```
>> fa_tsp_chk_nt

time =

   276.0260

route
  Columns 1 through 17

    64    44    50    73    69    81    25    61    58    67    28    93     1    92
 8    42    89

  Columns 18 through 34

    31    80    56    97    75     4    65    26    66    70    22    94    16    88
53    19    79

  Columns 35 through 51

    18    24    38    99    36    84    10    90    49     6    63    72    21    74
59    17    15

  Columns 52 through 68

    11    32    47    91    45    98    23    77    60    62    35    86    27    20
12    55    83

  Columns 69 through 85

    46    43     3    41    71   100    48    14    29    34     7     9    57    87
51    68    85

  Columns 86 through 100

    39    30    96    78    52     5    37    33    76    13    95    82     2    54
40

distance
      22699

difference from optimum solution
      1417

percentage error :
    6.6582


run =

     1
```

```
time =

   273.5671

route
  Columns 1 through 16

      76      33      37       5      96      78      52      48     100      41      71      14       3      43
46      29

  Columns 17 through 32

      30      39      85      68      81      25      61      51      87      57       9       7      34      83
55      12

  Columns 33 through 48

      20      27      86      35      62      60      77      23      98      91      45      32      11      15
17      59

  Columns 49 through 64

      74      21      72      84      10      90      75      19      53      79      18      24      38      36
99      94

  Columns 65 through 80

      88      16      22      70      66      26      65       4      97      56      80      31      89      42
8      92

  Columns 81 through 96

      49       6      63       1      47      93      28      58      67      40      54       2      64      69
73      50

  Columns 97 through 100

      44      82      95      13

distance
       22551

difference from optimum solution
       1269

percentage error :
    5.9628


run =
```

```
     2


time =

  272.5378

route
  Columns 1 through 16

    98    23    45    32    11    15    17    59    74    21    72    84    36    99
38    24

  Columns 17 through 32

    18    79    88    94    22    70    16    53    66    26    65     4    80    31
89    42

  Columns 33 through 48

    56    97    19    75     6    49    90    10    63     1    92     8    67    69
64    40

  Columns 49 through 64

    54     2    44    50    73    68    85    30    39    82    95    13    76    33
37     5

  Columns 65 through 80

    96    78    52    48   100    41    71    14     3    43    46    29    34    83
55    12

  Columns 81 through 96

    27    86    35    62    60    77    20     7     9    57    87    51    25    81
61    58

  Columns 97 through 100

    28    93    47    91

distance
      23318

difference from optimum solution
      2036

percentage error :
    9.5668
```

```
run =

     3


time =

   272.8180

route
  Columns 1 through 16

    81    73    44    50    68    85    39    30    29    46    43     3    14    71
41   100

  Columns 17 through 32

    48    52    78    96     5    37    33    76    13    95    82     2    54    40
64    69

  Columns 33 through 48

    61    58    67    28    93     1    63     6    49    90    75    92     8    42
89    31

  Columns 49 through 64

    80    56    97    19     4    65    26    66    70    22    94    16    88    53
79    18

  Columns 65 through 80

    24    38    99    36    84    10    72    21    74    59    17    15    11    32
47    91

  Columns 81 through 96

    45    98    23    77    60    62    35    86    27    20    12    55    83    34
7    57

  Columns 97 through 100

     9    87    51    25

distance
      22047

difference from optimum solution
    765
```

```
percentage error :
    3.5946


run =

     4


time =

  273.7644

route
  Columns 1 through 16

    83    55     7     9    87    51    57    20    12    27    86    35    62    60
77    23


  Columns 17 through 32

    98    91    45    32    47    11    15    17    59    74    21    72    63     1
92    75


  Columns 33 through 48

     6    49    90    10    84    36    99    38    24    18    79    19    53    88
16    94


  Columns 49 through 64

    22    70    66    26    65     4    97    56    80    31    89    42     8    67
28    93


  Columns 65 through 80

    58    61    25    81    69    64    40    54     2    95    76    33    13    82
44    50


  Columns 81 through 96

    73    68    85    39    37     5    52    78    96    30    48   100    41    71
14     3


  Columns 97 through 100

    43    46    29    34

distance
      23070
```

