Results – Exercise 2 – Obsessive Packing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cities | Items | Hill Climber | Average Run-time (Seconds) | Obsessive Packing | Average Run-time  (Seconds) | Max. Value |
| 280 | **279** | 15 656.13 | 1.30 | 15 940.59 | 1.14 | 16 138.12 |
| 280 | **1395** | 104 363.98 | 3.10 | 104 365.19 | 139.32 | 104 365.73 |
| 280 | **2790** | 411 714.27 | 8.75 | 411 714.79 | 483.11 | 411 714.79 |
| 4461 | **4460** | 232 122.20 | 175.45 | 250 039.91 | 220.77 | 250 520.95 |
| 4461 | **22300** | 1 478 784.83 | 558.25 | 1 478 811.36 | 600.13 | 1 478 891.23 |
| 4461 | **44600** | 5 8423 56.39 | 600.15 | 6 027 685.27 | 558.77 | 6 030 747.53 |
| 33810 | **33809** | 1 541 800.98 | 599.90 | 1 575 701.95 | 600.23 | 1 591 115.89 |
| 33810 | **169045** | -6 318 212.89 | 600.10 | -3 235 085.31 | 600.30 | -3 145 792.42 |
| 33810 | **338090** | -48 261 363.83 | 600.40 | 2 830 880.21 | 600.64 | 3 735 362.06 |

Results – Exercise 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cities | Items | Algorithm 3, Cost first | Algorithm 3, Weight first | Algorithm 3, Random |
| 280 | **279** | -93389.53 | 341839900.3 | 653109372.2 |
| 280 | **1395** | -1049453.52 | 529759.27 | 361668.73 |
| 280 | **2790** | -562026.17 | -580552.05 | -1058754.33 |
| 4461 | **4460** | -3.82E+07 | -1.19E+07 | -10141512.35 |
| 4461 | **22300** | -6.72E+08 | N/A | 187697241.6 |
| 4461 | **44600** | -1.95E+08 | N/A | N/A |
| 33810 | **33809** | -9.56E+08 | N/A | N/A |
| 33810 | **169045** | -4.40E+08 | N/A | N/A |
| 33810 | **338090** | N/A | N/A | N/A |

**Evaluate, and then return to original knapsack**

**Replace**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cities | Items | Knapsack Seed | TSP Choice | Generations | Iterations | Items to be considered |
| 280 | **279** | 2 | 1 | 10 | ALL | ALL |
| 280 | **1395** | 2 | 1 | 10 | ALL | ALL |
| 280 | **2790** | 2 | 1 | 6 | ALL | ALL |
| 4461 | **4460** | 2 | 1 | 1 | ALL | ALL |
| 4461 | **22300** | 2 | 1 | 10 | 8 | ALL |
| 4461 | **44600** | 2 | 1 | 1 | 25 | ALL |
| 33810 | **33809** | 4 | 1 | 6 | 5 | 7500 Good  2500 Random |
| 33810 | **169045** | 4 | 1 | 1 | 12 | 2000 Good  500 Random |
| 33810 | **338090** | 4 | 1 | 1 | 50 | 2000 Good  500 Random |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cities | Items | Matt | Sami | Alec |
| 280 | **279** | 2 336.46 | 653109372.2 | 5 085.01 |
| 280 | **1395** | -260 949.38 | 361668.73 | -183 787.21 |
| 280 | **2790** | -735 902.37 | -562026.17 | -532 722.87 |
| 4461 | **4460** | N/A | 187697241.6 | -6 926 291.15 |
| 4461 | **22300** | N/A | N/A | -86 709 837.37 |
| 4461 | **44600** | N/A | N/A | N/A |
| 33810 | **33809** | N/A | N/A | N/A |
| 33810 | **169045** | N/A | N/A | N/A |
| 33810 | **338090** | N/A | N/A | N/A |