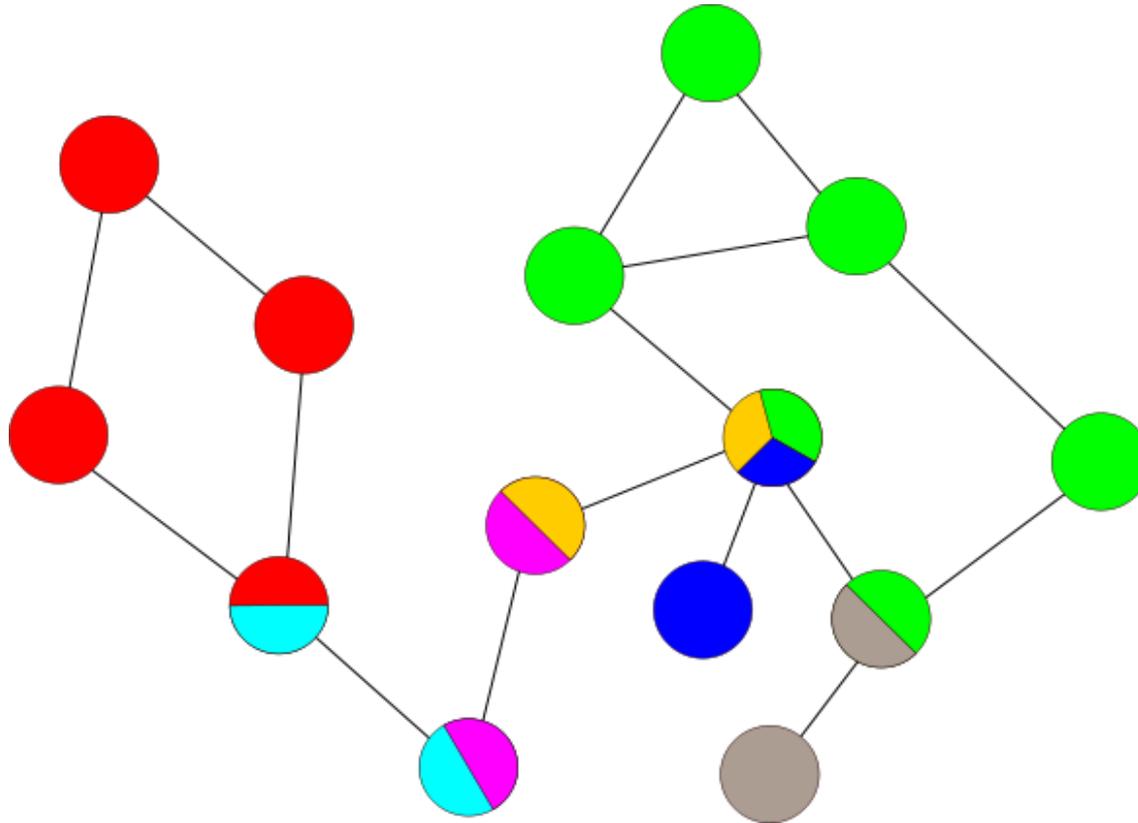


BRIDGES AND ARTICULATION POINTS

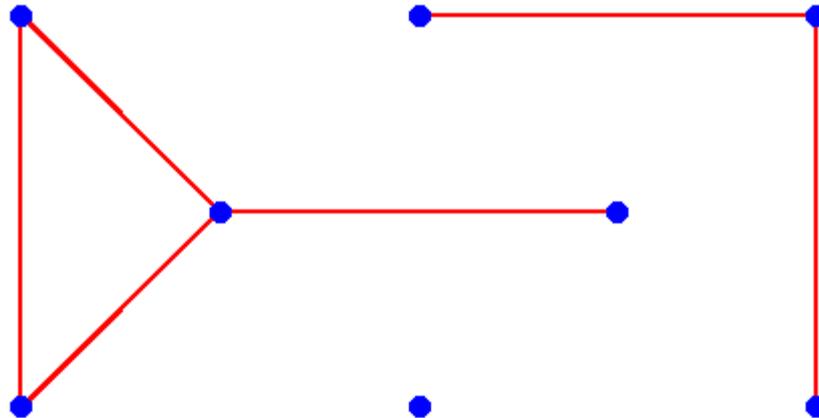


BY TAARIQ MOWZER
POWERED BY MS PAINT
AND WIKIPEDIA



WHAT IS A CONNECTED COMPONENT?

A connected component is a subgraph in which any two vertices in the subgraph are connected to each other by a path.



WHAT IS AN ARTICULATION POINT AND A BRIDGE?