difference from optimum solution
        1788

percentage error :
    8.4015

run =

     5

time =

  272.7640

route
  Columns 1 through 16

      95   82   39   85   68   73   50   44   2   54   40   64   69   81
25   67

  Columns 17 through 32

      28   93   58   61   51   87   57   9   7   20   77   23   98   91
47   1

  Columns 33 through 48

      63   6   49   92   8   42   89   31   80   56   97   75   19   4
65   26

  Columns 49 through 64

      66   70   22   16   88   94   18   79   53   90   10   84   24   38
99   36

  Columns 65 through 80

      72   21   74   59   17   15   11   32   45   60   62   35   86   27
12   55

  Columns 81 through 96

      83   34   29   46   43   3   14   71   41   100   48   30   96   78
52   5

  Columns 97 through 100

      37   33   76   13

```
distance
      22510

difference from optimum solution
       1228

percentage error :
    5.7701


run =

     6


time =

  272.7856

route
  Columns 1 through 16

    49     6    63     1    93    28    58    67    40    54     2    64    69    61
51    25

  Columns 17 through 32

    81    85    68    73    50    44    82    95    13    76    33    37     5    52
78    96

  Columns 33 through 48

    39    30    48   100    41    71    14    29     3    43    46    34    83    56
7     9

  Columns 49 through 64

    87    57    12    27    35    86    20    62    60    77    23    98    45    91
47    32

  Columns 65 through 80

    11    15    17    59    74    21    72    10    84    36    99    38    24    18
79    90

  Columns 81 through 96

    19    53    88    16    94    22    70    66    26    65     4    75    97    56
80    31
```

```
   Columns 97 through 100

      89    42     8    92

distance
       22866

difference from optimum solution
        1584

percentage error :
     7.4429


run =

      7


time =

   272.0406

route
   Columns 1 through 16

      33    76    13    95    82    50    39    85    68    73    44     2    54    40
  64    69

   Columns 17 through 32

      81    25     9     7    57    87    51    61    58    67    28    93     1    63
  92     8

   Columns 33 through 48

      42    89    31    80    56    97     4    65    26    66    70    22    94    16
  88    79

   Columns 49 through 64

      53    19    75     6    49    90    10    84    18    24    38    99    36    72
  21    74

   Columns 65 through 80

      59    17    15    11    32    47    91    45    98    23    77    60    62    35
  86    27

   Columns 81 through 96
```

```
    20    12    55    83    34    29    46    43     3    14    71    41   100    48
30    96

   Columns 97 through 100

    78    52     5    37
```

distance
       22264

difference from optimum solution
     982

percentage error :
     4.6142

run =

     8

time =

   272.3422

route
   Columns 1 through 16

```
    22    16    88    94    18    24    38    99    36    59    74    21    72    10
84    79
```

   Columns 17 through 32

```
    53    90    49     6    63     1    28    93    47    11    17    15    32    45
91    98
```

   Columns 33 through 48

```
    23    60    62    35    86    27    12    20     7     9    55    83    34    46
43     3
```

   Columns 49 through 64

```
    29    14    71    41   100    48    52    78    96    30    85    39     5    37
33    76
```

