Iterated Greedy Method

Initial analysis

Each instance is separated by an enter and at each iteration (up to 10) one random solution S is generated and then the IG is applied to it. The results for each iteration are shown in its line.

First five instances of 50 Jobs

```
0: From      797119   to      703640    tries:   1 in     0ms.   Got  11 (%) better.
1: From      666059   to      593694    tries:   1 in     0ms.   Got  10 (%) better.
2: From      701931   to      629168    tries:   0 in     0ms.   Got  10 (%) better.
3: From      812993   to      734788    tries:   0 in     0ms.   Got   9 (%) better.
4: From      750216   to      672336    tries:   0 in     0ms.   Got  10 (%) better.
5: From      672517   to      599215    tries:   3 in     1ms.   Got  10 (%) better.
6: From      737855   to      693785    tries:   0 in     0ms.   Got   5 (%) better.
7: From      724139   to      652973    tries:   0 in     0ms.   Got   9 (%) better.
8: From      738690   to      650673    tries:   0 in     0ms.   Got  11 (%) better.
9: From      662696   to      572967    tries:   0 in     0ms.   Got  13 (%) better.

0: From      712434   to      593374    tries:   0 in     0ms.   Got  16 (%) better.
1: From      584910   to      545887    tries:   0 in     0ms.   Got   6 (%) better.
2: From      618170   to      540489    tries:   0 in     0ms.   Got  12 (%) better.
3: From      723157   to      613549    tries:   1 in     0ms.   Got  15 (%) better.
4: From      636357   to      583456    tries:   0 in     0ms.   Got   8 (%) better.
5: From      730052   to      612573    tries:   0 in     0ms.   Got  16 (%) better.
6: From      695347   to      618177    tries:   2 in     0ms.   Got  11 (%) better.
7: From      726618   to      639326    tries:   0 in     0ms.   Got  12 (%) better.
8: From      696368   to      585845    tries:   1 in     0ms.   Got  15 (%) better.
9: From      670176   to      610488    tries:   0 in     0ms.   Got   8 (%) better.

0: From      936719   to      656914    tries:   1 in     0ms.   Got  29 (%) better.
1: From  1.02906e+06   to    741254    tries:  14 in     2ms.   Got  27 (%) better.
2: From      819204   to      724402    tries:   0 in     0ms.   Got  11 (%) better.
3: From      899315   to      809235    tries:   0 in     0ms.   Got  10 (%) better.
4: From      972586   to      859689    tries:   4 in     0ms.   Got  11 (%) better.
5: From      867280   to      640355    tries:   0 in     0ms.   Got  26 (%) better.
6: From      898330   to      832142    tries:   0 in     0ms.   Got   7 (%) better.
7: From      710486   to      557284    tries:   0 in     0ms.   Got  21 (%) better.
8: From      883430   to      809294    tries:   4 in     0ms.   Got   8 (%) better.
9: From      938309   to      702320    tries:   0 in     0ms.   Got  25 (%) better.

0: From      595699   to      540697    tries:   0 in     0ms.   Got   9 (%) better.
1: From      677015   to      547177    tries:   2 in     0ms.   Got  19 (%) better.
2: From      704898   to      674565    tries:   0 in     0ms.   Got   4 (%) better.
3: From      655577   to      602343    tries:   0 in     0ms.   Got   8 (%) better.
4: From      659001   to      601360    tries:   0 in     0ms.   Got   8 (%) better.
5: From      691230   to      549313    tries:   0 in     0ms.   Got  20 (%) better.
6: From      591111   to      535750    tries:   1 in     0ms.   Got   9 (%) better.
7: From      672803   to      621614    tries:   1 in     0ms.   Got   7 (%) better.
8: From      656261   to      607279    tries:   1 in     0ms.   Got   7 (%) better.
9: From      677275   to      587871    tries:  12 in     1ms.   Got  13 (%) better.

0: From      713765   to      626999    tries:   0 in     0ms.   Got  12 (%) better.
1: From      696086   to      629989    tries:   1 in     0ms.   Got   9 (%) better.
2: From      646768   to      601987    tries:   1 in     0ms.   Got   6 (%) better.
3: From      677446   to      577585    tries:   1 in     0ms.   Got  14 (%) better.
4: From      707966   to      579286    tries:   0 in     0ms.   Got  18 (%) better.
5: From      712000   to      578011    tries:   0 in     0ms.   Got  18 (%) better.
6: From      724921   to      628748    tries:   0 in     0ms.   Got  13 (%) better.
7: From      668220   to      625805    tries:   1 in     0ms.   Got   6 (%) better.
8: From      758671   to      638204    tries:   0 in     0ms.   Got  15 (%) better.
9: From      649027   to      597595    tries:   0 in     0ms.   Got   7 (%) better.
```