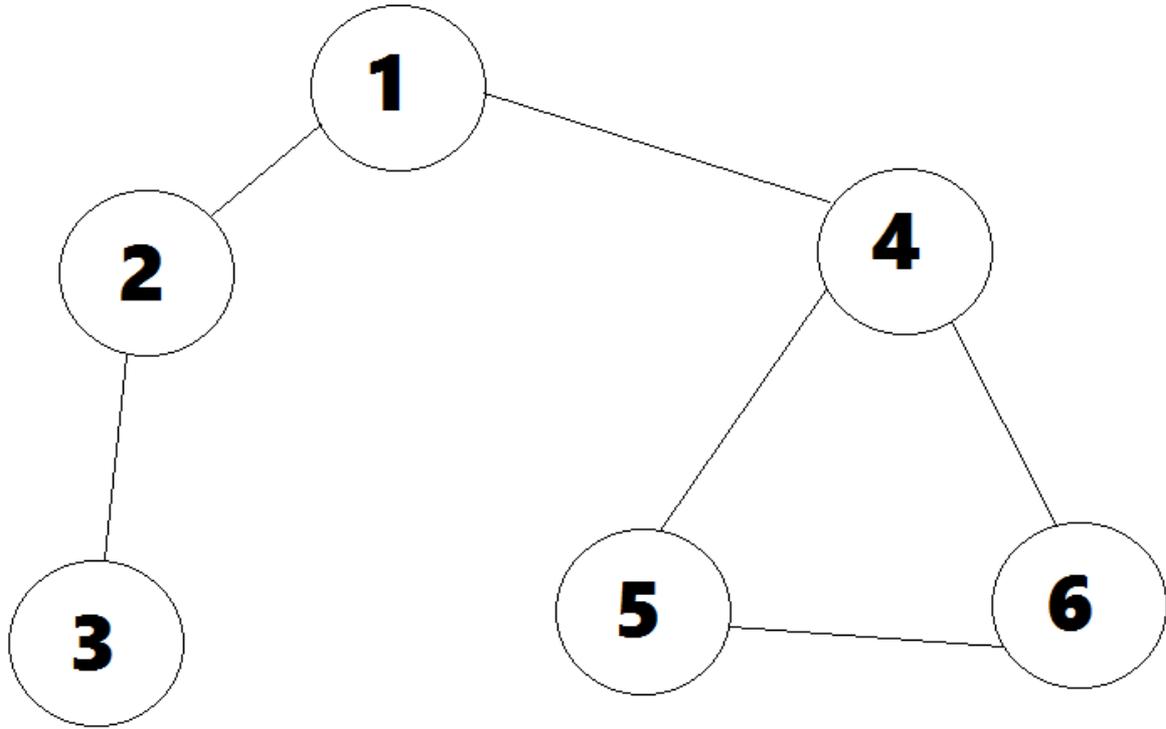
Articulation point

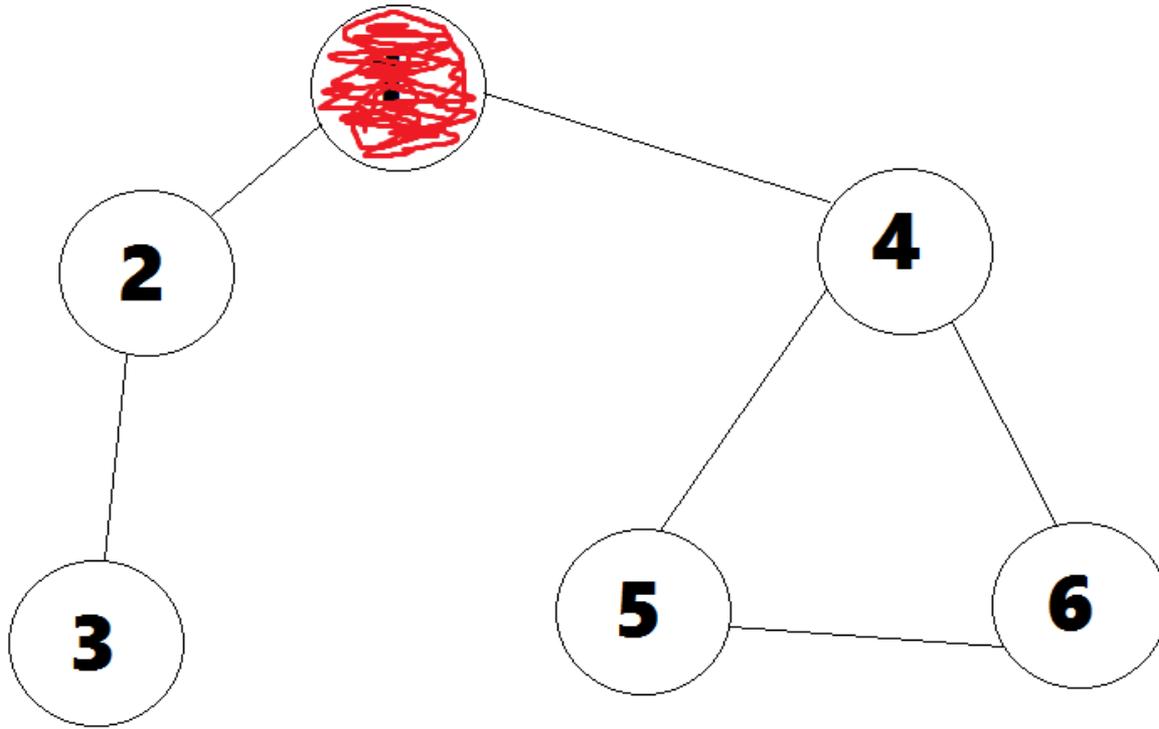
A point that if removed from the graph, the total number of connected components in the graph increase.

Bridge

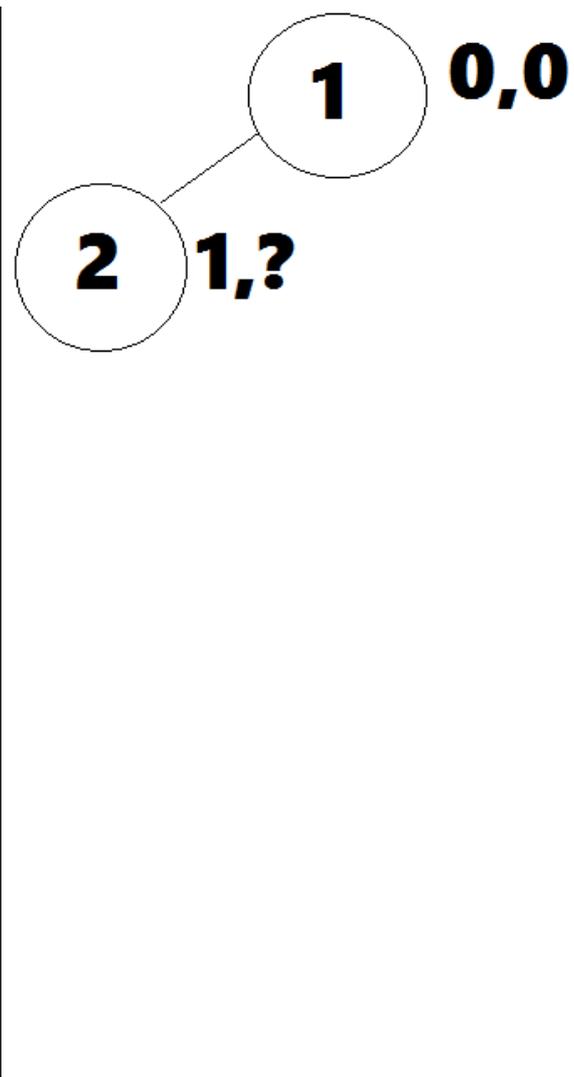
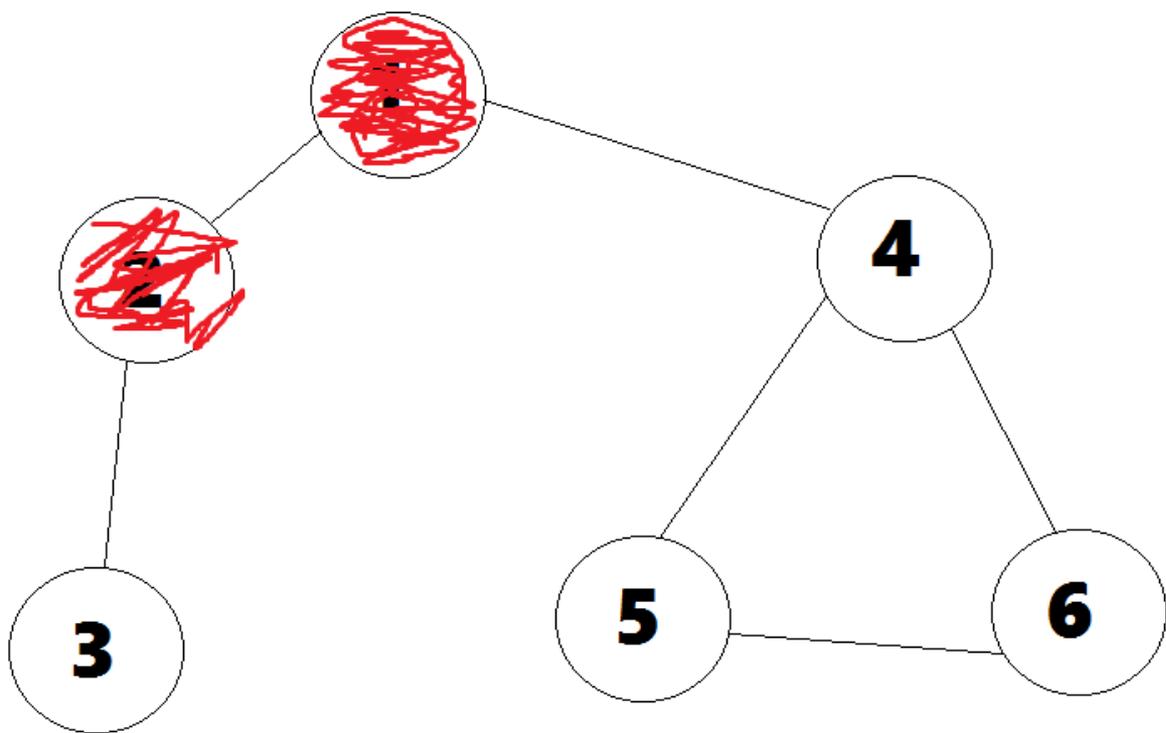
An edge that if removed from the graph, the total number of connected components in the graph increases.

