} (ix_i)^2$$

The power function that CUTEst seems to be using is included below:

$$\left(\sum_{i=1}^{N} ix_i^2\right)^2$$

Below, we have included our code that compares the two:

```
module Wrapper

export wrapfun

using CUTEst
using NLPModels

function power(x::AbstractVector)
  println("Julia port of CUTEST's GENROSE")
  grad = zeros(size(x))
  sum = 0
  for i = 1:length(x)
    term = i*x[i]^2
    sum = sum + term
  end
  for i = 1:length(x)
    grad[i] = 2*sum*2*i*x[i]
  end
  sum = sum^2
  return sum, grad
end

function wrapfun(x::AbstractVector,problem::String)
    nlp = CUTEstModel(problem, verbose=false)
    fx = obj(nlp, x)
    gx = grad(nlp, x)

    finalize(nlp)

    return convert(Float64,fx),convert(Array{Float64},gx)
end


y = ones(10000)
A = power(y)
B = wrapfun(y,"POWER")
print(A)
print(B)
end
```