***Conclusions**: IG made a few amount of tries (with two outliers of 14 and 12 tries), executing fast and obtaining good improvements considering only one iteration (max. 29%, min 4%).*

First five instances of 100 Jobs

```
0: From  2.67428e+06   to   2.23899e+06     tries:   0 in      2ms.   Got  16 (%) better.
1: From  2.79541e+06   to   2.52353e+06     tries:   0 in      1ms.   Got   9 (%) better.
2: From  2.61689e+06   to   2.40906e+06     tries:   4 in      6ms.   Got   7 (%) better.
3: From  2.57558e+06   to   2.31813e+06     tries:   0 in      1ms.   Got   9 (%) better.
4: From  2.63804e+06   to   2.42753e+06     tries:   1 in      2ms.   Got   7 (%) better.
5: From  2.61842e+06   to   1.98234e+06     tries:   2 in      1ms.   Got  24 (%) better.
6: From  2.81169e+06   to   2.48253e+06     tries:   1 in      1ms.   Got  11 (%) better.
7: From  2.76656e+06   to   2.51735e+06     tries:   0 in      0ms.   Got   9 (%) better.
8: From  2.75366e+06   to   2.45248e+06     tries:   2 in      1ms.   Got  10 (%) better.
9: From  2.57858e+06   to   2.33169e+06     tries:   4 in      3ms.   Got   9 (%) better.
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0: From  2.58981e+06   to   2.36452e+06     tries:   1 in      1ms.   Got   8 (%) better.
1: From  2.36546e+06   to   2.13234e+06     tries:  10 in      7ms.   Got   9 (%) better.
2: From  2.66002e+06   to   2.34788e+06     tries:   1 in      1ms.   Got  11 (%) better.
3: From   2.5052e+06   to   2.17607e+06     tries:   1 in      1ms.   Got  13 (%) better.
4: From  2.48786e+06   to   2.30635e+06     tries:   2 in      1ms.   Got   7 (%) better.
5: From  2.59876e+06   to   2.24382e+06     tries:   1 in      1ms.   Got  13 (%) better.
6: From  2.57105e+06   to   2.35271e+06     tries:   0 in      0ms.   Got   8 (%) better.
7: From  2.43532e+06   to   2.19709e+06     tries:   1 in      1ms.   Got   9 (%) better.
8: From  2.63746e+06   to   2.32821e+06     tries:   3 in      2ms.   Got  11 (%) better.
9: From   2.6329e+06   to   2.37689e+06     tries:   1 in      1ms.   Got   9 (%) better.
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0: From  3.51375e+06   to   3.13033e+06     tries:   6 in      4ms.   Got  10 (%) better.
1: From  3.31472e+06   to   3.07649e+06     tries:   1 in      1ms.   Got   7 (%) better.
2: From  3.15811e+06   to   2.48431e+06     tries:   3 in      2ms.   Got  21 (%) better.
3: From  3.28514e+06   to   2.91475e+06     tries:   2 in      2ms.   Got  11 (%) better.
4: From  3.36872e+06   to   2.91324e+06     tries:  38 in     26ms.   Got  13 (%) better.
5: From  3.10383e+06   to   2.73552e+06     tries:   4 in      3ms.   Got  11 (%) better.
6: From  3.10144e+06   to   2.47106e+06     tries:  14 in      9ms.   Got  20 (%) better.
7: From  3.14489e+06   to   2.87187e+06     tries:   0 in      0ms.   Got   8 (%) better.
8: From  3.07133e+06   to    2.7493e+06     tries:  16 in     11ms.   Got  10 (%) better.
9: From  3.03113e+06   to   2.66058e+06     tries:   1 in      1ms.   Got  12 (%) better.
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0: From  3.06436e+06   to   2.76566e+06     tries:   8 in      5ms.   Got   9 (%) better.
1: From  2.89487e+06   to   2.69346e+06     tries:   3 in      2ms.   Got   6 (%) better.
2: From  2.85381e+06   to   2.53915e+06     tries:   5 in      4ms.   Got  11 (%) better.
3: From  2.95503e+06   to   2.59557e+06     tries:   2 in      1ms.   Got  12 (%) better.
4: From  2.80901e+06   to   2.37538e+06     tries:   2 in      1ms.   Got  15 (%) better.
5: From   3.0103e+06   to   2.68803e+06     tries:   1 in      1ms.   Got  10 (%) better.
6: From  2.86384e+06   to   2.64703e+06     tries:   1 in      1ms.   Got   7 (%) better.
7: From  2.83844e+06   to   2.53981e+06     tries:   4 in      3ms.   Got  10 (%) better.
8: From  2.93505e+06   to    2.3925e+06     tries:  19 in     13ms.   Got  18 (%) better.
9: From  2.81659e+06   to   2.46258e+06     tries:   7 in      5ms.   Got  12 (%) better.
```

