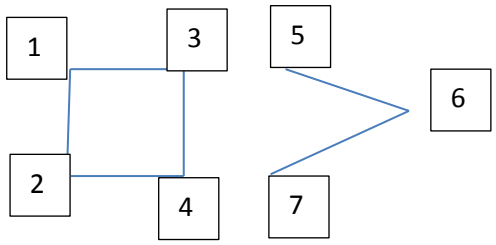
Say our string 110000010001000000101 has 6 ones, so it might be a spanning tree, we test further:



edge list = { (1,2), (1,3), (2,4), (3,4), (5,6), (6,7) }

Lets start with 1 in the connected set {1}

while there are still unselected nodes in the connected set
v = a node from the connected set that has not already been selected
for each edge in the list that has v as one of its ends
u = the other end of the edge
if u already exists in the connected set,
you have a cycle so this is not a ST, test a new graph
add u to the connected set
your connected set should now contain all n nodes or this is not a ST

so v = 1

connected edges = { (1,2), (1,3) } remaining edges = { (2,4), (3,4), (5,6), (6,7) }

u = 2 and u = 3

connected set {1, 2, 3} selected {1}

v = 2

connected edges = { (2,4) } remaining edges = { (3,4), (5,6), (6,7) }

u = 4

connected set {1, 2, 3, 4} selected {1, 2}

v = 3

connected edges = { (3,4) } remaining edges = { (5,6), (6,7) }

u = 4

connected set {1, 2, 3, 4}

4 was already in the connected set – so the edge (3,4) produced a cycle, and this graph is not a spanning tree, so reject it. (Other starting nodes will give you different results, but all should reject).