INSTRUCTIONS for AUGMECON2 (fortran) calling BCHTSP (gams)

Two objectives TSP

CONTENT files

1. augmecon2_fortran_biobj_TSP.f90 (main)

2. Biobj-TSP-bchtsp_randomAB100_e-constraint_plain-impr-any-eta.gms (subroutine)

3. dist_randomA100_tsp.txt (dataset for objective 1 or A)

4. dist_randomB100_orig.txt (dataset for objective 2 or B)

The model solves a Multiobjective Traveling Salesman Problem (MOTSP) with 2 objectives, 100 cities and symmetric cost matrices which are calculated from the datasets “randomA100.tsp” and “randomB100.tsp” from TSPLIB.

The Input files are 3 and 4.

The main is 1.

The subroutine is 2.

In order to run the model:

A) Place the input files 3 and 4 together with main program 1 and subroutine 2 in same folder.

B) Compile the main program 1 into three executables (thread1, thread2, thread3). If you do not have a Fortran compiler, the executables are supplied with the names thread1.exe, thread2.exe and thread3.exe

C) Add to your path the directory where the gams.exe program is installed. This in my PC is: “C:\Program Files\GAMS23.5”. In order to do so, go to Control Panel --> System --> Advanced Settings --> Environment Variables --> System Variables and edit “Path” variable. Add the directory where gams.exe lays in your PC and click OK.

*Step C) is crucial because the gams model 2 is run in a loop from within the main program 1, so step C) needs to be implemented for the gams processes to run!

D) Go to ../ Thread1exe folder. In a command prompt, run the executable thread1.exe. The computations should begin and last approximately 7 hours for randAB100 dataset.
Go to ../ Thread2exe folder. Optional: Give command ‘color 57’ before running the exe. In a command prompt, run the executable thread2.exe. The computations should begin and last approximately 9 hours for randAB100 dataset.

Go to ../ Thread3exe folder. Optional: Give command ‘color 27’ before running the exe. In a command prompt, run the executable thread3.exe. The computations should begin and last approximately 25 hours for randAB100 dataset.

E) The complete final output files are supplied for your convenience

SummaryPFandStatistics_DP_1_f.out,
SummaryPFandStatistics_DP_2_f.out,
SummaryPFandStatistics_DP_3_f.out

At run time, similar Summary files (without the _f) are produced online and updated at every iteration of the algorithm, and you can inspect them by NotePad at run time.

**If in a hurry, you can just run for 15 minutes each thread and inspect e.g. 10 POS that are created by every process

Author: Dr. Kostas Florios
LIEE/NTUA
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PS. In order to run other MOTSP data with p=2 objectives and N=100 cities adjust the .gms model accordingly, in lines #30, #40, #77, #91-92, #543. Also, you should adjust the .f90 file and change line #3 and #40 of the fortran file. Then, recompile using a fortran compiler (such as ifort or g95 or gfortran).

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