

```
>> fa_tsp_chk
```

```
time =
```

```
388.0291
```

```
route
```

```
Columns 1 through 17
```

```
33 37 5 96 78 52 48 100 41 71 14 3 43 46
29 30 39
```

```
Columns 18 through 34
```

```
85 68 73 81 25 61 51 87 57 9 7 34 83 56
12 27 35
```

```
Columns 35 through 51
```

```
86 20 62 60 77 23 98 91 45 32 15 17 11 47
1 8 92
```

```
Columns 52 through 68
```

```
63 6 49 90 10 84 72 21 74 59 36 99 38 24
18 79 19
```

```
Columns 69 through 85
```

```
53 88 16 94 22 70 66 26 65 4 75 97 56 80
31 89 42
```

```
Columns 86 through 100
```

```
67 28 93 58 69 64 40 54 2 44 50 82 95 18
76
```

```
distance
```

```
22669
```

```
difference from optimum solution
```

```
1387
```

```
gamma value :
```

```
0.0064
```

```
percentage error :
```

```
6.5172
```

```
run =
```

1

time =

386.1311

route

Columns 1 through 16

87	57	20	27	86	35	62	60	77	23	98	91	45	32
11	15												

Columns 17 through 32

17	59	74	21	72	84	36	99	38	24	18	79	88	14
94	22												

Columns 33 through 48

70	66	26	65	4	97	56	80	31	89	42	8	92	4
63	6												

Columns 49 through 64

49	75	19	53	90	10	47	93	28	67	58	61	51	25
81	69												

Columns 65 through 80

73	68	85	50	44	64	40	54	2	82	95	13	76	34
37	5												

Columns 81 through 96

52	78	96	39	30	48	100	41	71	14	3	43	46	24
34	83												

Columns 97 through 100

55	12	7	9
----	----	---	---

distance

22159

difference from optimum solution

877

gamma value :

0.0043

```
percentage error :  
    4.1209
```

```
run =
```

```
    2
```

```
time =
```

```
    382.4200
```

```
route
```

```
    Columns 1 through 16
```

```
    45    91    47    32    11    15    17    59    74    21    72    10    84    36  
99    38
```

```
    Columns 17 through 32
```

```
    24    18    79    94    22    70    16    88    53    19    75    66    26    65  
4    97
```

```
    Columns 33 through 48
```

```
    56    80    31    89    42    8    92    6    49    90    63    1    93    26  
67    58
```

```
    Columns 49 through 64
```

```
    61    51    87    25    81    69    64    40    54    2    44    50    73    68  
85    82
```

```
    Columns 65 through 80
```

```
    95    13    76    33    37    5    52    78    96    39    30    48    100    41  
71    14
```

```
    Columns 81 through 96
```

```
    3    43    46    29    34    83    55    7    9    57    12    27    35    86  
20    62
```

```
    Columns 97 through 100
```

```
    60    77    23    98
```

```
distance
```

```
    22023
```

26 65 4 19 75 97 56 80 31 89 42 8 92

[illegible]

Columns 81 through 96

	82	2	54	40	64	44	50	73	69	58	67	28	93	4
92	8													

Columns 97 through 100

42	89	31	80
----	----	----	----

distance

22460

difference from optimum solution

1178

gamma value :

0.0066

percentage error :

5.5352

run =

5

time =

384.5653

route

Columns 1 through 16

	97	56	80	31	89	42	8	92	75	19	53	79	90	4
6	63													

Columns 17 through 32

	1	47	93	28	67	58	61	81	25	51	87	57	7	4
85	68													

Columns 33 through 48

	50	73	69	64	40	54	2	44	82	95	13	76	33	3
5	39													

Columns 49 through 64

30	96	78	52	48	100	41	71	14	29	3	43	46	3
----	----	----	----	----	-----	----	----	----	----	---	----	----	--------------

83 55

Columns 65 through 80

12	20	27	86	35	62	60	77	23	98	91	45	32	14
15	17												

Columns 81 through 96

59	74	21	72	10	84	36	99	38	24	18	94	88	16
22	70												

Columns 97 through 100

66	26	65	4
----	----	----	---

distance

21902

difference from optimum solution

620

gamma value :

0.0122

percentage error :

2.9133

run =

6

time =

382.7562

route

Columns 1 through 16

67	69	73	64	40	54	2	44	50	82	95	13	76	38
37	5												

Columns 17 through 32

52	78	96	30	39	68	85	29	48	100	41	71	14	48
43	46												

Columns 33 through 48

```

      34      83      55      7      9      57      20      12      27      86      35      62      60      74
87      51

```

```
Columns 49 through 64

```

```

      81      25      61      58      28      93      1      47      91      98      23      45      32      14
15      17

