|  |  |  |
| --- | --- | --- |
| **function** | Reference computational time (s) | Computational time in our code (s) |
| read\_coordinate\_file | 0.03 | 0.045 |
| construct\_graph\_connections | 70 | 57.26 |
| construct\_graph | 0.002 | 0.005 |
| Task 6+7 | 0.007 | 0.017 |
| plot\_points (from task 8, excluding plt.show) | 2 | 3.1 |
| construct\_fast\_graph\_connections | 0.3 | 0.97 |
| Running the entire program using the ​*fast*​ version, excluding plotting | 1 | 1.9 |

**The path for SampleCoordinates.txt:** [0 4 3 5]

**The path for HungaryCities.txt:** [311 19 460 629 269 236 740 519 571 313 218 161 158 791 615 44 395 123 580 114 253 836 73 35 424 503 789 200 702]

**The path for GermanyCities.txt:** [ 1573 5032 3182 2958 4197 4448 2269 5634 3467 6172 4656 4390 3610 3776 4850 6846 764 5614 7656 6251 5004 5932 6906 7571 4712 3700 270 4160 2522 2738 2376 4399 3987 4890 2266 5813 6473 6062 6048 11572 8765 8847 3995 9989 9683 10232 4325 7418 3122 7115 10160 9311 4084 10561 4135 4806 629 4652 5762 6162 9350 8352 1112 4887 4699 6987 4651 5513 9104 4911 8920 5357 5414 10404 8228 9116 11213 9467 11126 10789 5970 7292 8473 9856 11780 9570 10476 10078 9956 9998 738 10403 9172 11716 10197 8148 6807 9578 7733 7197 7863 9346 10784 8538 11378 10872 5444 4289 6980 6434 7064 7841 9729 10362 7958 10584]

**Total cost for SampleCoordinates.txt**: 0.21934542403665436

**Total cost for SampleCoordinates.txt**: 0.19371042011238615

**Total cost for GermanyCities.txt:** 0.4160955644172491