Homework 3

UP: solution algorithms

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Consider your own unconstrained NLP problem (that you have solved using GAMS) and:

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- Step 1 (2 points out of 10): Solve it using a **steepest descent** algorithm that incorporates an exact line search (or a quadratic fit or a cubic fit) and that is implemented in Octave (or the like). Describe in detail your implementation.

- Step 2 (2 points out of 10): Solve it using a **Newton** algorithm implemented in Octave (or the like). Describe in detail your implementation.

- Step 3 (2 points out of 10): Solve it using a **modified Newton** algorithm that incorporates an exact line search (or a quadratic fit or a cubic fit) and that is implemented in Octave (or the like). Describe in detail your implementation.

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- Step 4 (2 points out of 10): Solve it using a **coordinate descent** algorithm implemented in Octave (or the like). Describe in detail your implementation.

- Step 5 (2 points out of 10): Greatly **scale** or **de-scale** your own problem and repeat 1-4 above. Draw conclusions.

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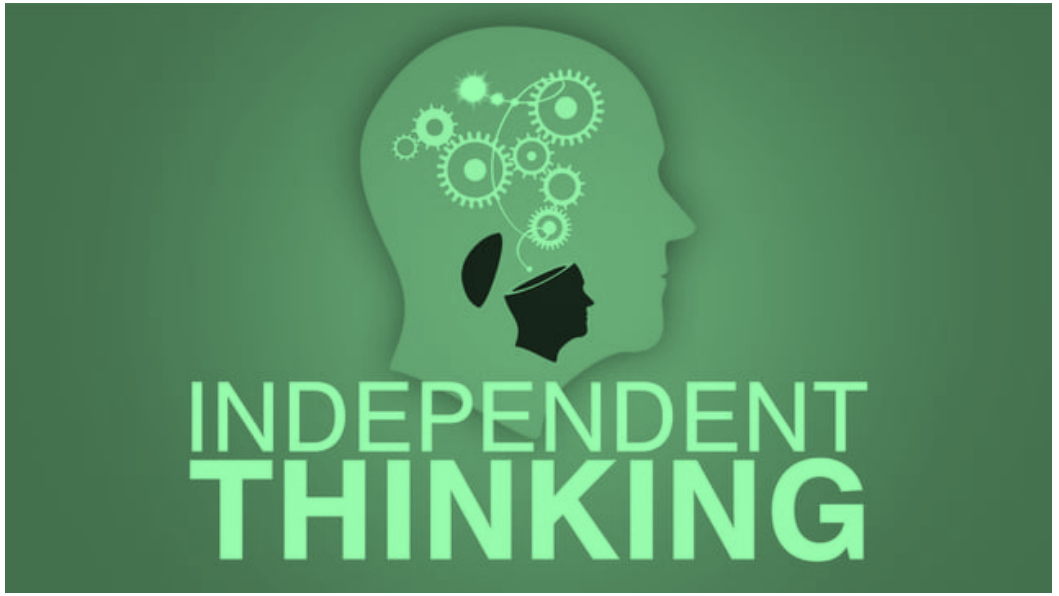
Make sure that your problem is complex enough:

- At least 3 optimization variables. Do not use quadratic functions.


INDEPENDENT
THINKING