Report for Homework 4

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1 Introduction

I have implemented Gentics algoirthm using pyevolve library, greedy algorithm and A-star algorithm to solve Travelling Sales Person (TSP) problem.

2 System configuration

All the programs were implemented and executed on the system with following configuration: . . . or bullet points . . .

- HP Pavillion laptop

- 8gb ram

- Dual boot windows and ubuntu(linux)

- 1 TB HDD

- The program was run on linux and not in windows

- You also need to install pyevolve library

3 Results and interpretation

Based on the results it can be deduced that the tour length is minimum in case of greedy for the benchmarks between GA and Greedy. Also you get the minimum value between GA, Greedy and Astar, from AStar.

BENCHMARKS	TOUR LENGTH FOR GA	EXECUTION TIME FOR GA(s)
d2103.tsp	2697923.26	492.245672
d1655.tsp	1787998.79	368.370110
fl1577.tsp	1090187.67	307.129964
att48.tsp	42600.07	11.175342
u1060.tsp	4976285.11	208.244865
u1817.tsp	1706349.69	406.600839
pr1002.tsp	4767184.18	209.593185
pcb3038.tsp	4646274.03	893.755261
u2319.tsp	4988270.90	589.186240
d1291.tsp	1363213.83	243.429005
vm1084.tsp	6413378.08	209.417412
rl1889.tsp	12055670.69	405.347429
u2152.tsp	2066133.61	512.525024
fnl4461.tsp	7317939.37	2078.84637
rl1304.tsp	7315459.97	262.509838
fl1400.tsp	1247698.51	269.254390
rl1323.tsp	7702362.39	260.044473
nrw1379.tsp	1111868.62	264.955883
pcb1173.tsp	1094419.01	223.922412
u1432.tsp	3131928.72	287.593116
pr2392.tsp	12787236.45	600.687142
vm1748.tsp	12083215.07	350.118080
fl3795.tsp	3081807.67	1430.066373
rl5915.tsp	38322326.79	4204.185836
rl5934.tsp	37876086.29	6141.941117

Table 1: Results for TSP using GA

BENCHMARKS	TOUR LENGTH	EXECUTION TIME(in seconds)
fl1577.tsp	28200.05	16.442822
att48.tsp	40526.42	0.454247
u1060.tsp	281976.07	5.103730
rl5934.tsp	695865.13	1425.235365
u1817.tsp	70147.67	831.724561
pr1002.tsp	325112.79	5.144432
pcb3038.tsp	176330.74	143.530396
u2319.tsp	286997.35	62.116791
d1291.tsp	60264.84	10.879561
vm1084.tsp	300938.52	7.260818
rl1889.tsp	394296.74	32.929133
d2103.tsp	87803.27	34.221999
d1655.tsp	74592.38	17.196115
fl1400.tsp	27201.25	12.669916
fnl4461.tsp	228417.91	348.297943
rl1304.tsp	324489.06	18.735194
rl1323.tsp	343251.62	11.829125
nrw1379.tsp	69794.61	12.352266
pcb1173.tsp	73326.7	7.832124
pr2392.tsp	464801.45	69.862949
u2152.tsp	77780.53	37.537427
u1432.tsp	193337.91	12.238017
vm1748.tsp	422017.51	24.755502
fl3795.tsp	34779.26	223.005743
rl5915.tsp	694765.36	978.694715

Table 2: Results for TSP using Greedy Algorithm

BENCHMARKS	TOUR LENGTH	EXECUTION TIME(in seconds)
val2.tsp	19520.3	1.385401
val3.tsp	12180.38	2.588935
val1.tsp	20.0	0.02474

Table 3: Results for TSP using A-Star Algorithm