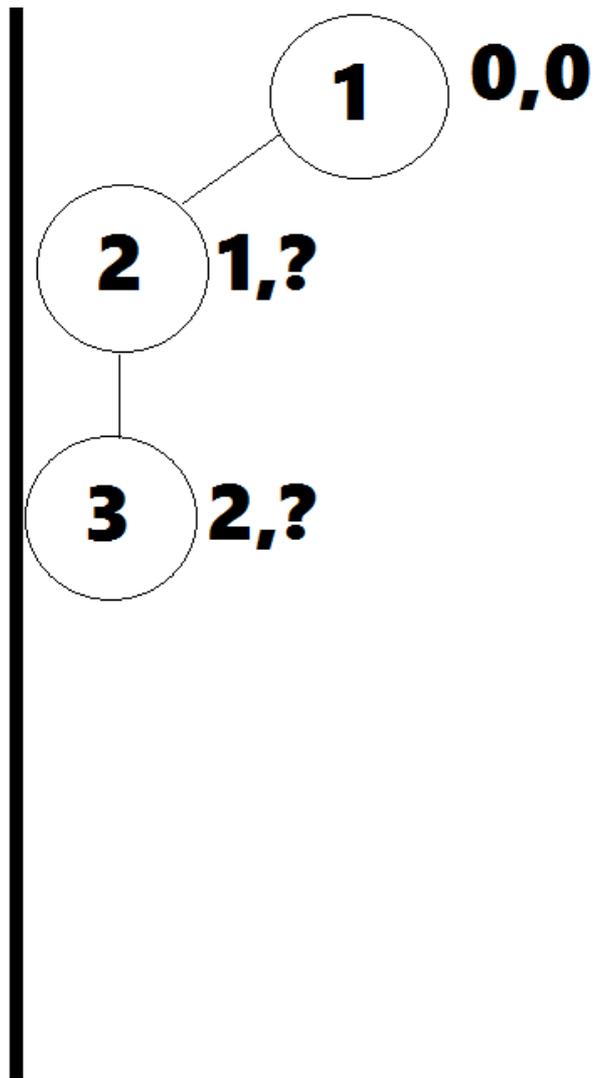
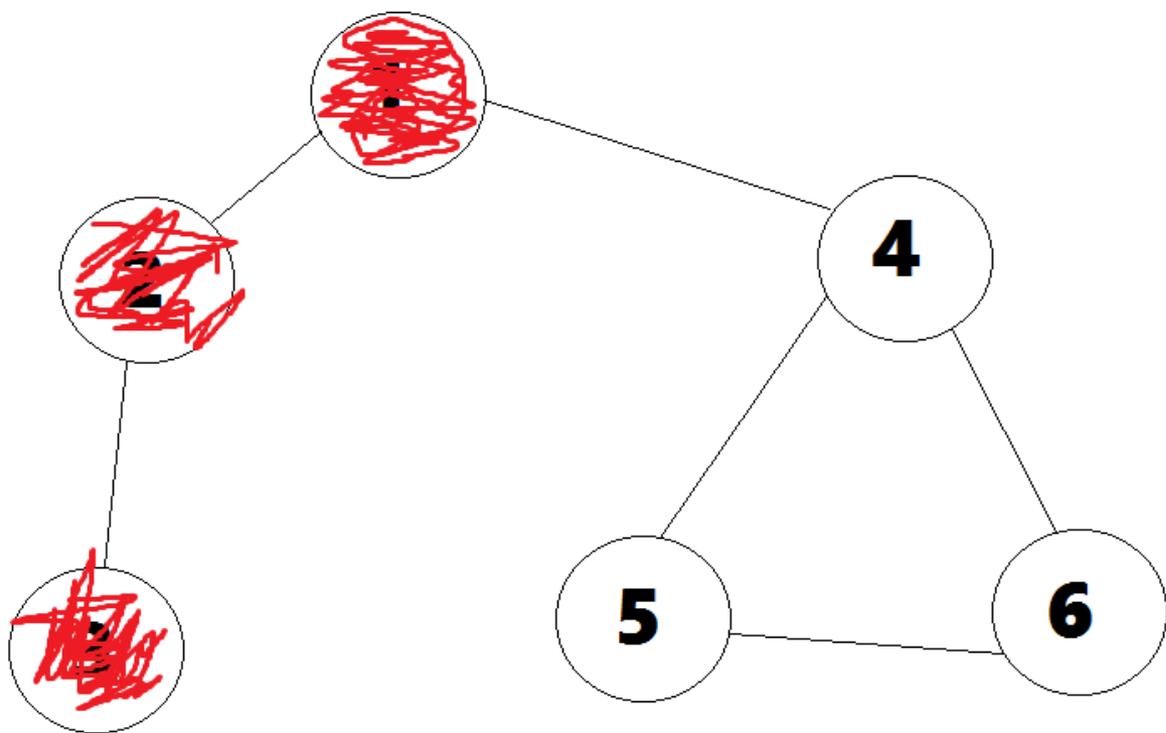
FINDING ARTICULATION POINTS

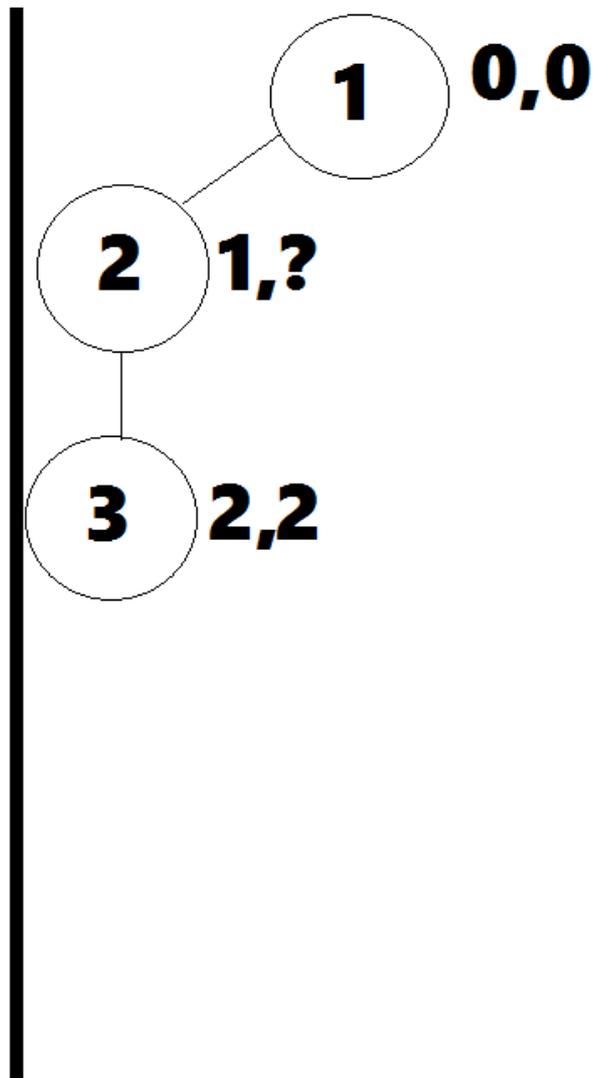
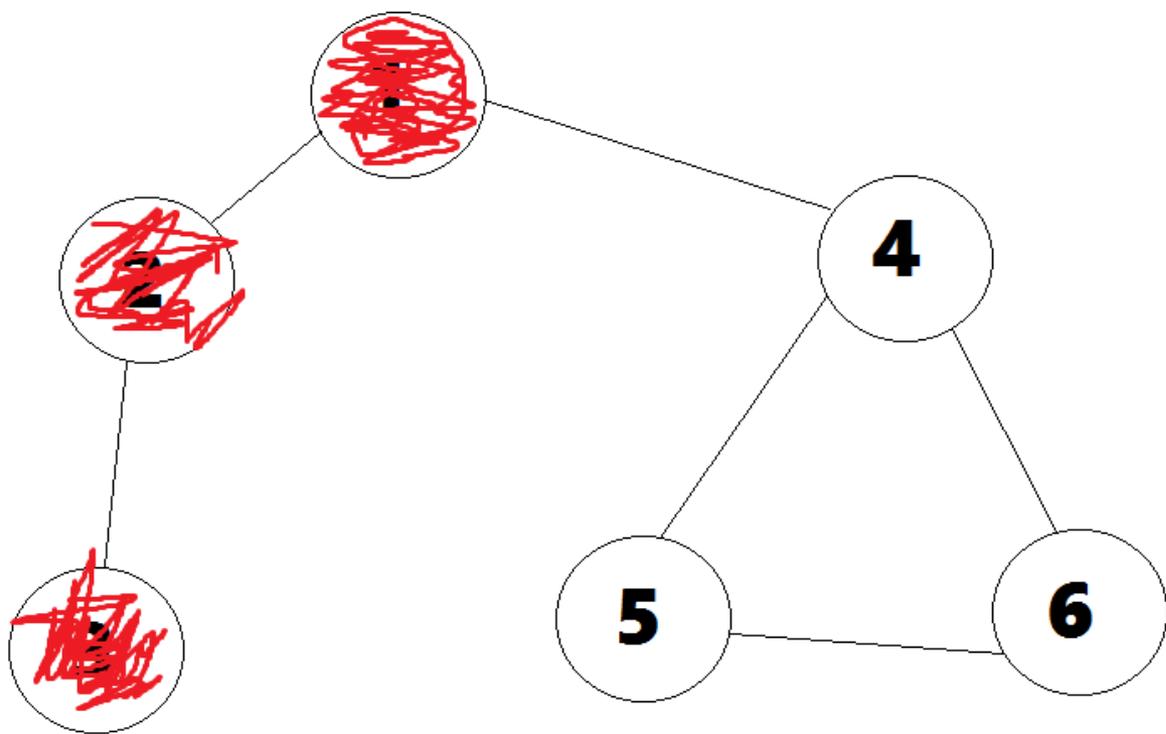