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0: From  2.98834e+06   to   2.61839e+06     tries:   0 in      0ms.   Got  12 (%) better.
1: From  3.07024e+06   to   2.66291e+06     tries:   1 in      1ms.   Got  13 (%) better.
2: From  2.90852e+06   to   2.55828e+06     tries:   4 in      3ms.   Got  12 (%) better.
3: From  2.94626e+06   to   2.69316e+06     tries:   0 in      0ms.   Got   8 (%) better.
4: From  2.84146e+06   to   2.39469e+06     tries:   0 in      0ms.   Got  15 (%) better.
5: From  3.06773e+06   to   2.62017e+06     tries:   0 in      0ms.   Got  14 (%) better.
6: From  3.11229e+06   to   2.76437e+06     tries:   0 in      0ms.   Got  11 (%) better.
7: From  2.98908e+06   to   2.72388e+06     tries:   0 in      0ms.   Got   8 (%) better.
8: From  3.11579e+06   to   2.71012e+06     tries:   2 in      1ms.   Got  13 (%) better.
9: From  3.13809e+06   to   2.78869e+06     tries:   3 in      2ms.   Got  11 (%) better.
```

Conclusions: *IG also executed these instances with a few number of tries, in a good execution time with considerable improvements (max. 24%, min 6%).*

First five instances of 200 Jobs

```
0: From  9.42491e+06   to   7.7671e+06    tries:  18 in    98ms.     Got  17 (%) better.
1: From   9.1631e+06   to  8.36241e+06    tries:   0 in     4ms.     Got   8 (%) better.
2: From  9.64882e+06   to   8.1719e+06    tries:   2 in    15ms.     Got  15 (%) better.
3: From   8.9609e+06   to  7.80967e+06    tries:   4 in    25ms.     Got  12 (%) better.
4: From  9.32195e+06   to  7.56652e+06    tries:   9 in    49ms.     Got  18 (%) better.
5: From  9.10525e+06   to  8.21131e+06    tries:   3 in    20ms.     Got   9 (%) better.
6: From  8.92651e+06   to  7.10922e+06    tries: 341 in  1698ms.     Got  20 (%) better.
7: From   9.1088e+06   to  8.14567e+06    tries:   4 in    25ms.     Got  10 (%) better.
8: From  8.88307e+06   to  7.43073e+06    tries:  22 in   113ms.     Got  16 (%) better.
9: From  9.27737e+06   to  8.23361e+06    tries:   0 in     5ms.     Got  11 (%) better.
```