```

```
Columns 65 through 80

```

```

      59      74      21      72      10      84      36      99      38      24      18      94      22      70
16      88

```

```
Columns 81 through 96

```

```

      53      79      90      49      6      63      92      75      19      66      26      65      4      97
56      80

```

```
Columns 97 through 100

```

```

      31      89      42      8

```

```

distance
      23215

```

```

difference from optimum solution
      1933

```

```

gamma value :
      0.0108

```

```

percentage error :
      9.0828

```

```

time =

      382.1839

```

```

route
Columns 1 through 16

```

```

      89      54      40      64      69      73      68      85      50      44      2      82      95      18
76      33

```

```
Columns 17 through 32

```

```

      37      5      52      78      96      39      30      48      100      41      71      14      3      42
46      29

```

```
Columns 33 through 48

```



```
      34      83      55      12      27      35      86      20      57      7      9      87      51      26
81      61
```

Columns 49 through 64

```
      58      67      28      93      1      63      47      91      98      77      62      60      23      45
32      11
```

Columns 65 through 80

```
      15      17      59      74      21      72      10      84      36      99      38      24      18      74
53      88
```

Columns 81 through 96

```
      16      94      22      70      66      26      65      4      97      56      75      19      90      49
6      92
```

Columns 97 through 100

```
      8      42      80      31
```

distance

```
      22477
```

difference from optimum solution

```
      1195
```

gamma value :

```
      0.0106
```

percentage error :

```
      5.6151
```

run =

```
      7
```

time =

```
      382.2682
```

route

Columns 1 through 16

```
      62      60      77      23      98      45      91      47      32      11      15      17      59      74
21      72
```

Columns 17 through 32

36	99	38	24	84	10	90	79	18	94	88	16	22	74
66	26												

Columns 33 through 48

65	4	53	19	75	97	56	80	31	89	42	8	92	49
6	63												

Columns 49 through 64

1	93	28	67	58	61	51	87	25	81	69	64	40	54
2	44												

Columns 65 through 80

50	73	68	85	30	39	82	95	13	76	33	37	5	96
78	52												

Columns 81 through 96

48	100	41	71	14	3	43	46	29	34	83	55	12	47
9	57												

Columns 97 through 100

20	27	86	35
----	----	----	----

distance

22017

difference from optimum solution

735

gamma value :

0.0098

percentage error :

3.4536

run =

8

time =

382.1489

route

Columns 1 through 16

	32	45	91	98	23	77	60	62	35	86	27	20	12	56
83	46													

Columns 17 through 32

	43	3	14	71	41	100	48	52	78	96	5	37	33	76
13	95													

Columns 33 through 48

	82	2	54	40	64	44	50	73	68	85	39	30	29	34
7	9													

Columns 49 through 64

	57	87	51	25	81	69	61	58	67	28	93	47	63	46
49	90													

Columns 65 through 80

	53	19	75	92	1	8	42	89	31	80	56	97	4	65
26	66													

Columns 81 through 96

	70	22	94	16	88	79	18	24	38	99	36	84	10	72
21	74													

Columns 97 through 100

59	17	15	11
----	----	----	----

distance

22347

difference from optimum solution

1065

gamma value :

0.0049

percentage error :

5.0042

run =

9

time =

381.7603

route

Columns 1 through 16

64	69	81	25	51	61	58	93	28	67	8	42	89	31
80	56												

Columns 17 through 32

97	75	19	4	65	26	66	70	22	94	16	88	53	74
18	24												

Columns 33 through 48

38	99	36	84	10	90	49	6	63	92	1	47	72	24
74	59												

Columns 49 through 64

17	15	11	32	45	91	98	23	77	60	62	35	86	27
12	20												

Columns 65 through 80

57	87	9	7	55	83	34	29	46	43	3	14	71	41
100	48												

Columns 81 through 96

52	78	96	5	37	33	76	13	95	82	39	30	85	64
73	50												

Columns 97 through 100

44	2	54	40
----	---	----	----

distance

21735

difference from optimum solution

453

gamma value :

0.0149

percentage error :