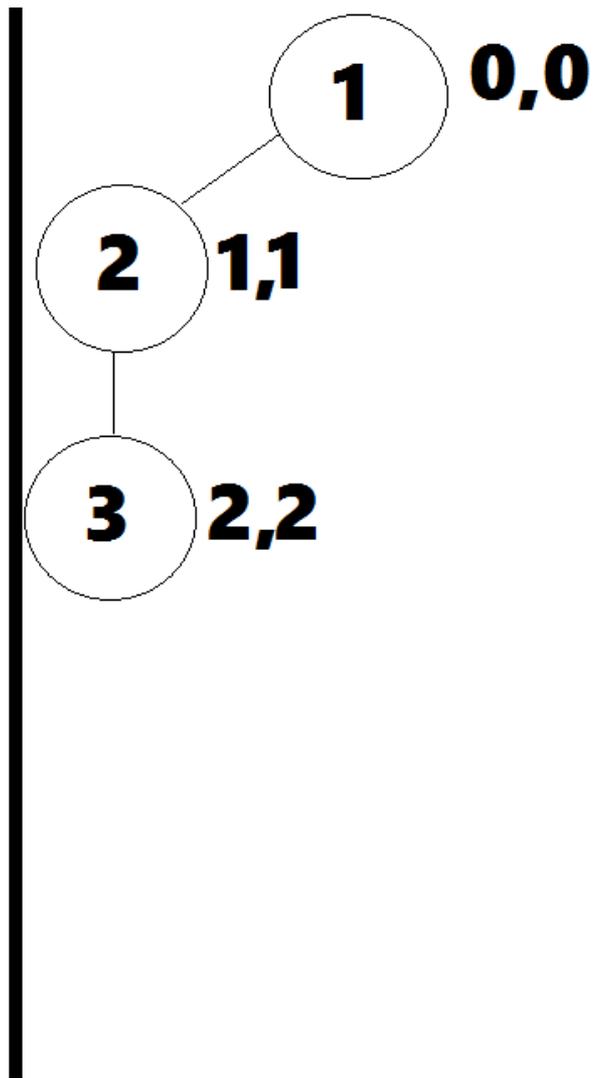
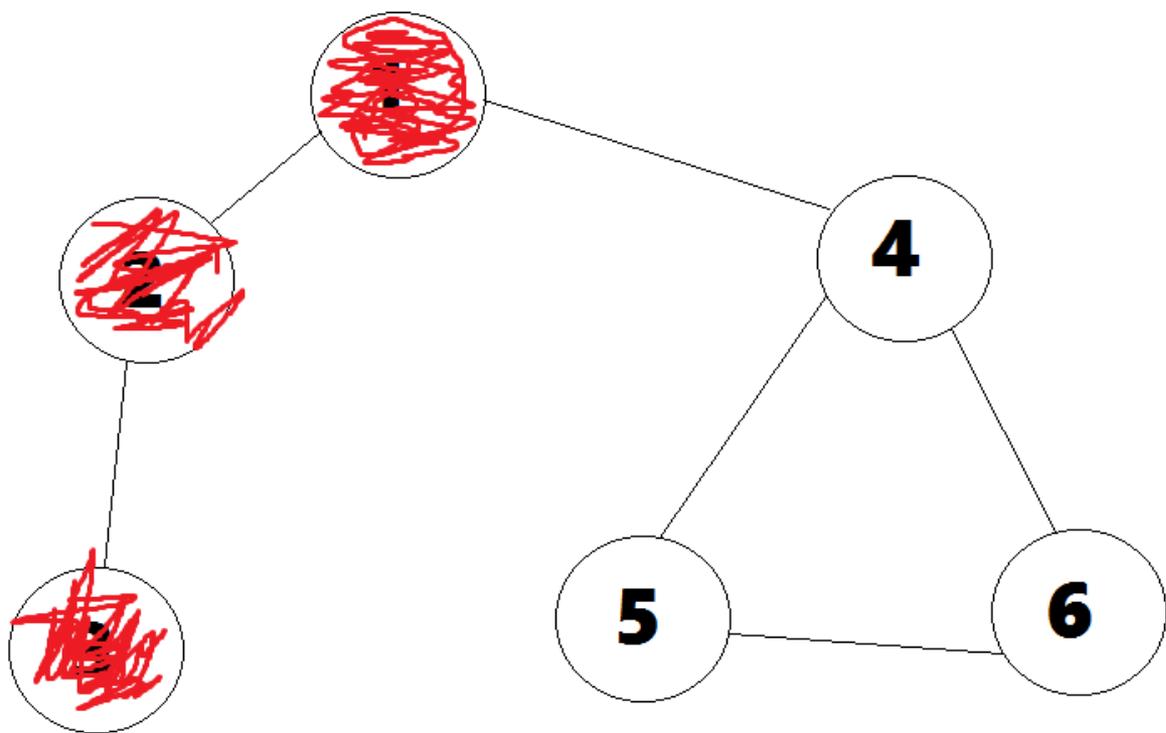