   Columns 65 through 80

```
    13    95    82    50    44     2    54    40    64    69    73    68    81    26
61    51
```

```
   Columns 81 through 96

     87     57     77     58     67     89     31     80     42      8     92     75     19     97
56      4

   Columns 97 through 100

     65     26     66     70

distance
       23815

difference from optimum solution
       2533

percentage error :
   11.9021


run =

      9


time =

  274.0249

route
   Columns 1 through 16

     40     64     69     73     50     44      2     82     95     13     76     33     37      5
96     78

   Columns 17 through 32

     52     48    100     41     71     14      3     43     46     29     30     39     85     66
81     25

   Columns 33 through 48

     61     58     51     87      9     34     83     55      7     57     20     12     27     86
35     62

   Columns 49 through 64

     60     77     23     98     91     45     32     11     15     17     59     74     21     72
10     84

   Columns 65 through 80
```

```
    36     99     38     24     18     94     22     70     16     88     53     79     90     49
 6     75

  Columns 81 through 96

    19     66     26     65      4     97     56     80     31     89     42      8     92     41
63     47

  Columns 97 through 100

    93     28     67     54

distance
      22512

difference from optimum solution
       1230

percentage error :
    5.7795


run =

    10


time =

  272.7533

route
  Columns 1 through 16

    17     59     74     21     72     10     84     36     99     38     24     18     94     79
53     88

  Columns 17 through 32

    16     22     70     66     26     65      4     97     56     80     31     89     42      8
92     75

  Columns 33 through 48

    19     90     49      6     47     63      1     93     28     67     58     69     81     25
61     51

  Columns 49 through 64

    87     85     68     73     64     40     54      2     44     50     82     95     13     76
```

```
33    37

  Columns 65 through 80

     5    52    78    96    39    30    48   100    41    71    14     3    43    46
29    34

  Columns 81 through 96

    55    83     7     9    57    20    12    27    86    35    62    60    77    23
98    91

  Columns 97 through 100

    45    32    11    15

distance
     22233

difference from optimum solution
   951

percentage error :
   4.4686


run =

    11


time =

  281.1458

route
  Columns 1 through 16

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

  Columns 17 through 32

    57     9     7    55    83    34    29    46    43     3    14    71    41   100
48    30

  Columns 33 through 48

    39    96    78    52     5    37    33    76    13    95    82     2    54    46
64    44
```

```
   Columns 49 through 64

     50    85    68    73    69    81    25    87    51    61    58    67    28    93
1    47

   Columns 65 through 80

     10    84    79    53    19    90    49     6    63    92     8    42    89    31
80    56

   Columns 81 through 96

     97    75     4    65    26    66    70    22    16    88    94    18    24    38
99    36

   Columns 97 through 100

     72    21    74    59

distance
        22119

difference from optimum solution
    837

percentage error :
    3.9329


run =

    12


time =

   280.3488

route
  Columns 1 through 16

     17    59    74    21    72    36    99    38    24    18    79    84    10    90
49     6

   Columns 17 through 32

     63     1    92     8    75    19    53    88    94    16    22    70    66    26
65     4

   Columns 33 through 48
```

```
    97    56    80    31    89    42    67    69    64    40    54     2    44    73
50    82

  Columns 49 through 64

    95    13    76    33    37     5    78    52    48   100    41    71    14    63
43    46

  Columns 65 through 80

    34    29    30    96    39    85    68    81    25    61    51    87    57    69
7    83

  Columns 81 through 96

    55    12    20    27    86    35    62    60    77    58    28    93    47    91
98    23

  Columns 97 through 100

    45    32    11    15

distance
      23133

difference from optimum solution
       1851

percentage error :
    8.6975


run =

    13


time =

  273.2253

route
  Columns 1 through 16

    63     6    49    90    10    84    36    99    38    24    18    79    53    86
16    94

  Columns 17 through 32

    22    70    66    26    65     4    19    75    97    56    80    31    89    42
8    92
```

```
   Columns 33 through 48

     1    93    28    67    58    77    57     7     9    87    51    61    25    84
69    64

   Columns 49 through 64

    40    54     2    44    50    73    68    85    39    82    95    13    76    36
37     5

   Columns 65 through 80

    52    78    96    30    48   100    41    71    14     3    43    46    29    34
83    55

   Columns 81 through 96

    12    20    86    27    35    62    60    23    98    91    45    15    17    59
74    21

   Columns 97 through 100

    72    11    32    47

distance
      22040

difference from optimum solution
    758

percentage error :
    3.5617


run =

    14


time =

  273.5401

route
  Columns 1 through 16

     8    92     1    93    28    67    58    61    51    87    57     7     9    86
68    25

   Columns 17 through 32
```

```
      81      69      64      40      54       2      44      73      50      82      95      13      76      33
  37       5

   Columns 33 through 48

      52      78      96      39      30      48     100      41      71      14       3      43      46      29
  34      83

   Columns 49 through 64

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

   Columns 65 through 80

      32      47      63       6      49      90      10      84      72      21      74      59      36      99
  38      24

   Columns 81 through 96

      18      79      88      16      94      22      70      66      26      65       4      53      19      75
  97      56

   Columns 97 through 100

      80      31      89      42

distance
       21887

difference from optimum solution
    605

percentage error :
    2.8428


run =

    15


time =

   272.6016

route
   Columns 1 through 16

      29      34      83      55      12      27      86      35      62      60      23      45      32      14
```

```
    15     17

  Columns 17 through 32

    59    74    21    72    10    84    36    99    38    24    18    79    53    86
16    94

  Columns 33 through 48

    22    70    66    26    65     4    97    56    80    31    89    42     8    92
75    19

  Columns 49 through 64

    90    49     6    63     1    47    91    98    77    20    57     7     9    87
51    58

  Columns 65 through 80

    93    28    67    61    25    81    69    64    40    54     2    44    50    73
68    85

  Columns 81 through 96

    39    82    95    13    76    33    37     5    52    78    96    30    48   100
41    71

  Columns 97 through 100

    14     3    43    46
```

