Graph data file for the 5 local cities distance graph from the class notes.

```
5
0 1 187
0 2 212
0 3 251
1 0 187
1 2 75
2 0 212
2 1 75
2 3 59
2 4 21
3 0 251
3 2 59
4 2 21
```

```
~~~~~~~~~~~Breadth first search~~~~~~~~~~~
Starting vertex V(0) pushed onto queue.
V(0) popped off queue.
V(1) pushed onto queue.
vertex =          0     1     2     3     4
searchOrders =    0
parent =          -1    0     -1    -1    -1
isVisited =       T     T     F     F     F
------------------------------------------------------
V(2) pushed onto queue.
vertex =          0     1     2     3     4
searchOrders =    0
parent =          -1    0     0     -1    -1
isVisited =       T     T     T     F     F
------------------------------------------------------
V(3) pushed onto queue.
vertex =          0     1     2     3     4
searchOrders =    0
parent =          -1    0     0     0     -1
isVisited =       T     T     T     T     F
------------------------------------------------------
V(1) popped off queue.
V(2) popped off queue.
V(4) pushed onto queue.
vertex =          0     1     2     3     4
searchOrders =    0     1     2
parent =          -1    0     0     0     2
isVisited =       T     T     T     T     T
------------------------------------------------------
V(3) popped off queue.
V(4) popped off queue.

------------------------------------------------------
Parent of vertex 1 is vertex 0
Parent of vertex 2 is vertex 0
Parent of vertex 3 is vertex 0
Parent of vertex 4 is vertex 2
```

```
~~~~~~~~~~~Depth first search~~~~~~~~~~~
vertex =          0     1     2     3     4
searchOrders =    0
parent =          -1    0     -1    -1    -1
isVisited =       T     F     F     F     F
-------------------------------------------------------
vertex =          0     1     2     3     4
searchOrders =    0     1
parent =          -1    0     1     -1    -1
isVisited =       T     T     F     F     F
-------------------------------------------------------
vertex =          0     1     2     3     4
searchOrders =    0     1     2
parent =          -1    0     1     2     -1
isVisited =       T     T     T     F     F
-------------------------------------------------------
vertex =          0     1     2     3     4
searchOrders =    0     1     2     3
parent =          -1    0     1     2     2
isVisited =       T     T     T     T     F
-------------------------------------------------------
Parent of V(1) is V(0)
Parent of V(2) is V(1)
Parent of V(3) is V(2)
Parent of V(4) is V(2)
```

```
~~~~~~~~~~~Prim's MST algorithm~~~~~~~~~~~
T =         0
vertex =    0     1     2     3     4
parent =    -1    0     0     0     0
cost =      0     187   212   251   2000
------------------------------------------------------
T =         0     1
vertex =    0     1     2     3     4
parent =    -1    0     1     0     0
cost =      0     187   75    251   2000
------------------------------------------------------
T =         0     1     2
vertex =    0     1     2     3     4
parent =    -1    0     1     2     2
cost =      0     187   75    59    21
------------------------------------------------------
T =         0     1     2     4
vertex =    0     1     2     3     4
parent =    -1    0     1     2     2
cost =      0     187   75    59    21
------------------------------------------------------
T =         0     1     2     4     3
vertex =    0     1     2     3     4
parent =    -1    0     1     2     2
cost =      0     187   75    59    21
------------------------------------------------------
Total weight of minimum spanning tree rooted at V(0) is 342
Parent of V(1) is V(0)
Parent of V(2) is V(1)
Parent of V(3) is V(2)
Parent of V(4) is V(2)
```

```
~~~~~~~~~~~Dijkstra's shortest path algorithm~~~~~~~~~~~
T =         0
vertex =    0     1     2     3     4
parent =    -1    0     0     0     0
cost =      0     187   212   251   2000
------------------------------------------------------
T =         0     1
vertex =    0     1     2     3     4
parent =    -1    0     0     0     0
cost =      0     187   212   251   2000
------------------------------------------------------
T =         0     1     2
vertex =    0     1     2     3     4
parent =    -1    0     0     0     2
cost =      0     187   212   251   233
------------------------------------------------------
T =         0     1     2     4
vertex =    0     1     2     3     4
parent =    -1    0     0     0     2
cost =      0     187   212   251   233
------------------------------------------------------
T =         0     1     2     4     3
vertex =    0     1     2     3     4
parent =    -1    0     0     0     2
cost =      0     187   212   251   233
------------------------------------------------------
Cost of going from V(0) to V(1) is 187
The path is :  V(1) <-- V(0)
Cost of going from V(0) to V(2) is 212
The path is :  V(2) <-- V(0)
Cost of going from V(0) to V(3) is 251
The path is :  V(3) <-- V(0)
Cost of going from V(0) to V(4) is 233
The path is :  V(4) <-- V(2) <-- V(0)
```