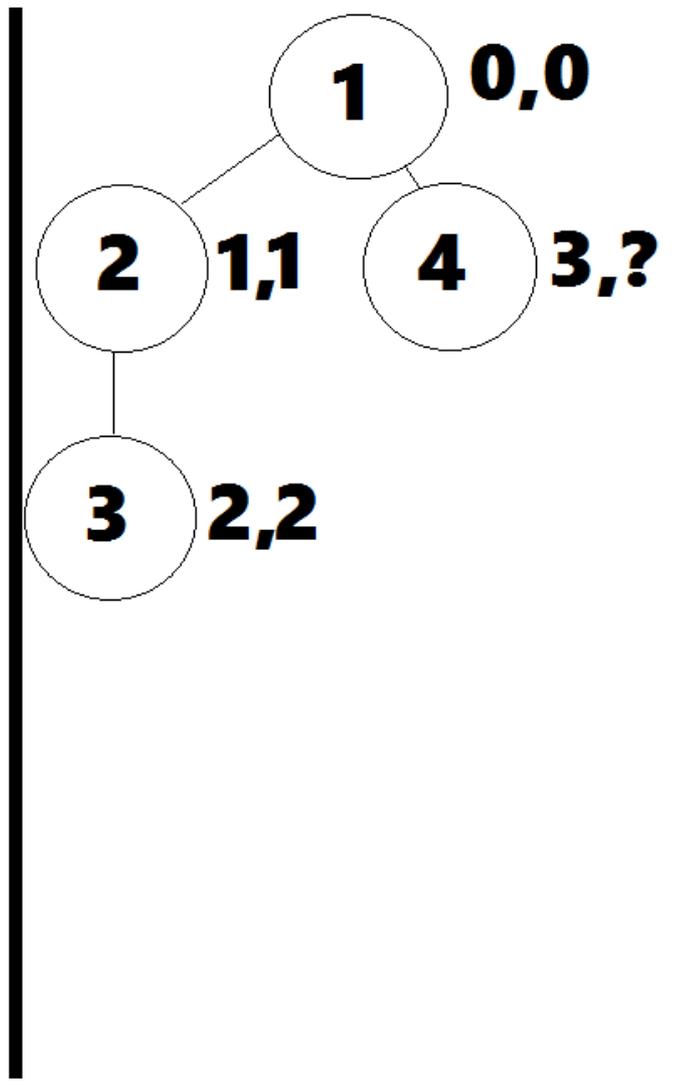
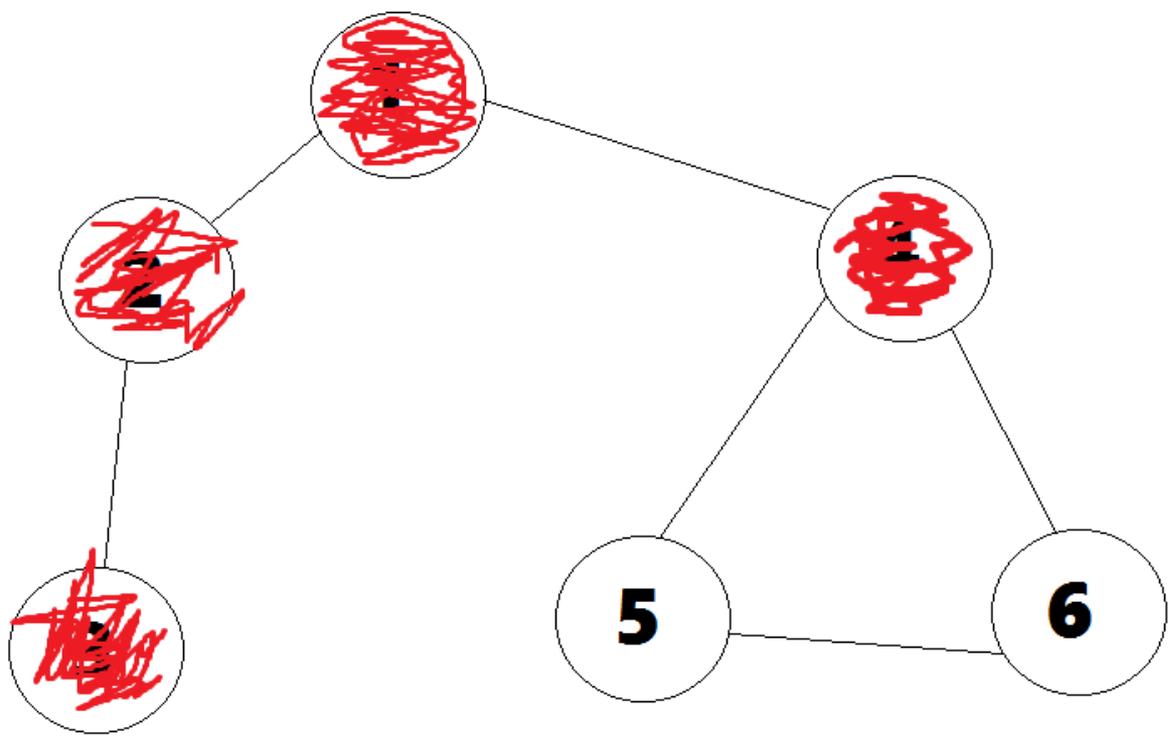
1 **0,0**

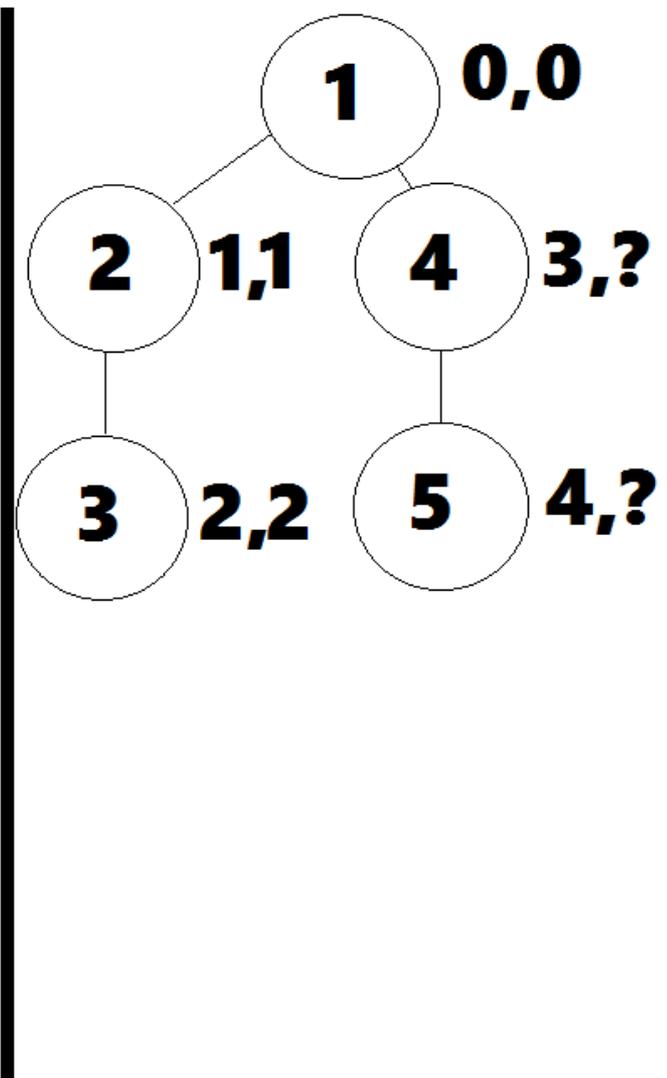
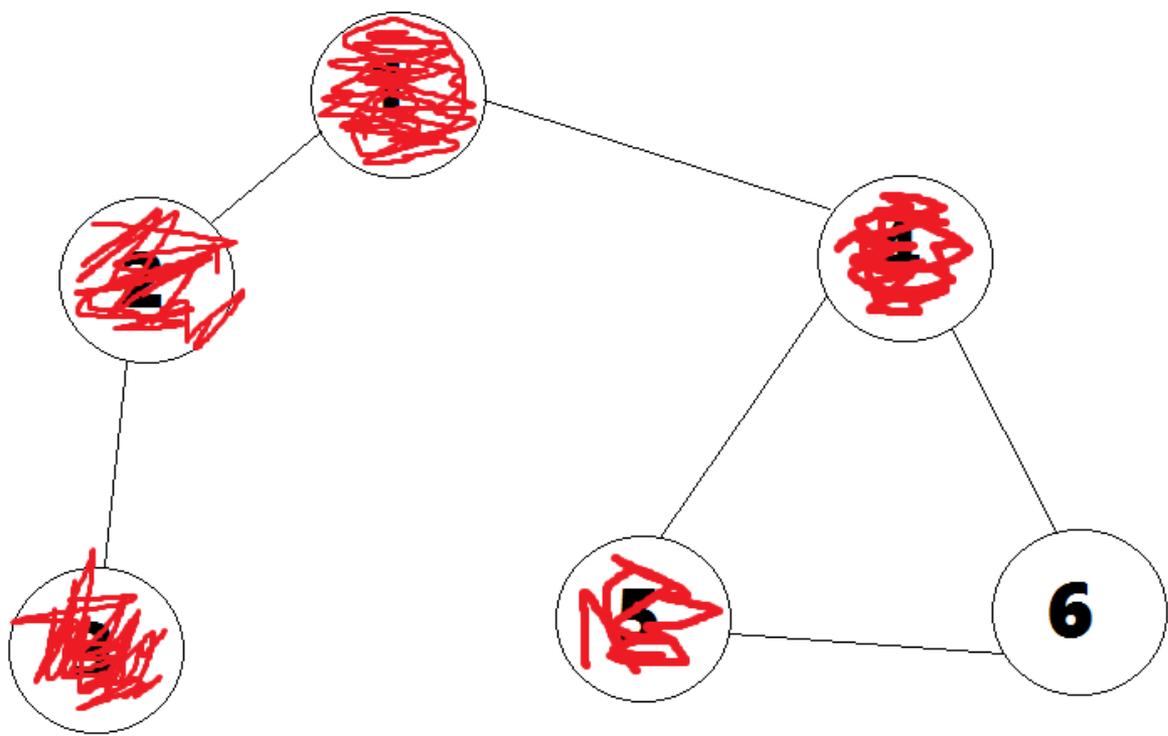


