**Bridge, bi-directional, O(V+E)**

**Tested on: lightOJ 1026 - Critical Links**

vector< pair<int, int> > bridge;

pair<int, int> pii;

int t, dis[MX], low[MX], parent[MX];

void findBridge(int u)

{

low[u] = dis[u] = ++t;

vis[u]=true;

for(int i=0;i<adj[u].size();i++)

{

int v=adj[u][i];

if(!vis[v])

{

parent[v]=u;

findBridge(v);

low[u]=min(low[u], low[v]);

if(low[v]>dis[u]) //edge(u, v) is bridge

{

pii.first=u, pii.second=v;

if(u>v) swap(pii.first, pii.second); // if sort requires

bridge.push\_back(pii);

}

}

else if(parent[u]!=v)

low[u]=min(low[u], dis[v]);

}

return;

}

for(int i=0;i<node;i++)

if(!vis[i]) findBridge(i);