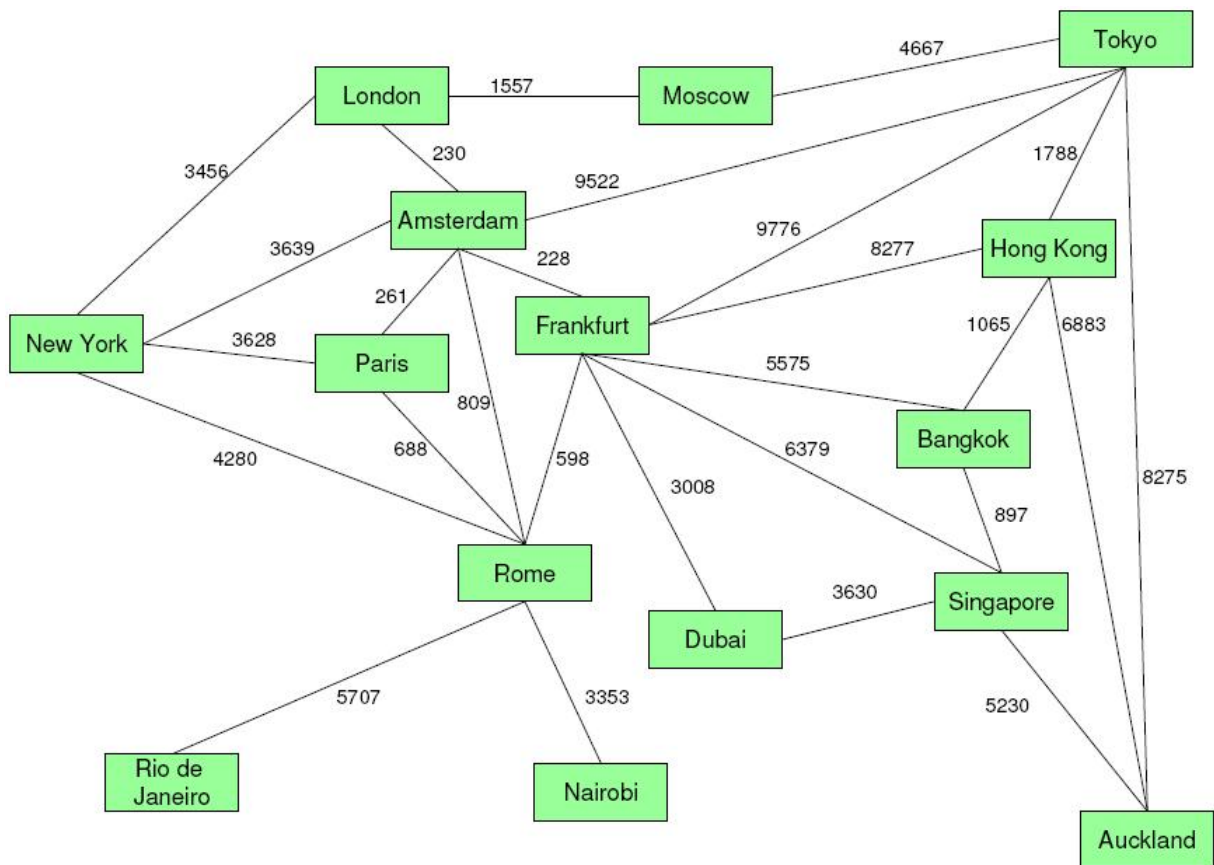


Exercises of lecture  
**Wireless Sensor Networks**  
 Winter 2006/2007  
 Sheet 11

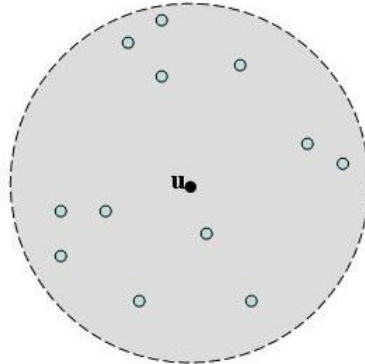
**SECTION 1:**

Topology Control: Minimum Spanning Tree, Yao-graph

1. There are two well-known algorithms for finding minimum spanning trees (MSTs), namely Prim's algorithm and Kruskal's algorithm. What is the significant difference between them in terms of the construction of MSTs?
2. Consider the following connected undirected weighted graph  $G(V,E)$  of the air distance among several cities in miles. Use Prim's algorithm to find a minimum spanning tree of  $G$  starting from the vertex called 'London'. Show each major step in a separate diagram.



3. Draw a directed Yao graph  $Y_k(V)$  centered at node  $u$  with  $k=6$ , and the ray starting on the horizontal line of the diagram below.



$Y_k(\vec{V})$

$K=6$

$\alpha = 60^\circ$