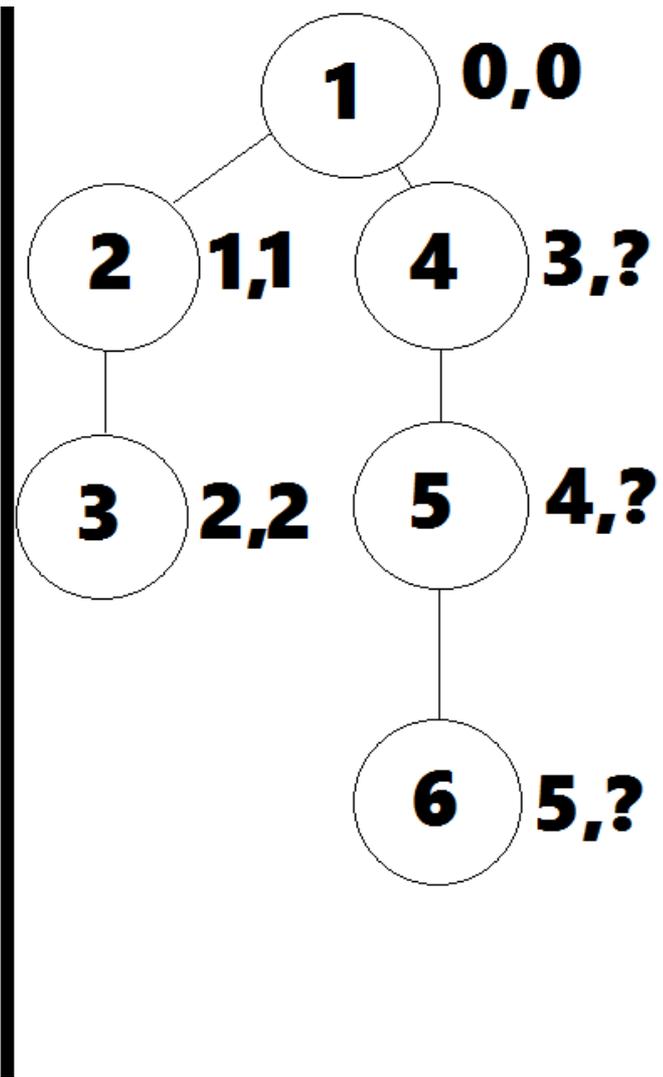
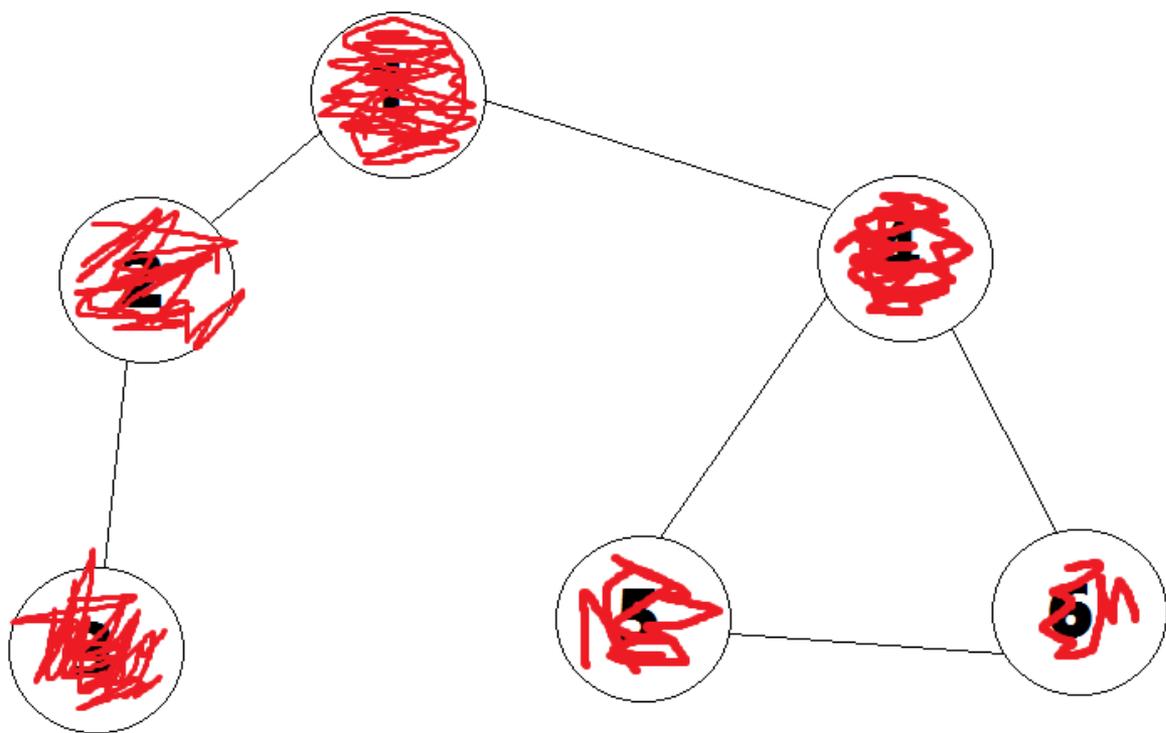