distance
       22004

difference from optimum solution
     722

percentage error :
     3.3925

run =

     16

time =

   273.1983

route

```
   Columns 1 through 16

     65      4     19     75     97     56     80     31     89     42      8     92      1     93
 28     67

   Columns 17 through 32

     58     61     51     87     25     81     85     68     73     69     64     40     54      2
 44     50

   Columns 33 through 48

     82     95     13     76     33     37      5     52     78     96     39     30     48    100
 41     71

   Columns 49 through 64

     14      3     43     46     29     34     83     55      7      9     57     20     12     27
 86     35

   Columns 65 through 80

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

   Columns 81 through 96

     63      6     49     90     10     84     36     99     38     24     18     79     53     88
 16     94

   Columns 97 through 100

     22     70     26     66
```

distance
      21650

difference from optimum solution
    368

percentage error :
    1.7292

run =

    17

time =

```
   273.8920

route
  Columns 1 through 16

      89    31    80    56    97     4    65    26    66    70    22    16    88    94
18    79

  Columns 17 through 32

      53    19    75    63     6    49    90    10    84    24    38    99    36    72
21    74

  Columns 33 through 48

      59    17    15    11    32    45    91    98    23    77    60    62    35    86
27    12

  Columns 49 through 64

      20    57     9     7    55    83    34    29    46    43     3    14    71    41
100    48

  Columns 65 through 80

      52    78     5    37    96    30    39    85    68    73    50    44    13    36
76    95

  Columns 81 through 96

      82     2    54    40    64    69    81    25    87    51    61    58    67    28
93    47

  Columns 97 through 100

       1    92     8    42

distance
      22322

difference from optimum solution
      1040

percentage error :
    4.8868


run =

    18
```

```
time =

   273.1683

route
  Columns 1 through 16

    56    80    31    89    42     8     1    67    58    28    93    47    91    98
77    20

  Columns 17 through 32

     7     9    57    87    51    61    25    81    85    68    73    69    64    40
54     2

  Columns 33 through 48

    44    50    82    95    13    76    33    37     5    52    78    96    39    30
48   100

  Columns 49 through 64

    41    71    14     3    43    46    29    34    83    55    12    27    86    35
62    60

  Columns 65 through 80

    23    45    32    11    15    17    59    74    21    72    36    99    38    24
18    94

  Columns 81 through 96

    22    70    16    88    53    79    84    10    90    49     6    63    92    75
19     4

  Columns 97 through 100

    66    26    65    97

distance
      22762

difference from optimum solution
      1480

percentage error :
    6.9542


run =
```

```
     19


time =

   272.7682

route
  Columns 1 through 16

      8     42     89     31     80     56     97      4     65     26     66     70     22     16
 88     94

  Columns 17 through 32

     18     24     38     99     36     84     10     72     21     74     59     17     15     11
 32     45

  Columns 33 through 48

     91     98     23     60     62     35     86     27     12     55     83     34     29     46
 43      3

  Columns 49 through 64

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

  Columns 65 through 80

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

  Columns 81 through 96

      9      7     57     20     77     58     67     28     93     47      1     63      6     46
 90     79

  Columns 97 through 100

     53     19     75     92

distance
      21955

difference from optimum solution
    673

percentage error :
    3.1623
```

```
run =

    20


avgTime =

  273.9656


avgDist =

   2.2488e+04


bestDist =

       21650


stdDeviation =

  549.0653

>>
```