## Minimum Spanning Tree

*Application Scenario:*

During Electronic Circuit Design, stitches with multiply components need to be connected together. When we want to connect with n stitches, n – 1 lines can be used to connect each stitch pair. Apparently, total length of lines should be as long as possible.

*Description:*

Using one *Connected Undirected Graph G = (V, E)* to represent, and V is the collection of all stitches, while *E* is the collection of all possible connection between *the stitches u and v*. For each *edge (u, v)* which belongs to E, we assign the *weight w(u, v)* as the cost of connection between the stitch u and v.

We hope to find an *Acyclic Sub – Graph Collection T* belongs to E, which can be used to connect all stitches, and has the least cost, which means that *w(T) = Total-Sum w(u, v) (u, v)* belongs to E.

Since T is the Acyclic Graph which connects all nodes, therefore, T can be treated as one *Generated Tree*. Of course, we can call T the *Minimum Spanning Tree*. Such problem can be called as the *Minimum Spanning Tree Problem*.

*For Example:*