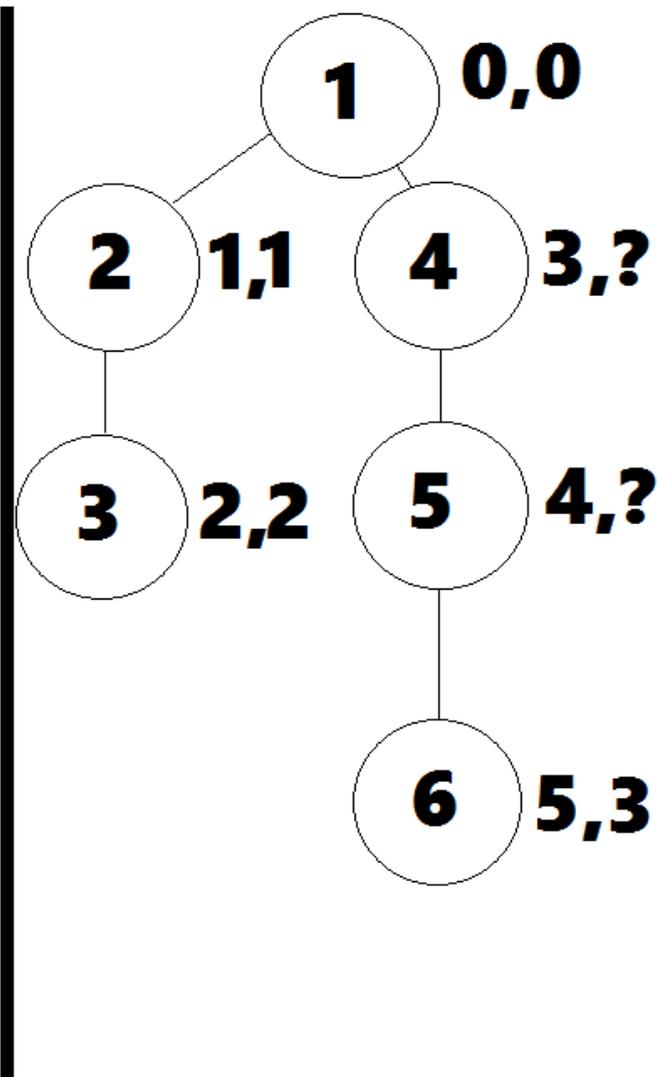
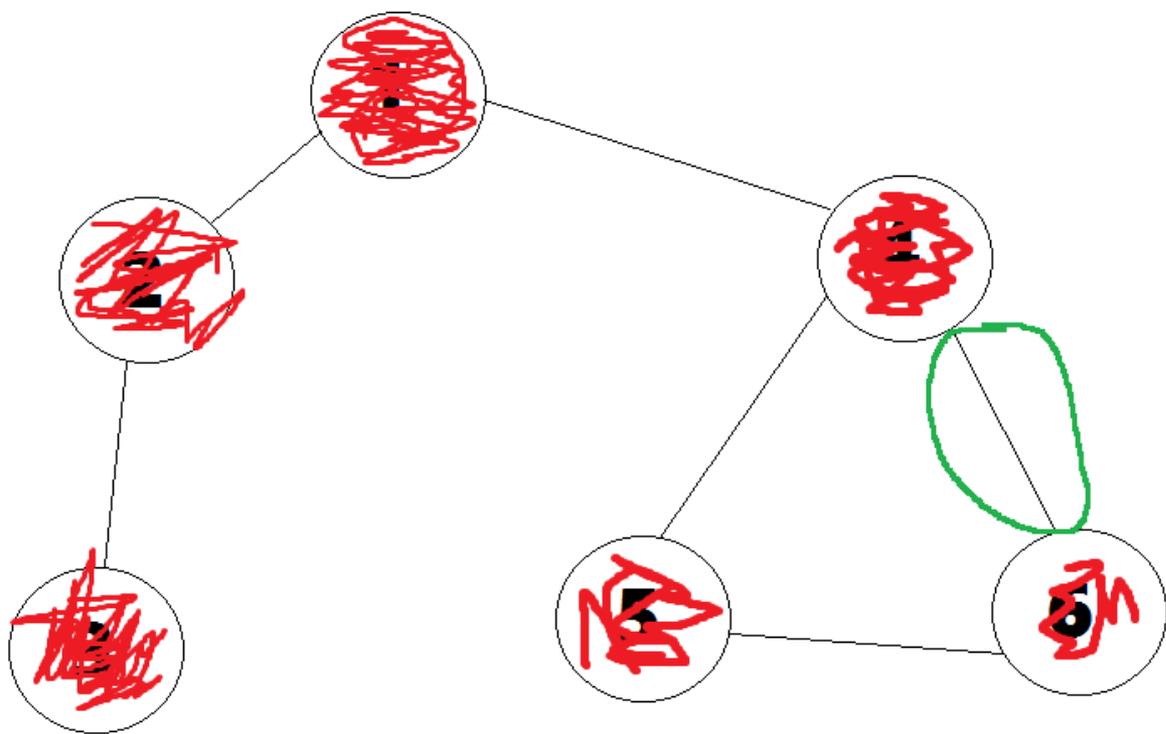


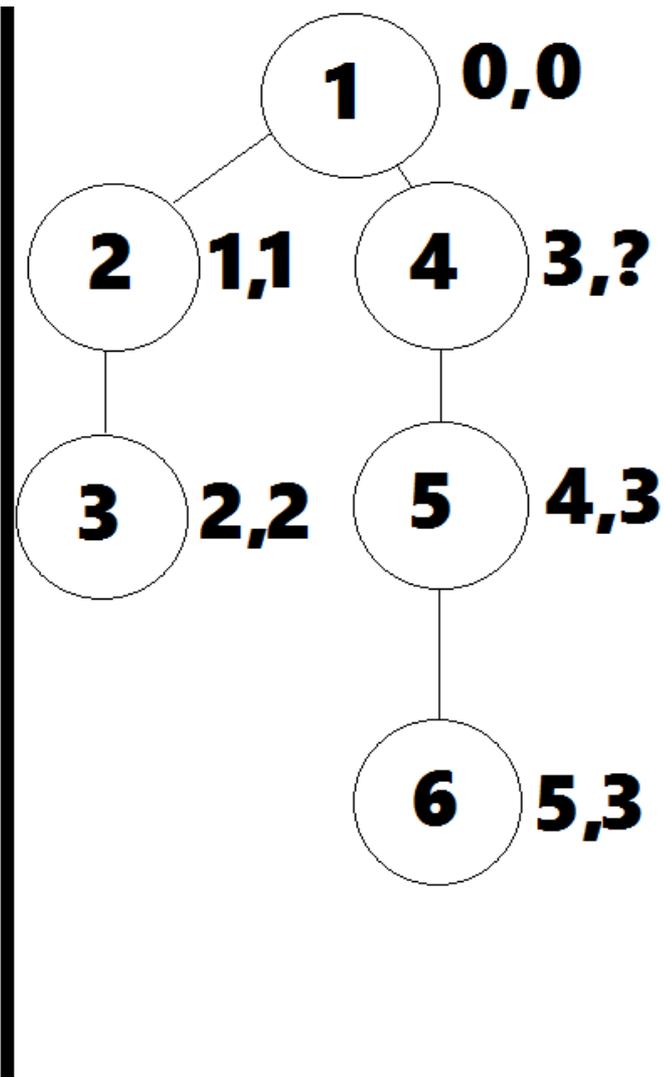
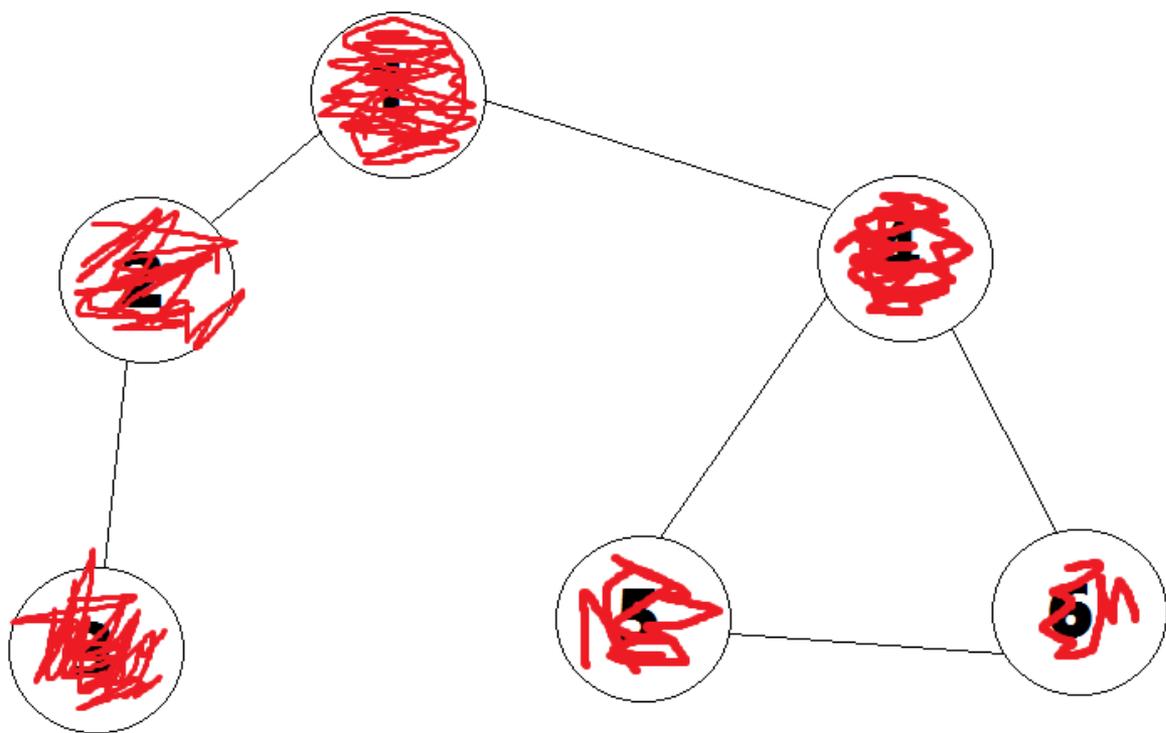