2.1286

run =

10

time =

382.3443

route

Columns 1 through 16

56	6	63	1	47	93	28	58	67	92	8	42	89	31	84
	97													

Columns 17 through 32

24	75	19	4	65	26	66	70	22	94	16	88	53	79	14
	38													

Columns 33 through 48

34	99	36	59	17	15	45	60	62	35	86	27	12	55	83
	29													

Columns 49 through 64

37	46	43	3	14	71	41	100	48	30	39	96	78	52	45
	33													

Columns 65 through 80

81	76	13	95	82	85	68	73	50	44	2	54	40	64	64
	25													

Columns 81 through 96

21	61	51	87	9	7	57	20	77	23	98	91	32	11	74
	72													

Columns 97 through 100

84	10	90	49
----	----	----	----

distance

22611

difference from optimum solution

1329

gamma value :
0.0094

percentage error :
6.2447

run =

11

time =

389.3487

route

Columns 1 through 16

90	79	53	19	4	65	26	66	70	22	16	88	94	14
24	38												

Columns 17 through 32

99	36	84	10	72	21	74	59	17	15	11	32	45	91
98	23												

Columns 33 through 48

77	60	62	35	86	27	12	20	57	51	87	9	7	56
83	34												

Columns 49 through 64

29	46	43	3	14	71	41	100	48	52	78	96	30	34
5	37												

Columns 65 through 80

33	76	13	95	82	2	54	40	64	44	50	85	68	73
69	81												

Columns 81 through 96

25	61	58	67	28	93	47	1	63	6	49	92	8	42
89	31												

Columns 97 through 100

80 56 97 75

distance
21955

difference from optimum solution
673

gamma value :
0.0062

percentage error :
3.1623

run =
12

time =
385.9850

route
Columns 1 through 16

26	66	70	22	16	88	94	18	24	38	99	36	84	140
72	21												

Columns 17 through 32

74	59	17	15	11	32	47	91	45	98	23	60	62	74
51	87												

Columns 33 through 48

9	7	57	20	86	35	27	12	55	83	34	46	43	43
14	71												

Columns 49 through 64

41	100	48	29	85	68	39	30	96	78	52	5	37	38
76	13												

Columns 65 through 80

95	82	2	54	40	64	44	50	73	69	81	25	61	54
67	28												

Columns 81 through 96

```

    93    1    63    6    49    90    79    53    19    75    92    8    42    89
31    80

```

```
Columns 97 through 100

```

```

    56    97    4    65

```

```

distance
    22261

```

```

difference from optimum solution
    979

```

```

gamma value :
    0.0040

```

```

percentage error :
    4.6001

```

```

run =

    13

```

```

time =

    384.9703

```

```

route
Columns 1 through 16

```

```

    54    40    64    67    58    28    93    1    92    8    42    89    31    89
56    97

```

```
Columns 17 through 32

```

```

    75    19    4    65    26    66    70    22    94    16    88    53    79    14
24    38

```

```
Columns 33 through 48

```

```

    99    36    59    74    21    72    84    10    90    49    6    63    47    14
17    15

```

```
Columns 49 through 64

```

```

    32    45    91    98    23    77    60    62    35    86    27    12    20    47
9    57

```


87 51 61 25 81 69 73 68 85 55 83 34 29 46

[illegible]

82 50 44 2

difference from optimum solution
663

```
percentage error :
    3.1153
```

```
time =  
384.2170
```

64 54 40 69 81 25 51 61 58 93 28 67 8 ~~42~~

80 56 97 75 92 1 63 6 49 10 84 90 19 

[illegible]

Columns 49 through 64

59	17	15	11	32	47	91	45	98	23	77	60	62	24
86	35												

Columns 65 through 80

27	12	57	87	9	7	55	83	34	29	46	43	3	14
71	41												

Columns 81 through 96

100	48	30	39	96	78	52	5	37	33	76	13	95	82
2	44												

Columns 97 through 100

50	85	68	73
----	----	----	----

distance

22542

difference from optimum solution

1260

gamma value :

0.0107

percentage error :

5.9205

run =

15

time =

384.0885

route

Columns 1 through 16

50	73	68	85	82	95	13	76	33	37	5	52	78	96
39	30												

Columns 17 through 32

48	100	41	71	14	3	43	46	29	34	83	55	9	87
----	-----	----	----	----	---	----	----	----	----	----	----	---	---------------

51 57

Columns 33 through 48

32	7	20	12	27	86	35	62	60	77	23	98	45	91	47
	11													

Columns 49 through 64

53	15	17	59	74	21	72	10	84	36	99	38	24	18	79
	88													

Columns 65 through 80

63	16	94	22	70	66	26	65	4	97	75	19	90	49	46
	1													

Columns 81 through 96

69	92	8	56	80	31	89	42	67	28	93	58	61	25	84
	64													

Columns 97 through 100

40	54	2	44
----	----	---	----

distance

21944

difference from optimum solution

662

gamma value :

0.0043

percentage error :

3.1106

run =

16

time =

383.3376

route

Columns 1 through 16

50	44	64	40	54	2	69	67	8	42	89	31	80	56
97	75												

Columns 17 through 32

19	4	65	26	66	70	22	94	16	88	53	79	18	24
38	99												

Columns 33 through 48

36	84	10	72	21	74	59	17	15	11	32	45	23	96
91	47												

Columns 49 through 64

63	90	49	6	92	1	93	28	58	61	81	25	51	87
57	9												

Columns 65 through 80

7	20	77	60	62	35	86	27	12	55	83	34	29	46
43	3												

Columns 81 through 96

14	71	41	100	48	30	96	78	52	5	37	33	76	16
95	82												

Columns 97 through 100

39	85	68	73
----	----	----	----

distance

22521

difference from optimum solution

1239

gamma value :

