//TreeMerge: An input file is required to be an tree MCS file, defined as follows:

//树型结构MCS的分治求解方法：输入为一个树型MCS的描述文件TreeFile

//First line: two parameters: Root node index Index\_Root and total number of nodes Num\_Nodes. Note here that, we set T\_0 as the root node and the Index\_Root is 0, and for simplicity, we set the index of the parent node of the Root node also as 0, although there is no such a node.

//第一行数据为：根节点 在节点数组的下标Index\_Root （一般设为0---T0；同时，为简化起见，将根节点的双亲节点也假设为0--不影响总体运行情况）和 总的节点数目 Num\_Nodes

//In the next lines, every line describes a node of the tree one by one, by the following format: the index of its parent node Index\_Parent, the first/smallest element/index (Order\_1) of set ST2, the first/smallest element/index (Order\_2) of ST3, all elements/indexes of the current MCS node.

//接下来每一行为按照树型结构描述的每个树节点MCS及相关树型结构信息：

双亲节点位序号Index\_Parent、该节点的ST2（仅在该节点的所有元素集）起始元素Order\_1、ST3（所有与孩子节点相连的元素集）起始元素Order\_2、MCS的具体数值

//Note: all elements are numbered from the root node to its child nodes, and from left nodes to right nodes. In each node, all elements in ST2 are less than those in ST3. Also, all elements are less than those in ST2.

//Order\_1 and Order\_2 decide the partition of ST2 and ST3.

//In a leaf node, Order\_2 must be not in the node.

//所有节点元素从根开始，按照层次从上到下、从左到右，**每个节点**的元素值要求：**ST2中所有元素均小于ST3的起始元素**

**//注意隐含的特殊要求：ST1中的元素均小于ST2中的元素均小于ST3中的元素！！**

**//Order\_1与Order\_2的次序确定了ST2与ST3中元素的分段情况！！**

***//易错点：一定要注意叶子节点的表示，ST3的起始元素一定没在该节点中，并且比该节点的元素序号大1！！否则，容易造成程序看起来出错了！！***

//First, input an MCS Treefile, and create a Tree in the child-linked-list-with-parent-node way. Then, recursively obtain sub-MHS for each sub-tree. Finally, merge all sub-MHS to obtain the final MHS for the whole tree.

//首先通过读入TreeFile文件，以带双亲节点的孩子链表结构构建一棵树

//然后，通过递归分治的方法求解每个子树的sub-MHS，最后将他们按照改进的Merge方法求解最终的MHS

//Example1.

//例1：



Fig.1 图1

//The corresponding MCS Tree File is described as follows:

//图1所示的树的文件描述如下：

0 7

0 2 2 1 2 3

0 4 5 2 4 5 6

0 7 8 3 7 8 9

1 10 11 5 10

1 11 12 6 11

2 12 13 8 12

2 13 14 9 13

//Example 2:

例2：



Fig.2 图2

//The corresponding MCS Tree File is described as follows:

图2 所示的树的表示方式如下：

0 15

0 2 2 1 2 3

0 4 5 2 4 5 6

0 7 8 3 7 8 9

1 10 11 5 10 11 12

1 13 14 6 13 14 15

2 16 17 8 16 17 18

2 19 20 9 19 20 21

3 22 23 11 22

3 23 24 12 23

4 24 25 14 24

4 25 26 15 25

5 26 27 17 26

5 27 28 18 27

6 28 29 20 28

6 29 30 21 29

//Example 3:

例3：



Fig.3 图3

//The corresponding MCS Tree File is described as follows:

图3所示的树的表示形式如下：

0 6

0 2 2 1 2 3

0 4 4 2 4 5 6

0 7 8 3 7

1 8 9 4 8

1 9 10 5 9

1 10 11 6 10