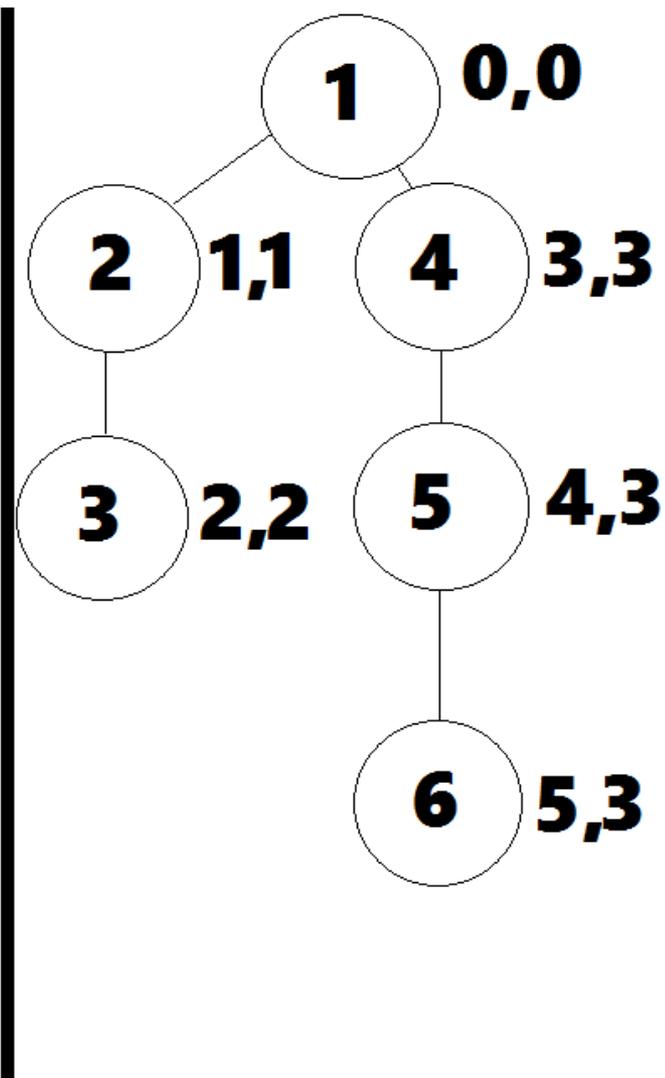
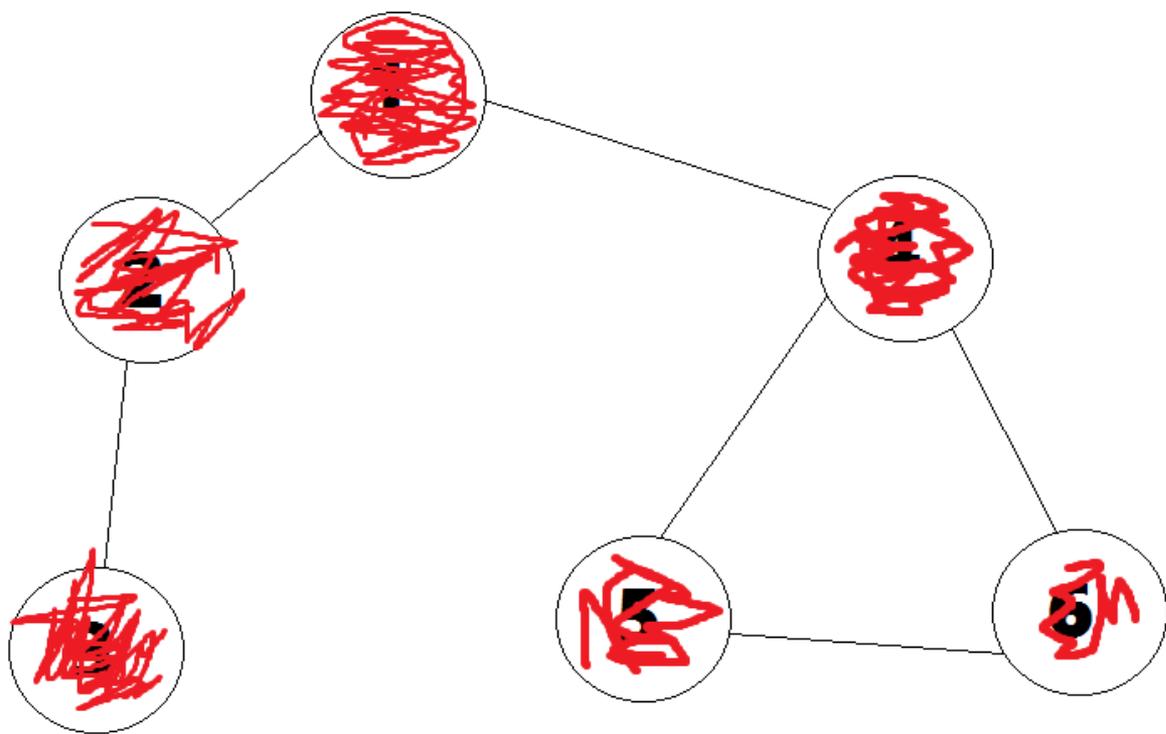










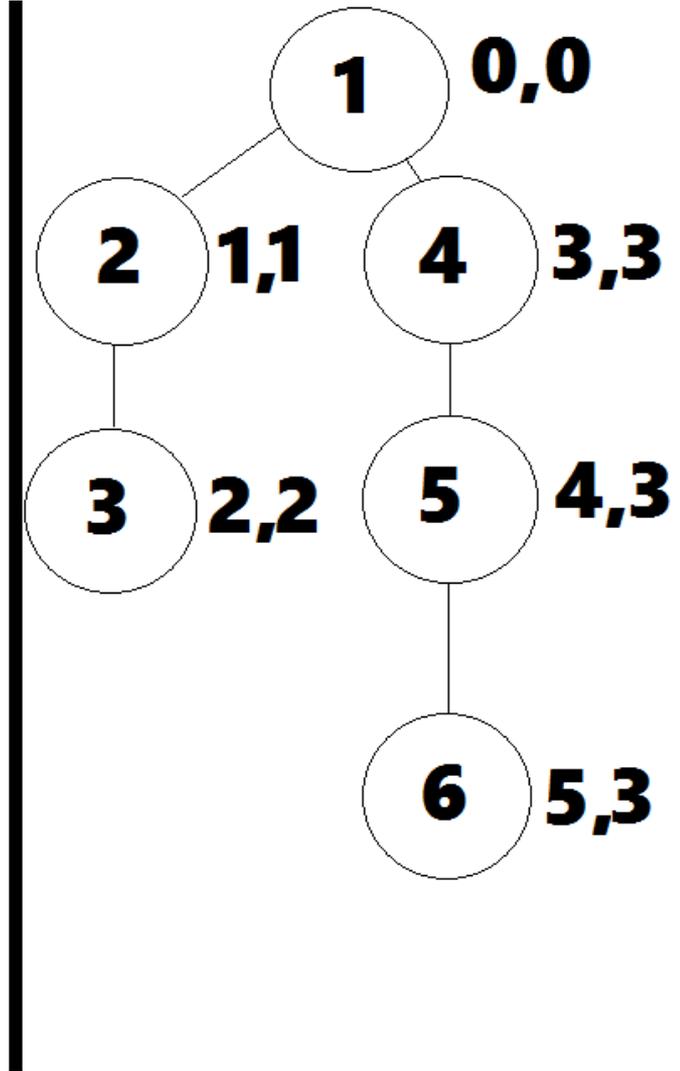


u is an articulation point if and only if

u is a root, and has more than two children

u is not a root, and where v is a child of u,
If $\text{back}[v] \geq \text{time}[u]$

From the above we see that points: 1, 2 and 4
are articulation points



uv is a bridge, for $\text{time}[u] > \text{time}[v]$

If and only if

$\text{back}[v] > \text{time}[u]$