0.0071

percentage error :

5.8218

run =

17

time =

384.9636

route

Columns 1 through 16

32	11	17	15	45	91	98	23	77	60	62	35	86	27
12	20												

Columns 17 through 32

57	7	9	87	51	25	81	68	85	39	30	29	34	83
55	46												

Columns 33 through 48

43	3	14	71	41	100	48	52	78	96	5	37	33	76
13	95												

Columns 49 through 64

82	2	54	40	64	44	50	73	69	61	58	93	28	67
8	42												

Columns 65 through 80

89	31	80	56	97	75	19	53	4	65	26	66	70	22
94	16												

Columns 81 through 96

88	79	18	24	38	99	36	59	74	21	72	84	10	90
49	6												

Columns 97 through 100

63	92	1	47
----	----	---	----

distance

22504

difference from optimum solution

1222

gamma value :

0.0117

percentage error :

5.7419

run =

18

time =

384.7576

route

Columns 1 through 16

43	3	14	71	41	100	48	52	78	96	5	37	39	30
29	34												

Columns 17 through 32

7	9	57	87	51	85	68	73	50	44	82	13	33	76
95	2												

Columns 33 through 48

54	40	64	69	81	25	61	58	67	28	93	1	63	46
49	90												

Columns 49 through 64

10	84	79	53	19	75	92	8	42	89	31	80	56	97
4	65												

Columns 65 through 80

26	66	70	22	16	88	94	18	24	38	99	36	72	21
74	59												

Columns 81 through 96

17	15	11	32	47	91	45	98	23	77	60	62	35	86
27	20												

Columns 97 through 100

12	55	83	46
----	----	----	----

distance

23062

difference from optimum solution

1780

gamma value :

0.0029

percentage error :
8.3639

time =

382.6383

route

Columns 1 through 16

9	42	8	92	93	28	67	58	69	81	25	61	51	87	57
	7													

Columns 17 through 32

95	34	29	30	39	85	68	73	50	44	64	40	54	2	82
	13													

Columns 33 through 48

46	76	33	37	5	96	78	52	48	100	41	71	14	3	43
	83													

Columns 49 through 64

17	55	12	20	27	86	35	62	60	77	23	98	91	45	15
	11													

Columns 65 through 80

99	32	47	1	63	6	49	90	10	84	72	21	74	59	36
	38													

Columns 81 through 96

75	24	18	79	88	16	94	22	70	66	26	65	4	53	14
	97													

Columns 97 through 100

56	80	31	89
----	----	----	----

distance

22501

difference from optimum solution

1219

gamma value :
0.0038

percentage error :
5.7278

run =

19

time =

383.1012

route

Columns 1 through 16

73	69	61	51	87	25	81	68	85	30	39	82	95	14
76	33												

Columns 17 through 32

37	5	96	78	52	48	100	41	71	14	3	43	46	24
34	83												

Columns 33 through 48

55	12	7	9	57	20	27	86	35	62	60	77	58	67
28	93												

Columns 49 through 64

1	47	91	98	23	45	32	11	15	17	59	74	21	72
10	84												

Columns 65 through 80

36	99	38	24	18	79	53	88	16	94	22	70	66	26
65	4												

Columns 81 through 96

97	56	75	19	90	49	6	63	92	8	42	80	31	84
54	40												

Columns 97 through 100

64	2	44	50
----	---	----	----

distance
22795

difference from optimum solution
1513

gamma value :
0.0025

percentage error :
7.1093

time =
384.3475

route
Columns 1 through 16

	22	94	16	88	53	79	18	24	38	99	36	84	10	90
49	6													

Columns 17 through 32

	63	47	72	21	74	59	17	15	11	32	45	91	98	20
77	60													

Columns 33 through 48

	62	35	86	27	20	57	9	7	12	55	83	34	29	40
43	3													

Columns 49 through 64

	14	71	41	100	48	30	96	78	52	5	37	33	76	10
95	82													

Columns 65 through 80

	39	85	68	73	50	44	2	54	40	64	69	81	25	80
51	61													

Columns 81 through 96

	58	67	28	93	1	92	8	42	89	31	80	56	97	70
19	4													

Columns 97 through 100

65	26	66	70
----	----	----	----

```
distance
    21392

difference from optimum solution
    110

gamma value :
    0.0111

percentage error :
    0.5169

run =

    20

avgTime =

    383.9183

avgDist =

    2.2212e+04

bestDist =

    21392

bestGamma =

    0.0111

stdDeviation =

    338.6441

>>
```