```
0: From  9.19315e+06   to  8.13154e+06    tries:   0 in     4ms.     Got  11 (%) better.
1: From  9.03182e+06   to  7.81425e+06    tries:   2 in    14ms.     Got  13 (%) better.
2: From  8.77825e+06   to  7.82719e+06    tries:   1 in    10ms.     Got  10 (%) better.
3: From  8.95031e+06   to  8.11984e+06    tries:   1 in    10ms.     Got   9 (%) better.
4: From    9.176e+06   to  8.10734e+06    tries:  13 in    69ms.     Got  11 (%) better.
5: From  8.89025e+06   to  8.13922e+06    tries:   2 in    15ms.     Got   8 (%) better.
6: From  8.96709e+06   to  7.90018e+06    tries:  11 in    59ms.     Got  11 (%) better.
7: From  9.42779e+06   to  8.00084e+06    tries:  38 in   192ms.     Got  15 (%) better.
8: From  8.84462e+06   to  7.69652e+06    tries:   0 in     5ms.     Got  12 (%) better.
9: From  9.33569e+06   to  8.46021e+06    tries:   3 in    20ms.     Got   9 (%) better.
```

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0: From  9.44082e+06   to  8.00134e+06    tries:  38 in   193ms.     Got  15 (%) better.
1: From  9.38178e+06   to  8.10361e+06    tries:  64 in   320ms.     Got  13 (%) better.
2: From  9.26321e+06   to   8.2756e+06    tries:  40 in   202ms.     Got  10 (%) better.
3: From  9.25578e+06   to   7.9119e+06    tries:  12 in    65ms.     Got  14 (%) better.
4: From  8.61804e+06   to  7.60252e+06    tries:   1 in    10ms.     Got  11 (%) better.
5: From   9.0759e+06   to  8.16517e+06    tries:   3 in    20ms.     Got  10 (%) better.
6: From   9.6548e+06   to  7.51193e+06    tries:  58 in   291ms.     Got  22 (%) better.
7: From  9.06812e+06   to  8.29459e+06    tries:   0 in     4ms.     Got   8 (%) better.
8: From  9.47282e+06   to  8.01517e+06    tries:  32 in   164ms.     Got  15 (%) better.
9: From  9.42596e+06   to  8.13685e+06    tries:   7 in    41ms.     Got  13 (%) better.
```

```
0: From  9.79419e+06   to  8.66837e+06    tries:   0 in     5ms.     Got  11 (%) better.
1: From  9.75854e+06   to  8.83828e+06    tries:   4 in    25ms.     Got   9 (%) better.
2: From  9.85333e+06   to  8.82247e+06    tries:  46 in   232ms.     Got  10 (%) better.
3: From  9.78719e+06   to  8.75801e+06    tries:   0 in     4ms.     Got  10 (%) better.
4: From  9.60928e+06   to  7.90882e+06    tries:  25 in   129ms.     Got  17 (%) better.
5: From  9.45351e+06   to  8.47246e+06    tries:   3 in    20ms.     Got  10 (%) better.
6: From  9.40589e+06   to  8.57366e+06    tries:  11 in    59ms.     Got   8 (%) better.
7: From  9.44095e+06   to  8.37855e+06    tries:   5 in    30ms.     Got  11 (%) better.
8: From   9.7063e+06   to  8.77036e+06    tries:   0 in     4ms.     Got   9 (%) better.
9: From  9.99865e+06   to  8.00657e+06    tries:  10 in    55ms.     Got  19 (%) better.
```

```
0: From  9.97437e+06   to  8.99274e+06    tries:   0 in     5ms.     Got   9 (%) better.
1: From  9.52762e+06   to  8.87028e+06    tries:   4 in    26ms.     Got   6 (%) better.
2: From   9.9063e+06   to  8.37782e+06    tries:   0 in     4ms.     Got  15 (%) better.
3: From  1.02692e+07   to  8.95994e+06    tries:   1 in     9ms.     Got  12 (%) better.
4: From  9.76867e+06   to  8.63801e+06    tries:   2 in    15ms.     Got  11 (%) better.
5: From  9.85453e+06   to  8.77332e+06    tries:   0 in     4ms.     Got  10 (%) better.
6: From  9.76898e+06   to  8.20707e+06    tries:   1 in    10ms.     Got  15 (%) better.
7: From   9.8217e+06   to  8.91557e+06    tries:   1 in     9ms.     Got   9 (%) better.
8: From  9.75734e+06   to  8.82107e+06    tries:   0 in     5ms.     Got   9 (%) better.
9: From   9.6264e+06   to  8.64958e+06    tries:   7 in    40ms.     Got  10 (%) better.
```

***Conclusions**: Medium number of tries, with one outlier of 341 tries. Medium exec. time (when compared to 100 jobs instances) and very good improvements (max. 22%, min 8%).*